**Abstract:** There is a new paradigm for evaluating landfills. While landfills are contaminated repositories of hazardous wastes, they also are brownfields that can be redeveloped for renewable energy development. It is possible to view landfills through a new lens: As endowed areas of renewable energy potential that can be magnets for a host of renewable development incentives. Landfills also are critical resource areas for the control of greenhouse gases. Landfill materials decompose into methane, a greenhouse gas that is more than twenty times more potent—molecule for molecule—than carbon dioxide. This Article traces the molecular composition of waste in landfills, analyzing the chemical stew that brews in these repositories. Without doubt, landfills in America are brownfields. And many of these landfills leak and cause public health risks. This Article also analyzes the potential to utilize landfill gas for electricity production or as a thermal resource. It evaluates the energy potential at municipal sewage treatment plants and the ability to utilize the land at landfills to host wind turbines. The environmental regulatory envelope that surrounds landfill operation is explored. Also analyzed are the various incentives that foster renewable energy development and are applicable to landfill brownfields development. These include tax credits, tax-preferenced financing, renewable energy credits under state renewable portfolio standard (RPS) systems in twenty-two states, and direct renewable trust fund subsidies in sixteen states, as well as net metering available in forty states. Finally, creative techniques to mitigate derivative environmental liability under Superfund, the Resource Conservation and Recovery Act (RCRA), and similar state laws that can accompany energy operations at a landfill, are suggested.
Funding Opportunities for Brownfield Redevelopment

Julianne Kurdila & Elise Rindfleisch

Abstract: Many financial tools are available to redevelopers of former industrial and commercial sites, commonly known as “brownfields.” Because the money is often tied to federal, state, or local government programs, time is usually a factor in such transactions. This Article explores the various financial mechanisms available to brownfield redevelopers, including government funding sources, insurance claims, and cost recovery from parties who are found responsible for the contamination.

A Tale of Two Brownfield Sites: Making the Best of Times from the Worst of Times in Western Pennsylvania’s Steel Valley

Nancy Perkins

Abstract: In the past decade, two attractive multi-use developments have sprung up on the banks of western Pennsylvania’s Monongahela River, improving vast brownfields where large steel plants once stood. The communities that are home to these projects—Homestead and Pittsburgh’s South Side neighborhood—have unquestionably benefited from these developments, but those benefits have not been evenly distributed. This Article compares these two projects from an environmental justice perspective. It concludes that Homestead is an environmental justice community, and that it has not fared as well as the Southside in the distribution of the benefits associated with brownfield redevelopment. The benefits that are most lacking in Homestead are those related to community empowerment and community identity as reflected in the development itself. Professor Perkins suggests that states amend their brownfield programs to better prepare environmental justice communities well in advance of development in order to assure that projects maximize these important community identity features.

The Uniform Environmental Covenants Act: Why, How, and Whether

Kurt A. Strasser

Abstract: With contaminated land, it sometimes makes sense to do a partial cleanup, rather than a complete one, and combine the cleanup with
land use restrictions and continuing obligations to monitor the land. The Uniform Environmental Covenants Act creates a new state law property interest to make these restrictions and obligations permanent and enforceable. It addresses issues created by traditional common law doctrines that were hostile to permanent land restrictions, as well as more contemporary problems presented by tax liens, eminent domain, and adverse possession. This Article reviews the Act’s legal infrastructure for creating, enforcing, and modifying the terms of the land use restrictions and monitoring obligations. The Article argues that the Act’s legal infrastructure provides parties with the legal certainty needed to encourage future cleanups, while also protecting against environmental risks that the residual contamination could otherwise pose. These cleanups, often financed as part of the property’s redevelopment, are particularly useful because they are a way to return blighted properties to the stream of commerce. The Act has drawn some criticism, primarily for not going further with its protections, and these are reviewed at the end of the Article.

Brownfield Redevelopment in the European Union

Bernard Vanheusden

[pages 559–576]

Abstract: Brownfields not only occur in the United States, but in every industrialized country and region. The European Union is currently confronting the challenge of regulating these sites. This Article offers a comparative survey of different legal approaches within both the European Union and the United States toward dealing with brownfields. As a case study, it outlines important developments in the Flemish region of Belgium. It is clear that more and more Member States are searching for different measures to deal with soil remediation in general, and brownfields in particular. However, the shortage of knowledge and information regarding brownfield development creates myriad difficulties with the start-up and realization of potential brownfield projects. Additionally, and with regard to funding schemes, no consideration is made of the sustainability of the methods used to redevelop these sites.
ESSAY

NATURE’S TRUST: A LEGAL, POLITICAL AND MORAL FRAME FOR GLOBAL WARMING

Mary Christina Wood

[pages 577–604]

Abstract: This essay portrays the urgency of global warming and discusses the role of environmental law in bringing about this crisis. It explains why our regulatory system ignored this problem for too long and offers a property-based perspective to frame government’s responsibility in confronting climate crisis.

NOTE

PLAYING CHICKEN AT THE WTO: DEFENDING ANIMAL WELFARE-BASED TRADE EMBARGOES UNDER GATT’S MORAL EXCEPTION

Edward M. Thomas

[pages 605–637]

Abstract: The European Parliament recently adopted a proposal mandating higher welfare standards for chicken used in meat production, including a provision that would regulate or prohibit the importation of chicken not produced with the same high standards. Final passage of such a law would likely raise a World Trade Organization (WTO) complaint by a chicken-exporting nation. This Note argues that under WTO precedent, a carefully crafted import ban could survive such a challenge by invoking the moral exception to the General Agreement on Tariffs and Trade (GATT). In order to defend its regulation, however, the European Union must first attempt to negotiate a resolution with its trading partners, allow a flexible timeframe for nations to comply, provide exceptions for producers who abide by high standards, and mandate the same standards for both domestic and foreign producers. This Note argues that the European Union should follow these steps, and not back down from passing a much-needed law to improve animal welfare.
CONVERTING BROWNFIELD ENVIRONMENTAL NEGATIVES INTO ENERGY POSITIVES

STEVEN FERREY*

Abstract: There is a new paradigm for evaluating landfills. While landfills are contaminated repositories of hazardous wastes, they also are brownfields that can be redeveloped for renewable energy development. It is possible to view landfills through a new lens: As endowed areas of renewable energy potential that can be magnets for a host of renewable development incentives. Landfills also are critical resource areas for the control of greenhouse gases. Landfill materials decompose into methane, a greenhouse gas that is more than twenty times more potent—molecule for molecule—than carbon dioxide. This Article traces the molecular composition of waste in landfills, analyzing the chemical stew that brews in these repositories. Without doubt, landfills in America are brownfields. And many of these landfills leak and cause public health risks. This Article also analyzes the potential to utilize landfill gas for electricity production or as a thermal resource. It evaluates the energy potential at municipal sewage treatment plants and the ability to utilize the land at landfills to host wind turbines. The environmental regulatory envelope that surrounds landfill operation is explored. Also analyzed are the various incentives that foster renewable energy development and are applicable to landfill brownfields development. These include tax credits, tax-preferred financing, renewable energy credits under state renewable portfolio standard (RPS) systems in twenty-two states, and direct renewable trust fund subsidies in sixteen states, as well as net metering available in forty states. Finally, creative techniques to mitigate derivative environmental liability under Superfund, the Resource Conservation and Recovery Act (RCRA), and similar state laws that can accompany energy operations at a landfill, are suggested.

Introduction: From Environmental Negatives to Energy Positives

When discussing greenhouse gases, landfills are critical for several reasons. First, they constitute a large share of U.S. greenhouse gas emis-

* Professor of Law, Suffolk University Law School; M.A., J.D., University of California, Berkeley; B.A., Pomona College.
sions: as of 2000, the United States is responsible for approximately eleven percent of worldwide methane emissions.\(^1\) Approximately thirty percent of U.S. anthropogenic methane emissions, which is equivalent to 193.6 million metric tons, came from waste management in 2003.\(^2\) Landfills represent ninety-two percent of the 193.6 million metric tons of methane emissions, by far the single largest source.\(^3\) Approximately 5.2 million metric tons of the 178.1 million tons of landfill methane annually are captured as landfill gas (LFG); 2.6 million metric tons of this is used for productive energy, while 2.6 million metric tons of the recovered LFG are flared with no productive energy capture.\(^4\)

Second, the feedstock of LFG—municipal solid waste (MSW)—is the only increasing renewable resource. Total generation of MSW in the United States has increased more than fifty percent since 1980 to a level of 236.2 million tons annually.\(^5\) The per capita MSW generation rate is 4.45 pounds per person per day.\(^6\) This increase is not necessarily a positive attribute, but it is reality. MSW generation rates in European countries are significantly lower.\(^7\)

Third, landfills are the repository for the bulk of MSW. Approximately fifty-six percent of U.S. MSW goes to landfills as its final destination.\(^8\) Thirty years ago, in 1978, there were 20,000 operating landfills in


3. See Emissions of Greenhouse Gases, \textit{supra} note 2, at xv tbl.ES4. The remaining eight percent of these emissions from waste management are associated with domestic wastewater treatment programs. \(\text{See id.}\)

4. \(\text{See id.}\) at 50.


6. \(\text{Id.}\) at 2. The average American generates his or her own weight in municipal solid waste (MSW) every fifty-three days. \(\text{See id.}\)

7. \(\text{Id.}\)

8. \(\text{Id.}\)
the United States. The number steadily declined to approximately 1767 operating landfills in the United States in 2002. But declining absolute numbers of repositories belie the new larger mega-fills. While the number of landfills in the United States has been declining, their waste capacity has remained relatively constant. The currently available landfill capacity in the United States is estimated at 3.6 billion tons, which at current rates of disposal would provide twenty-eight years of additional disposal capacity.

Fourth, the bulk of MSW eventually degrades into methane molecules. About two thirds of the total MSW is organic matter that will degrade to release methane under anaerobic conditions. In 2002, landfills accounted for 6.9 million metric tons of methane emitted annually. These emissions can be captured and employed productively as a methane gas energy source, collected and flared for no productive purpose, or left alone to migrate into the environment as a potent greenhouse gas.

In addition to landfilling MSW and then capturing the methane produced as an energy fuel, the organic material can be directly combusted to release energy. Fourteen percent of MSW in the United States is incinerated; occasionally, incineration is coupled with a turbine to produce electricity. In 2002, there were 107 active waste-to-energy combustion facilities in operation in the United States. The most significant deployment of waste-to-energy combustion facilities to handle

---

10 *Municipal Solid Waste*, supra note 5, at 9.
13 U.S. Environmental Protection Agency, Municipal Waste: Basic Facts, http://www.epa.gov/msw/facts.htm (Mar. 2, 2007) [hereinafter MSW Basic Facts]. The composition of typical MSW is 34.2% paper, 13.1% yard waste, 11.7% food waste, 5.7% wood, 11.9% plastics, and 7.3% textiles, leather, and rubber, and the remainder metals, glass, and other materials. *Id.*
16 MSW Basic Facts, supra note 13; *Municipal Solid Waste*, supra note 5, at 10 fig.6. Combustion reduces waste by seventy-five percent of its volume, leaving a residual ash for disposal in landfills. MSW Basic Facts, supra note 13.
17 Kaufman et al., supra note 11, at 40.
MSW is in New England, where thirty-four percent of the waste stream is handled in this manner. Waste-to-energy combustion of MSW in the United States generated 289 trillion British thermal units (BTU) of energy in 2001, representing approximately 0.3% of total U.S. electricity demand. There is a third destination alternative: thirty-one percent of the MSW waste stream in the United States is recycled or composted, almost a twofold increase from a decade earlier.

I. EVERY LANDFILL IS A BROWNFIELD

A. Why Municipalities May View Landfills as Hazardous Liabilities

1. The Presence of Household Hazardous Waste

   All industrial nations are neck-deep in waste. What poses a potential liability for municipalities is that (1) so-called “sanitary” MSW is actually hazardous, and (2) these landfills are leaking. All waste, whether liquid, gaseous, or solid, is characterized as solid waste. Some solid wastes are sanitary, although others are hazardous. Municipal garbage collected from households is designated as municipal solid waste and is appropriately disposed of in sanitary landfills.

   Roughly thirty percent of the total waste collected in some communities are household wastes. Detailed surveys indicate that approximately three percent of MSW is recycled; the remainder is thrown

---

18 Id. at 34. Rocky Mountain and Midwest regions use this technology the least. Id. The areas where the largest percentage of waste is landfill are the Rocky Mountain region with ninety percent of MSW waste stream landfilled, the Midwest with seventy-five percent of the waste stream landfilled, the Great Lakes region of the Midwest with sixty-eight percent of the waste stream landfilled, and the South with sixty-nine percent of the waste stream landfilled. Id.


20 See Municipal Solid Waste, supra note 5, at 3. Combustion reduces waste by ninety percent of its volume, leaving a residual ash for disposal in landfills. Id.; See MSW Basic Facts, supra note 13.


out. In 1976, the United States officially produced and placed in landfills more than 360 million tons of solid waste created by municipal, commercial, and industrial sources. Congressional records from proceedings on the Resource Conservation and Recovery Act (RCRA) estimate that over 11 billion tons of waste are generated every year in the United States. In 1999, the United States produced approximately 545 million tons of solid waste, 374 million tons of which were placed in landfills. On a per capita basis, each American creates approximately 4.5 pounds of MSW each day. This amount varies depending on the “degree of urbanization,” the season, the average income level, 29

26 Robert A. Griffin et al., Attenuation of Pollutants in Municipal Landfill Leachate by Passage Through Clay, 10 Envtl. Sci. & Tech. 1262, 1262 (1976). This disposal had an annual cost of more than $4.5 billion. Id. Additionally, each day Americans flush an estimated 6.8 billion gallons of sewage. Judy Licht & Jeff Johnson, Without a Paddle, 17 Envtl. Action 10, 13 (1985).
27 S. Rep. No. 102-301, at 2 (1992) (Comm. Rep.). Of these 11 billion tons, 7 billion were industrial wastes, 4 billion were wastes generated from generators including mines, electric utilities, and oil and gas extraction and production, 250 million were subtitle C hazardous wastes, and 180 million were municipal wastes. Id.
29 MSW Basic Facts, supra note 13. This definition of MSW includes residential and commercial waste. Id. Reported MSW generation as of 1986 ranges from about 2.3 to 6.58 pounds per capita per day (lb./cap/day). BUREAU OF SOLID WASTE DISPOSAL, DEP’T OF ENVTL. QUALITY ENG’G, COMMON-WEALTH OF MASS., WASTE COMPOSITION STUDIES 1, 6 (1986) [hereinafter WASTE COMPOSITION STUDIES]. The study reported, “Where residential waste can be separately identified, it ranges from about 1.4 to 2.8 lb./cap/day.” Id.
30 WASTE COMPOSITION STUDIES, supra note 29, at 7. To account for the effect of community size on waste generation, “a desktop study of materials recovery in Vermont and New Hampshire assumed that generation was 2.4 lb./cap/day in communities of less than 4,500 persons, [and] 2.8 lb./cap/day in communities larger than 4,500.” Id. A Dane County Wisconsin Solid Waste Plan also “found that generation rates were lower in rural areas than in urban areas.” Id. To calculate “overall county generation rates, the Dane County planners assumed” the following generation rates: “2.2 lb./cap/day in rural areas of 10,000 or more; 1.6 lb./cap/day in towns of 2,500 to 10,000; 1.0 lb./cap/day in rural areas with incorporated places; 85 lb./cap/day in very rural areas with one or fewer incorporated places of 1,000 or less.” Id. at 8. In another study, Delaware landfill records showed “annual waste generation of 880 lb./cap/year in rural areas, and 2,400 lb./cap/year in wealthy coastal areas.” Id. at 8.
31 Id. A study of waste generation in Portland, Maine “found that total waste generation could vary seasonally from 80 to 120 percent of the average monthly rate . . . .” Id. The study reasoned that the “seasonal recreational population may cause extensive seasonal variation.” Id.
32 Id. Although noting that income levels cannot provide a simplistic explanation for waste generation, the Milwaukee Garbage Project “reported that lower income households appear to generate more household waste than middle or upper income households. This
and level of economic activity. In 1984, 133 million tons of this waste were MSW, as of 2003 it had climbed to 236.2 million tons annually. In 2005, 245 million tons of this waste was MSW produced by U.S. industries, residents, businesses, and institutions. Nearly 131 million tons of the total MSW generated domestically was deposited in landfills.

Estimates of the quantity of waste that is hazardous vary. In the United States, more than 1.5 billion tons of hazardous materials, including gasoline and radioactive materials, are transported by land, sea, and air annually. In 1982, the Environmental Protection Agency (EPA) estimated that over 20,000 hazardous waste generators produce upwards of 40 million metric tons of hazardous waste annually in the United States, although the U.S. Office of Technology Assessment (OTA), a congressional agency, places the amount at approximately 255 to 275 million tons per year. That is, the OTA believed that six times more hazardous waste is being produced than EPA thought it was regulating.

was attributed to different consumption patterns that resulted in the use of more packaging.” Id.

33 Id. “The Dane County [Solid Waste Management] Plan noted a correlation between the rate of increase of the [gross national product] and per capita solid waste generation rates. In Wastepaper: The Future of a Resource, [a 1982 report], Franklin Associates found an increase in per capita waste generation with time . . . and projected that it would rise to 3.66 lb./cap/day by 1990.” Id.

34 Bureau of Nat’l Affairs, EPA Study Finds Older, Unlined Landfills More Likely to Adversely Affect Environment, 17 Env’t Rep. (BNA) 1221, 1222 (Nov. 21, 1986).

35 Municipal Solid Waste, supra note 5, at 2.

36 At present, thirty-two percent of this MSW is recycled, fourteen percent is incinerated at combustion facilities, and fifty-four percent is disposed of in landfills. MSW Basic Facts, supra note 13.

37 Municipal Solid Waste, supra note 5, at 2.


41 See id. EPA officials in 1983 claimed to regulate only 40 to 45 million tons of hazardous waste. Id. at 797. Inadequate recordkeeping makes it impossible for the EPA to tell whether waste generation is increasing or decreasing. See Bureau of National Affairs, Inc., Data on Waste Generation, Management Said Inadequate for Key Policy Decisions, 17 Env’t Rep. (BNA) 1784, 1784 (Feb. 20, 1987).
Although the composition of residential waste varies seasonally, approximately fifty percent is various paper products, five to ten percent is plastics, twenty to thirty percent is yard waste, and three to nine percent is food, while remaining shares are ferrous metals (three to six percent), aluminum (0.6-1.3%), glass (four to eleven percent), and miscellaneous inorganic matter (0.1-3%), as illustrated in Table 1, infra. Approximately seventy-four percent of the gross volume of MSW would be suitable for combustion if, in lieu of landfiling, it became part of a waste-to-energy conversion process. Table 2 illustrates the elemental share of organic materials in MSW.

Chemicals contained in trash include pesticides, paints, degreasers, preservatives, detergents, oven cleaners, insecticides, and even shampoos sold ubiquitously over the counter to consumers. Research conducted in Nassau County, New York, estimates that in that county alone, hardware, department, and automotive stores annually sell an estimated 288,000 gallons of consumer products containing organic carcinogens, suspected carcinogens, or other harmful organic materials. Consumers dump some of these chemical compounds directly onto the ground, others are discharged into cesspools or septic systems and escape into the ground, and still others are disposed of in household trash and are collected for disposal at MSW landfills.

Telephone surveys reveal that the most commonly used and discarded hazardous household substances, in descending order, are household cleaners, pesticides, auto and furniture polishes, paint and paint thinners, motor oil, chemical drain openers, antifreeze, wood preservatives, and herbicides. Paint products, solvents, batteries, pes-

---

42 See Cal. Recovery Sys., supra note 24, at 15 tbl.1. In warmer months yard waste increases, food waste decreases, and other wastes show various fluctuations in volumes. See also Glaub et al., supra note 25, at 204.
43 See Glaub et al., supra note 25, at 199–202 (finding similar composition of residential waste); infra Appendix, tbl.1. The organic share is approximately forty-two percent carbon and forty percent oxygen. Glaub et al., supra note 25, at 199–202.
44 Glaub et al., supra note 25, at 198. Residential solid waste has a heating value of approximately 4200 BTU per pound. Id. at 208.
47 Association of Bay Area Governments, The Disposal of Hazardous Wastes by Small Quantity Generators, in In-Depth Summary of Selected Household Hazardous Waste Char-
ticides and herbicides, adhesives, aerosols, alcohols, oils and grease, polishes and waxes, cosmetics, and dyes contain dozens of metals as well as halogenated and nonhalogenated compounds,\(^4\) some of which qualify as hazardous substances under federal law.\(^4\) A number of elemental metals in significant concentrations are found in MSW,\(^5\) and both soluble fluorides and chlorides are found at average concentrations of 1900 parts per million (ppm).\(^5\) The organic fraction of MSW contains both pesticides and herbicides.\(^5\) Some pesticides found in MSW are decades old and have since been banned from commercial use.\(^5\) These concentrations are displayed in Table 3, infra.

An examination of the waste stream in King County, Washington, identified approximately 1500 distinct potentially hazardous items in waste loads from ninety-one trash collection vehicles.\(^4\) On a nationwide basis, very little effort is made to collect and contain household hazardous waste (HHW) separately, and even when the effort is made, very few households typically participate in collection initiatives.\(^5\) Over the past decade the number of HHW collections in the United States has been on the rise.\(^5\) In 1997, more than 3000 collection pro-

---

\(^4\) See Characterization Studies 3 (1985) (on file with author) [hereinafter Summary of Studies]; see also Cal. Recovery Sys., Inc., Characterization And Impacts of Nonregulated Hazardous Wastes in Municipal Solid Waste of King County 4, 15, 17 (1985) [hereinafter Municipal Solid Waste of King County] (listing different categories of hazardous household substances and the estimated amount of each category in the King County waste stream).

\(^5\) Municipal Solid Waste of King County, supra note 47, at 30–41. Halogenated compounds include one of the following five elements: fluorine, chlorine, bromine, iodine, or astatine. Halogenated contaminants pose a greater risk to the environment.


\(^7\) Cal. Recovery Sys., supra note 24, at 41–43. Metals detected in the 10 to 100 parts per million (ppm) range (by volume) include aluminum, iron, barium, copper, manganese, magnesium, zinc, bismuth, chromium, lead, strontium, antimony, cerium, gallium, germanium, molybdenum, nickel, platinum, tin, arsenic, mercury, and vanadium. Id.; see also Glaub et al., supra note 25, at 210 (providing an elemental analysis of MSW).

\(^8\) Cal. Recovery Sys., supra note 24, at 43; Glaub et al., supra note 25, at 210.

\(^9\) See Glaub et al., supra note 25, at 214–15 (providing a comprehensive pesticide and herbicide analyses of MSW). Chlorinated pesticides detected in relatively dilute concentrations include aldrin, BHC, chlordane, DDE, DDT, dieldrin, endrin, heptachlor, haptachlor epoxide, kepone, methoxychlor, mirex, PCB, and toxaphene. Id. at 215. Phosphate pesticides detected in significant concentrations include diazinon, ethyl parathion, malathion, and methyl parathion (this list is in the parts per million range). Id. Chlorinated phenoxyacid herbicides detected include: 2,4-D; 2,4,5-T; and 2,4,5-TP. Id.

\(^5\) Municipal Solid Waste of King County, supra note 47, at 22.

\(^5\) See generally id.


\(^5\) Meske, supra note 55, at 365 n.57.
grams were documented in all fifty states.\textsuperscript{57} While numbers indicate that there has been an increase in HHW collection initiatives, even in communities where programs are well-established, participation remains voluntary and inconsistent. Such low participation rates will not begin to remove hazardous waste from the MSW stream. Hazardous substances are in landfills.

2. Landfill Leakage

If dumped in a municipal solid waste landfill, these chemicals can seep or “leach”\textsuperscript{58} into the ground and into the groundwater. After a thorough examination of hazardous constituents in household waste, one research team concluded that “[t]he volatile organic chemical species likely to contaminate groundwater enter the waste stream primarily in the form of paint and paint products, solvents, and cosmetics. Lead enters the waste stream primarily in the form of paint and paint products and in the form of batteries.”\textsuperscript{59} Volatile organic solvents (VOCs) are common in many household products. EPA lists many of these chemical compounds as priority pollutants, subject to direct regulation as toxic chemicals.\textsuperscript{60} When saturated in soil or blended with groundwater streams, VOCs remain present for extended periods of time. VOCs in the ground pose a special threat when they become mobile in the soil and reach the groundwater.\textsuperscript{61}

The stability of VOCs in the ground is influenced by temperature, light, soil composition, moisture, sedimentation, and the presence or absence of oxygen.\textsuperscript{62} VOCs are not readily biodegraded or absorbed


\textsuperscript{58} “Leachate” is “any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste.” 40 C.F.R. § 260.10; see Danielle M. Bergner, Comment, The Electronic Waste Recycling Act of 2003: California’s Response to the Electric Waste Crisis, 88 MARQ. L. REV. 377, 384 n.55 (2004). Such a phenomenon is described as a “leaching” of contaminants.

\textsuperscript{59} MUNICIPAL SOLID WASTE OF KING COUNTY, supra note 47, at 28.

\textsuperscript{60} See 40 C.F.R. § 302.4. Typical low-solubility volatile organics found in contaminated wells include aliphatics (including propane, straight, or branched chain hydrocarbons), aromatics (benzene, toluene, ethylbenzene, etc.), chlorinated aromatics (mono- and dichlorobenzenes, etc.), halogenated alkanes (chloroethane, myethylene chloride, 1,1- and 1,1,1- chloroethanes, trihalomethanes), and chlorinated ethers (vinyl chloride, vinylidene chloride, cis- and trans-1,2-dichloroethylene, trichloroethylene, and tetrachloroethylene). Id.


\textsuperscript{62} MACKAY, supra note 46, at 6.
into the soil, and they can move rapidly through soil to groundwater.\footnote{Edward J. Bouwer et al., \textit{Anaerobic Degradation of Halogenated 1- and 2-Carbon Organic Compounds}, 15 \textit{Envtl. Sci. & Tech.} 596, 596 (1981); Sabel & Clark, \textit{supra} note 61, at 121 (relying on an unpublished 1983 research report on groundwater contamination for the Minnesota Pollution Control Agency); \textit{see also} Frances Parsons & Gladys B. Lage, \textit{Chlorinated Organics in Simulated Groundwater Environments}, \textit{Research & Tech.}, May 1985, at 52, 57, 59 (concluding that some volatile organic solvents (VOCs)—e.g., chlorinated alkenes—are particularly resistant to biotransformation and are therefore troublesome pollutants because they persist in the groundwater). In low concentrations these compounds can be degraded anaerobically, but not aerobically.\footnote{See Bouwer et al., \textit{supra} note 63, at 599.}

Minnesota data indicate that there is no chemical distinction between the type and amount of organic pollutants present in the rural regions—where there is no manufacturing waste—and urban landfills surveyed.\footnote{Sabel & Clark, \textit{supra} note 61, at 120–21 & tbl.I.} Rural landfills, which contain only household waste, therefore pose contamination problems identical to urban landfills, which contain both household and industrial waste. A congressional study surveying MSW facilities leaching hazardous substances revealed that “[g]enerally the contaminants found at the [sanitary] facilities and their frequency resemble what has been found at all [Superfund] sites . . . All the information suggests that solid waste sites on the NPL [National Priority List] score similarly to NPL sites that dealt solely with hazardous wastes.”\footnote{\textit{See} Steven Ferrey, \textit{The Toxic Time Bomb: Municipal Liability for the Cleanup of Hazardous Waste}, 57 \textit{Geo. Wash. L. Rev.} 197, 208 (1988) (quoting U.S. Office of Tech. Assessment, \textit{Superfund Strategy} 131 (1985)).}

Although there are fewer toxic constituents per unit of volume of MSW than industrial waste, the enormous tonnage of MSW land-filled annually yields large quantities of potentially toxic elements. There is no definitive survey measuring the percentage of household waste that is hazardous, yet a waste analysis by one of the most experienced American waste consulting teams indicates that “[h]azardous wastes make up less than 0.1% by weight of the municipal waste stream.”\footnote{\textit{Summary of Studies}, \textit{supra} note 47, at 12 (construing a 1985 project feasibility report prepared for the Northern Santa Clara County Solid Waste Management Authority based on the study by Glaub et al., \textit{supra} note 25).} In a more detailed 1984 study, the Los Angeles County Sanitation Districts estimated that 0.00147% of all refuse discarded at five of its mu-
nicipal facilities qualified as hazardous.\textsuperscript{68} These estimates, however, may be low.\textsuperscript{69}

The great bulk of hazardous waste in the United States is dumped in landfills.\textsuperscript{70} About ninety percent of this hazardous material, however, was improperly disposed, and continues to pose a potential health threat.\textsuperscript{71} Rules passed between 1980 and 1985 led to the closure of thousands of the nation’s landfills because they threatened to contaminate nearby groundwater supplies.\textsuperscript{72} In 1985, the OTA concluded that “many, if not most, solid waste facilities have [posed] and will continue to pose threats associated with the release of hazardous substances into the environment.”\textsuperscript{73}

In a study conducted for the Office of Management and Budget, EPA found that more than sixty percent of the nation’s known hazardous waste facilities failed to comply with federal groundwater monitoring requirements,\textsuperscript{74} and more than twenty percent of inspected landfills are cited for contaminating either the air or the water.\textsuperscript{75} Experts also posit that the liners placed in landfill sites to protect against leakage are more permeable than anticipated, resulting in potential leachate migration problems.\textsuperscript{76}

---

\textsuperscript{68} See Ferrey, \textit{supra} note 66, at 210 (citing a 1986 report by the Office of Solid Waste).

\textsuperscript{69} See \textit{id}. The Los Angeles project was concerned with identifying commercial size quantities, and therefore looked only for containers greater than one gallon or whole boxes containing hazardous waste. See \textit{id}. This tends to undercount the actual volume of hazardous constituents. See \textit{id}.

\textsuperscript{70} See \textit{supra} Part I.A.1.

\textsuperscript{71} See Epstein \textit{et al.}, \textit{supra} note 39, at 9 tbls.1 & 2 (1982).

\textsuperscript{72} See 40 C.F.R. § 265 (2005) (defining interim status standards for owners and operators of hazardous waste treatment, storage, and disposal facilities). Interim status was a mechanism at the 1976 passage of RCRA to “grandfather” the temporary operation of existing facilities until EPA issued a permit. See 42 U.S.C. § 6925(e) (2000).

\textsuperscript{73} Ferrey, \textit{supra} note 66, at 213–14 (quoting a 1985 Office of Technology Assessment (OTA) study).

\textsuperscript{74} Mosher, \textit{supra} note 40, at 796.

\textsuperscript{75} See Bureau of Nat’l Affairs, \textit{supra} note 34, at 1222 (stating that 2.2423 percent of 11,540 landfill facilities inspected in 1984 were cited for violations of air or water quality contamination).

\textsuperscript{76} David Anderson, \textit{Does Landfill Leachate Make Clay Liners More Permeable?}, CIVIL ENGINEERING-ASCE, Sept. 1982, at 66–69. Anderson explains that the permeability of clay liners is usually tested only with relatively pure water. \textit{Id.} at 66. Actual leachates generated in landfills, however, may be highly contaminated or contain organic liquids, greatly increasing the permeability of the clay liners. \textit{Id.} In reauthorizing the Resource Conservation and Recovery Act (RCRA) in 1984, Congress took notice of the real and imminent danger of hazardous contamination at MSW sanitary landfills:

Subtitle D facilities are the recipients of unknown quantities of hazardous waste and other dangerous materials resulting from the disposal o[f] household

About twenty-three percent of the National Priority List (NPL) Superfund sites are or were MSW disposal facilities. In 1998, EPA estimated that municipal landfills constituted twenty percent of the sites on the NPL, noting further that municipalities were otherwise involved as “generators, transporters, or arrangers” at twenty-five percent of the NPL sites then in existence.

The OTA acknowledges that hazardous substances are leaching from a significant percentage of sanitary solid waste facilities, and concludes that household waste is a source of these hazardous substances. The OTA estimates that there are 75,000 operating, and 150,000 closed industrial landfills, and 176,242 operating and 4731 closed surface impoundments. Of the 621,000 open and closed solid waste facilities, the OTA conservatively estimates that 17,400 to 34,800 MSW sites may eventually require cleanup under Superfund.

waste, small quantity generator wastes and illegal dumping. Since construction, siting, and monitoring standards for these facilities are either nonexistent or far less restrictive than those governing hazardous waste disposal facilities, environmental and health problems caused by Subtitle D facilities are becoming increasingly serious and widespread. A high proportion of sites listed on the National Priority List were sanitary landfills. Without the additional environmental protection that the implementation of this provision will provide, even more Subtitle D facilities are destined to become Superfund sites.


79 See Ferrey, supra note 66, at 208.

80 Id. at 126.

81 Id.
II. What Goes on at a Landfill Stays at a Landfill? Landfill Gas as an Energy Resource

A. Overview of the Chemical Process

Americans annually dispose of millions of tons of waste in thousands of landfills across the country.82 Because waste is composed of a high percentage of organic materials, including paper, food scraps, and yard waste, over time, bacterial decomposition of organic material, the volatilization of certain wastes, and chemical reactions within the landfill create copious quantities of gas.83 This landfill gas is comprised primarily of carbon dioxide and forty to sixty percent methane, while containing smaller amounts of nonmethane organic compounds (NMOCs) and some other trace organic elements.84 For comparison, pipeline natural gas contains about ninety percent methane.85

Landfill gas (LFG) constituents can pose health and safety problems. Methane in high concentrations can create an explosion hazard.86 LFG contains a variety of toxic gases and carcinogens that can have detrimental effects on the health of the surrounding community.87 Globally, methane and carbon dioxide released from landfills each are greenhouse gases contributing significantly to global warming.88 While both carbon dioxide and methane contribute to global warming, methane has twenty-one times the global warming potential of carbon dioxide.89

82 CLIFF CHEN & NATHANAEL GREENE, NATURAL RES. DEF. COUNCIL, IS LANDFILL GAS GREEN ENERGY? 1 (2003). In 2000, the United States deposited 231.9 million tons of municipal waste. Id. Of that waste, fifty-five percent was landfilled, thirty percent was recycled, and fifteen percent was combusted. Id. fig.1.
86 REA 1996, supra note 84.
88 See REA 1996, supra note 84.
B. Productive Energy Applications

1. Exploiting the Energy Potential of Landfill Gas Brownfields

After LFG is collected (in the vast majority of landfills in the United States and the world it is not collected) there are two disposal options. The first is an open flare system in which the gas is burned. The second option is using the gas for useful energy applications either in the gaseous form or as the fuel for electric production. Some states allow LFG projects to make direct sales of the methane to third-party customers without being regulated as a public utility. Small LFG-to-electricity projects are exempt from regulation in Connecticut, Florida, and Wisconsin.

The EPA encourages, but does not require or provide additional incentives for, the second option. Burning LFG converts methane into carbon dioxide, a gas less than five percent as damaging as methane in terms of global warming potential. EPA estimates that each megawatt of electricity generated from LFG has the same impact of planting 12,000 acres of forest, removing 8800 cars per year, or eliminating the need for 93,000 barrels of oil.

EPA maintains a database of more than 2300 landfills that are potential LFG-to-energy locations in the United States. EPA Landfill

90 See 40 C.F.R. § 60.18. The requirements of the flare system include having a flame at all times and having no visible emissions except for less than five minute intervals not within a two consecutive hour period. Id. Additionally, if a flare system is employed, the equipment must have a heat sensing device that indicates a constant flame and a device that measures flow into, or bypass of, the flare. Id. § 60.756. The gas flow rate into the flare must be measured at fifteen minute intervals. Id. If a bypass line is installed, it must be visually inspected once every month. Id.


93 See Ferrey & Cabraal, supra note 89, at 9 tbls.1 & 2.


Methane Outreach Program (LMOP) tracks 395 operating LFG projects in the United States, and identifies more than 570 additional landfills as very good candidates because of their size and methane generation characteristics.96 These 570 candidate landfills have the potential of generating 695 million cubic feet (mcf) of LFG per day.97 The challenge is to get these developed amidst a variety of impediments. It is estimated that “each year . . . 421 to 613 billion cubic feet of methane from landfills alone is wasted.” That amount of methane could produce up to 4000 megawatts of electricity, enough to power three millions homes.98

Additionally, there are 100 landfills that are in the process of constructing LFG electricity projects. The 400 existing LFG projects generate about 9 billion kilowatt-hours (kW-h) of electricity annually, plus also produce approximately 200 mcf per day of LFG for direct thermal purposes.99 This is equivalent to planting nearly 19,000 acres of forest, saving 160 million barrels of oil, removing 13 million vehicles from the road, or supplying the electricity and heating requirements of approximately 1 million homes.100

2. Municipal Sewage Treatment Brownfields

The United States expends $25 billion every year to process and treat 33 billion gallons of wastewater.101 Many, but not all, cities and towns have sewage treatment facilities. Some of these also constitute brownfields because of contamination. They also consume significant quantities of electricity treating sewage. Treatment works are viewed by many municipalities exclusively as environmental negatives.

However, these facilities also can be adapted or redeveloped into environmental positives. The facilities can offer an energy generation or energy capture opportunity, rather than only being an environmental problem. There are several proven technologies to accomplish energy extraction from sewage.

---

96 See LMOP: Energy Projects and Candidate Landfills, supra note 95.
100 Id.
One way to capture heat from raw sewage is to employ a heat pump to extract heat from the hot mixture and distribute the heat.102 Alternatively, an anaerobic digester collects the methane or “biogas” that bacteria convert consuming organic material anaerobically.103 The biogas produced is composed of about sixty percent methane, forty percent carbon dioxide, and approximately 0.2% to 0.4% hydrogen sulfide.104 The methane can be combusted for electricity or used thermally.

Such technologies are in use in the United States, and can be supported by renewable system benefit charges and trust funds, as evidenced by projects such as the Deer Island sewage treatment plant in Boston.105 This process also is finding application in developing countries in agricultural waste settings to create Carbon-Emission Reductions (CERs) pursuant to the clean development mechanism (CDM) of the Kyoto Protocol.106

Other benefits of this energy extraction process include reducing the amount of waste remaining that has to be disposed of, and reducing the odor because volatile compounds have been removed.107 Sewage solids can be landfilled, burned, or recycled. When biomass—in this example sewage—is heated with little or no oxygen, it combusts, becoming a gas mixture of carbon monoxide and hydrogen known as syngas. This syngas then mixes with oxygen and burns more efficiently than the original solids in the waste stream, and can produce electric energy and/or heat.108 Plants that use biomass gasification have better

102 Alister Doyle, Oslo’s Sewage Heats Its Homes, PLANET ARK, Apr. 10, 2006, http://www.planetark.com/dailynewstory.cfm/newsid/35952/story.htm. This technology is in use in Oslo to heat homes and office buildings. Id. The untreated sewage flows from the houses and into the system of compressors and condensers which extract heat, which warms water to about ninety degrees Celsius, heating the homes and offices. Id. This system can produce eighteen megawatts of heat and can save the burning of 6000 tons of oil a year. Id.


efficiency of energy capture than plants that burn the waste solids, and also convert sludge to ash, which consumes less landfill space.\textsuperscript{109}

Sewage methane also can be used in advanced fuel cell technologies to produce direct current electricity for self-use or for wholesale export to the electric grid. For example, a New York sewage treatment plant employs a 200 kilowatt hydrogen fuel cell to supply enough electricity for sixty homes.\textsuperscript{110} Technology research is proceeding on a microbial fuel cell (MFC) which will not only create electricity from the sewage but also treat it.\textsuperscript{111}

In most states, all of the technologies that could be deployed at municipal brownfields that consist of either landfills or sewage treatment facilities would be eligible for subsidy pursuant to state renewable system benefit charges/trust funds schemes, or qualify to earn tradable Renewable Energy Credit pursuant to the state Renewable Portfolio Standard.\textsuperscript{112} They might also be eligible for Title II Clean Water Act grants for innovative systems.\textsuperscript{113}

C. Above Ground Energy Capture: Wind Power & Brownfields

While LFG-to-energy or direct thermal LFG applications might appear to be the logical first choice for use of landfill brownfields in many municipalities, it is not the only choice. Landfills are good sites


\textsuperscript{110} Andrew Revkin, Turning Sewage Gas into Electricity and Heat, N.Y. Times, Feb. 7, 1999, Late Edition at 46, \textit{available at} http://www.zetatalk.com/energy/tengy18i.htm. The only byproduct from the process is hot water, which then is used to warm the bacteria, which decomposes the organic gas from the sewage. \textit{Id}. The sewage treatment plant saves natural gas that they would otherwise use as fuel for this process. A plant in Renton, Washington, is using both the digesters and the fuel cells. Miguel Llanos, Poop Power? Sewage Turned into Electricity, MSNBC, Jul. 19, 2004, \textit{available at} http://www.msnbc.msn.com/id/5335635.

\textsuperscript{111} Gayle Ehrenman, From Foul to Fuel, MECH. ENG’G, June 2004, \textit{available at} http://www.memagazine.org/backissues/membersonly/jun04/features/fromfoul/fromfoul.html. The device is a single-chambered plexiglass device which is six inches long and 2.5 inches in diameter. \textit{Id}. Inside of the chamber “eight graphite anodes surround a cathode that is made up of a carbon/platinum catalyst and proton exchange membrane layer fused to a plastic support tube.” \textit{Id}. A copper wire then connects to the circuit. The microbial fuel cell (MFC) captures electrons, which are released by the bacteria as they digest the organic matter and converts this into energy; the process also removes about eighty percent of the organic matter from the wastewater. \textit{Id}.

\textsuperscript{112} See infra Appendix, tbls.4 & 5.

\textsuperscript{113} See Grants for Construction of Treatment Works, 33 U.S.C. §§ 1281–1301 (2000 & Supp. IV 2004); Biomass Gasification, \textit{supra} note 108. If the new treatment plant project uses innovative or alternative technology, they are allowed up to seventy-five percent federal funding to complete the project. \textit{Id}. § 1282(a).
for consideration of siting wind energy projects. Wind energy projects are possible where a landfill is too small, too old, or not sufficiently deep to allow LFG collection and beneficial use. However, a wind turbine can be placed at, or even on, a landfill that also is collecting LFG for beneficial purposes. A single wind turbine can not only lower a town’s energy expenses, but can also result in green-energy certificates that the town can sell to utilities who need to comply with the state’s Renewal Energy Portfolio Standard.\textsuperscript{114}

Wind turbines consist of two or three blades affixed to a rotor.\textsuperscript{115} The rotor is mounted on a shaft that “is typically more than 100 feet high.”\textsuperscript{116} The wind causes the blades to spin, which turns the rotor.\textsuperscript{117} The rotor is attached to a generator which creates a flow of electrons that generates electricity.\textsuperscript{118}

Assuming that there is a reasonable wind regime in the location, landfills typically have a significant amount of land area that can provide a buffer of distance to neighboring homes, and in some cases can provide a visual buffer for wind turbines. Landfills also often are raised significantly above ordinary grade, and therefore can represent a relative highpoint topographically in a given community, thus increasing power generation potential. Additionally, landfills typically are zoned in a manner compatible for electric power production.\textsuperscript{119}

Despite these apparent possibilities, there is only one landfill in the United States on which there is a wind turbine. That is the Hull Wind II in Hull, Massachusetts, which went on-line in May 2006.\textsuperscript{120} Hull Wind II stands at 330 feet and can power approximately 750 homes.\textsuperscript{121}

\textsuperscript{114} See Stephanie Ebbert, Wind Turbines Gaining Power: Small Communities, Colleges Plan Projects, Boston Globe, Feb. 24, 2006, at B1. It is estimated that one wind turbine’s green energy certificates can currently be sold to a utility for $100,000. See id; see also 225 Mass. Code Regs. 14.07 (2005).


\textsuperscript{116} Id.

\textsuperscript{117} Id.

\textsuperscript{118} Id.

\textsuperscript{119} For a discussion of wind zoning issues, see Professor Ferrey’s forthcoming article on land-use barriers to wind projects. Publication expected in 2008.

\textsuperscript{120} James F. Manwell, PowerPoint Presentation, The Hull Wind II Project 6 (2006), available at http://www.ceere.org/rl/projects/support/ (follow “Massachusetts Wind Working Group” hyperlink; then follow “Hull Wind II” hyperlink.) The site hosts a single turbine 1.8 megawatt facility. Id. at 4.

\textsuperscript{121} See id. at 4. It is located on top of a capped landfill, known as the George Washington Boulevard Landfill, on the opposite side of town from Windmill Point. See id. at 7, 12.
The wind project in Hull, Massachusetts, has a simple 7.5 year payback on the investment, assuming it offsets power retailing at 10¢ per kW-h.122 However, the project was completely financed by grants and donations; therefore, it had zero capital costs.123 The energy generated by the turbine saves the town between $250,000 and $425,000 annually.124

There are thirty-three wind turbines operating in Massachusetts.125 The vast majority consist of a single turbine, while the largest is comprised of eight turbines.126 In Massachusetts, there are municipally-owned wind turbines located in Beverly127 and Princeton;128 the City of Lynn plans to build a wind turbine to power its waste-treatment plant, which serves the city and three neighboring communities;129 and the Town of Orleans would build two turbines to power its water treatment plant.130 Seventeen municipalities in the state are actively planning wind energy projects and an additional thirty-six other communities have indicated some interest in siting a wind turbine in their town.131

III. Regulatory Controls

There are significant regulatory requirements regarding landfill operation and management. However, far from discouraging productive energy use, these environmental regulatory requirements actually encourage the productive capture and use of landfill gas (LFG) at landfills. The federal section 29 and section 45 tax credits, the former

122 Id. at 20.
123 Id.
124 Id. 
126 See id.
127 Renewable Energy Programs, supra note 115. A ten kilowatt turbine stands on the grounds of Beverly High School, along with a one hundred kilowatt photovoltaic system. Id. The current wind turbine was installed in 1997 and together with the solar panels save Beverly almost $11,000 annually. Id.
128 Id.; see also Princeton Municipal Light Department, http://www.pmld.com/Home.htm (last visited Apr. 23, 2007). The farm consists of eight forty-kilowatt turbines standing 100 feet tall near Mount Wachusett in central Massachusetts. Renewable Energy Programs, supra note 115. The town meeting approved a proposal to replace the eight turbines with two 1.5-megawatt turbines, which will produce forty times the amount of electricity as the current wind farm. Id.
130 Id.
131 Id.
of which added a subsidy of about 1¢ per kilowatt-hour (kW-h) to electricity generation from LFG, also provided incentives to make the capital investment at landfills to construct LFG projects.\footnote{See Steven Ferrey, Law of Independent Power \S 3:53 (2006).}

A. \textit{Resource Conservation and Recovery Act (RCRA)}

RCRA mandates that all large landfills operating after 1991 install a protective cap to prevent gas from escaping.\footnote{40 C.F.R. \S 258.40 (2006).} Any landfill constructed or extended after October 1993 is required to install a protective lining around the sides and bottom of the landfill to prevent the lateral migration of LFG and groundwater contamination.\footnote{See id. \S 258.50; Solid Waste Disposal Facility Criteria, Delay of Compliance and Effective Dates, 58 Fed. Reg. 51,536 (Oct. 1, 1993).} RCRA requires that all municipal solid waste landfills have a methane gas concentration of less than “[twenty-five] percent of the lower explosive limit for methane.”\footnote{Explosive Gases Control, 40 C.F.R. \S 258.23 (2006). The regulations define the “lower explosive limit” as the lowest percent by volume of a mixture of explosive gases in air that will generate a flame at twenty-five degrees Celsius and atmospheric pressure. Id.} Methane gas is explosive between five and fifteen percent concentrations.\footnote{U.S. Envtl. Prot. Agency, Anthropogenic Methane Emissions in the United States: Estimates for 1990 (1993), available at http://www.epa.gov/nonco2/reports/anthro-summary.html.} Imminent hazards are deemed to occur where methane releases migrate to buildings or underground utility conducts at a concentration of ten percent of the lower explosive limit (LEL).\footnote{310 Mass. Code Regs. 40.0321 (2006).} RCRA also requires that the methane concentration at the facility’s property boundary be less than the lower explosive limit for methane.\footnote{40 C.F.R. \S 258.23.}

In order to know whether or not landfills are in compliance with these requirements, the owner/operators of the landfill must conduct a methane-monitoring program.\footnote{Id. Four factors determine the type and frequency of the monitoring program: the soil conditions, the hydrogeologic conditions surrounding the facility, the hydraulic conditions surrounding the facility and the location of the facility structures and property boundaries. Id.} Municipal solid waste landfill facilities must provide a report on their methane concentration levels quarterly.\footnote{Id. See id.} If the methane concentration levels exceed the limits, the owner/operator is required to initiate affirmative steps to correct the problem and must take the proper steps to ensure the health and
safety of the people surrounding the landfill. A written record of the methane level, and the steps taken to protect human health, must be created within seven days of the detection. The state can order assessment and remedial action. The division of solid waste of the state environmental regulatory agency can require plan application and approval. Post-closure environmental monitoring is required.

B. Air Regulation for Landfills

1. New Source Performance Standards for Landfills

The New Source Performance Standards (NSPS) of the Clean Air Act (CAA) applies to any new landfill which began modification or construction after May 30, 1991. Under the NSPS, any landfill that has a design capacity in excess of 2.5 million cubic meters must monitor non-methane organic compound (NMOC) emission rates. If NMOC emission rates exceed fifty megagrams per year, the landfill will be required to implement a LFG collection and control system. An owner must reduce NMOC by ninety-eight weight-percent, or to less than twenty parts per million by volume (ppmv), dry basis as hexane at three percent oxygen. Separate rules apply to landfills that do not come under the NSPS.

---

141 See id.
142 Id. Within sixty days of learning of the high methane concentration, the owner/operator must devise and submit a corrective plan that addresses the methane gas release. Id.
144 Id.
145 310 Mass. Code Regs. 19.142 (2006). The regulations afford the state discretion in setting minimum reporting intervals for the levels of methane. 40 C.F.R. § 258.23. The alternative reporting schedule must take into account the unique characteristics of the particular community and the climate and hydrogeologic conditions in and surrounding the area. Id.
146 Designation of Affected Facility, 40 C.F.R. § 60.750(a) (2006).
147 Id. § 60.752(b).
148 Id. § 60.752(b)(2). These regulations provide the standards, record keeping, and reporting requirements for municipal solid waste landfills. Id. § 60.752(b)(2)(i)(B).
149 Id.
150 Id. § 60.32(c). Under the New Source Performance Standards (NSPS) and under 40 C.F.R. 51, 52, and 60, landfills that meet certain size and age requirements are required to install and operate an active or passive LFG collection system that meets specified performance criteria—as well as install devices that combust and destroy at least ninety-eight percent of the non-methane organic compounds (NMOCs) in the collected LFG—or reduce the NMOCs concentration in the combustion gases to less than twenty parts per million by vol-
Compliance with most of subpart WWW’s requirements will be necessary if landfills have accepted waste after November 8, 1987, have a design capacity of more than 2.5 million megagrams and 2.5 million cubic meters, and have a non-methane organic compound emission rate of fifty or more megagrams per year. As there are increasingly fewer but larger landfills there are more landfills required by government regulation to capture and utilize or flare LFG. If the landfill expands from below the threshold to above it, the owner/operator must submit an amended design capacity report within ninety days of the increase in size so that it may now be treated as regulated under subpart WWW.

The owner/operator must calculate a NMOC emission rate and report it annually. If the rate exceeds fifty megagrams then a collection and control system will be required to be installed. The collection and control system must be designed in such a way to ensure capture of the gas generated by the landfill. Control of hazardous air pollutants is required.

Monitoring and testing is required as to gas pressure, flow, temperature, oxygen and nitrogen concentrations, and the operator must calibrate and maintain equipment. Information must be retained for at

---

151 Id. § 60.752(b)(2)(i)(B). Specifically, landfills that commenced construction prior to May 30, 1991, accepted waste since November 8, 1987, have a design capacity to dispose of greater than 2.75 million tons of solid waste, and are projected to emit more than fifty megagrams per year of NMOCs without controls are subject to the requirements. Id. §§ 60.752(c)(1), 60.33(c)(1)–(3).

152 See LMOP: Energy Projects and Candidate Landfills, supra note 95; supra notes 9–11 and accompanying text.

153 40 C.F.R. § 60.757(a)(3). The report must contain a map indicating the size and location of the landfill and all areas where solid waste may be placed, a calculation of the maximum design capacity that is either specified by state or local permit or by “good engineering practices.” Id. § 60.757(a)(2).

154 Id. § 60.752(b)(1).

155 Id. § 60.752.

156 Id. § 60.752(b)(2)(ii).

least five years. Individual permits establish units for emissions of NOx, CO, NMOC, PM, SO2, VOC, and opacity (visible emissions). Section 60.753 sets the operating standards for the collection system, and also requires the owner/operator to test the above-ground level of methane concentration to determine that level may not exceed 500 ppm or more above background concentration. After installing a collection and control system, an initial report must be submitted within 180 days of the start of collection. After the initial report is filed, annual reports must thereafter be filed.

---

158. Id. § 63.753.
159. See Massachusetts Dept. of Envtl. Prot., App. No. 4V95069, Final Air Quality Operating Permit for Allied Waste Systems, Inc. for Plainville Sanitary Landfill, Mar. 25, 2004 [hereinafter Allied Waste Operating Permit]. A landfill is in theory a source of volatile organic solvents (VOCs) subject to the EPA’s Reasonably Available Control Technology (RACT), as per 310 Mass. Code Regs. 7.18 (1), (a), but the RACT regulations do not specify any specific requirements for landfills. 310 Mass. Code Regs. 7.18(1)(a)(2006). Under 310 Mass. Code Regs. 7.19(1), RACT applies only to facilities that have the potential to emit, prior to the application of air pollution control equipment, greater that or equal to fifty tons per year of NOx. Id. § 7.19(1)(a).
160. E.g., Allied Waste Operating Permit, supra note 159.
161. 40 C.F.R. § 60.753. Each wellhead must be operated at a negative pressure unless there is a fire, increased well temperature, some type of synthetic cover being used, or the well is no longer functional. Id. § 60.753(b). There are specific temperatures of gas allowed in the wellhead as well as maximum nitrogen and oxygen levels. Id. § 60.753(c). The standard for these three may be altered as long there is a showing of data supporting the benefits of the levels employed. See id. § 60.755(3)–(5). These three levels must be checked monthly pursuant to the compliance provisions in section 60.755 and section 60.756. Id. § 60.755(a)(5). If the levels exceed the limits in the statute or the revised approved levels, corrective action must be taken within five calendar days. Id. § 60.755.
162. Id. § 60.755(d). The background concentration is calculated by measuring the methane levels around the perimeter of the landfill, at least thirty meters away from past perimeter wells. Id. Measurements are taken both upwind and downwind. Id. After establishing the background concentration, testing must be done in thirty meter intervals across the entire property and also must take place at specific areas where there is likely to be a release of methane gas. Id. These areas include places where there appear to be distressed vegetation and cracks or other breaks in the cover. Id. If the test results indicate a level higher than the standard 500, a record of the exact area where the reading was taken must be documented. Id. § 60.755(c)(4). Then, the nearest well must be adjusted so that its collection volume is increased. Id. Another reading must be taken ten days after this corrective action. Id. The owner/operator has three chances and thirty days to correct the problem. Id. If after this time the readings still exceed the authorized levels, more invasive action must be taken to correct the problem. See id. This includes potentially replacing the well itself or installing an entirely new collection system. Id.
163. Id. § 60.757(f). The initial report must contain a diagram of the collection system indicating the location of each device inserted into the ground to collect the gas. Id. § 60.757(g)(1). Included in this plan are areas that may in the future house collection devices if known. Id. For areas where no collection device is being installed the report must state the specifications resulting in no need for collection in that particular area. Id. § 60.757(g)(3). The initial report must also outline a plan for increasing the collection of
Under NSPS, semi-annual reports must be submitted regarding air limit exceedances and gas bypass flow reports.¹⁶⁵ Criminal liability can be imposed on the landfill owner if it commits a knowing violation of the CAA, or knowingly releases hazardous air pollutants, a violation punishable by a sentence of up to five years in prison.¹⁶⁶ The CAA also authorizes significant civil penalties of up to $27,500 for each violation.¹⁶⁷

2. State Air Requirements

Massachusetts law requires an annual registration of emission sources.¹⁶⁸ The owner/operator must keep for five years on-site, or off-site if not retrievable in four hours, up-to-date records of the design capacity report, the current amount of solid waste and the year-by-year waste acceptance rate.¹⁶⁹ Permits can require that copies of all standard operating and maintenance procedures be kept on-site, and records of maintenance be maintained on-site.¹⁷⁰

Flares are exempt from the Massachusetts Environmental Policy Act review process where they do not meet the review thresholds for air quality impacts (as set forth in 310 Mass. Code Regs. 7.02(1)), and where open flares do not have the potential to increase emissions more than forty tons per year of VOCs, 100 tons per year of NOx or gases should emissions become greater than the current system can handle and provisions for the control of offsite migration of gases. Id. § 60.757(g)(5)–(6).

¹⁶⁴ Id. § 60.757(b). The reports must contain the value and length of time that any measurements exceed stated limits. Id. § 60.757(f)(1). This includes NMOC, temperature, and nitrogen and oxygen levels, among other factors. Id. §§ 60.756, 60.757(f)(1). It must also state the duration of time when the gas stream bypasses the control system. Id. § 60.757(f)(2). If the control device breaks down for a period of longer than 1 hour, this must be recorded along with down time. Id. § 60.757(f)(3). Any instances where the collection mechanism was not operating for a period of five days or more must be documented. Id. § 60.757(f)(4). If any ground level methane concentrations exceed the stated limits the reading must be recorded. Id. § 60.757(f)(5).

¹⁶⁵ Id. § 63.1980(a).


¹⁶⁹ 40 C.F.R. § 60.758.

¹⁷⁰ See, e.g., Allied Waste Operating Permit, supra note 159, at 9, 10. Noise emissions must also comply with the Massachusetts Department of Environmental Protection’s noise guidelines (Policy 90-001) restricting increases in broadband noise levels and production to pure tone noise. MASS. DEP’T OF ENVTL. PROT., FACT SHEET: NOISE (2003), available at http://www.mass.gov/dep/air/community/noisesfs.pdf.
SO₂, twenty-five tons per year of particulates, five tons per year of lead, or 100 tons per year of any combination of hazardous air pollutant.

C. Permits for Energy Projects at Brownfields

1. Air Approvals

If one sites an energy project in a non-attainment area, New Source Review (NSR) applies to air permitting. 171 A “major” source subject to NSR must adopt Lowest Achievable Emission Rate technology. 172 What is “major” ranges by region from ten tons per year in “extreme” non-attainment areas to 100 tons per year in “moderate” areas. 173 In most of the urban areas in the United States, the “major” NSR threshold for ozone precursors is either twenty-five tons per year in “severe” areas such as greater New York City, or fifty tons per year in “serious” non-attainment areas such as Massachusetts. 174 In addition to sizing a LFG-to-energy project to be below the NSR “major” source threshold, there are netting strategies to mitigate this impact. 175

Conversely, in attainment areas, LFG energy projects or flares that emit less than 2.5 million megagrams, or 2.5 million cubic meters per year of all pollutants, are not subject to review under the federal Prevention of Signification Deterioration program. In Massachusetts, a Best Available Control Technology (BACT) analysis is required by the Department of Environmental Protection (DEP). 176 Open flares or energy projects which emit more than fifty tons per year of either VOCs or NOx—which are precursors to ozone formation—or 100

171 42 U.S.C. § 7502(c)(5).
172 Steven Ferrey, Environmental Law: Examples and Explanations 173 (3d ed. 2004). This may eliminate turbines since manufacturer guarantees are forty-two parts per million (ppm) and the Best Available Control Technology (BACT) limit is twenty-five ppm for some turbines; micro-turbines claim emissions levels at nine ppm. BACT control usually involves lean-burn combustion with automatic air-to-fuel ratio controls. 40 C.F.R. § 60.332. Manufacturers of internal combustion engines will only guarantee 0.6g per base horsepower hours (bhp-hr) of NOx emissions.
173 Ferrey, supra note 172, at 188.
174 Id. at 187, 188; Massachusetts Department of Environmental Protection, Implementation of the 1990 Federal Clean Air Act Amendments, http://www.mass.gov/dep/air/priorities/1990ca01.htm (last visited Apr. 22, 2007). Emissions from the landfill engines or turbines count toward this potential-to-emit New Source Review (NSR) thresholds, while the flare may or may not count towards the emission threshold.
175 See Ferrey, supra note 132, § 6:50.
176 No approval of a comprehensive plan approval facility will be issued in instances where the emissions form such a facility or operation of such a facility would not represent BACT. 310 Mass. Code Regs. 7.02(8)(a)(2) (2006).
tons per year of every other pollutant subject to regulation under the CAA, are subject to be classified in Massachusetts, for example, as a Major Stationary Source, requiring a Non-Attainment Review under 310 Mass. Code Regs. 7.00 Appendix A. A state DEP air quality operating permit can be required.

The air regulators at the state level can condition operating permits by limiting maximum heat input of LFG into flares on a monthly or annual basis, as well as regulating the temperature of flares and the noise from flare operation (measured as increase of decibels). Temperature is controlled within a range to ensure complete combustion of gas constituents. A range of temperature of 1400–2000°F at the exit of the combustion chamber thermocouple is typical.

Despite some obvious advantages, there are additional hurdles to site a renewable wind project on, as opposed to at, a landfill. It is necessary to break through any cap on the landfill and excavate waste to find bedrock below the landfill into which to anchor the turbine mast. This could involve excavating sixty vertical feet or more of waste, and it must be replaced, and the cap repaired, afterward. Breaking through a waste landfill cap requires permission from state regulatory authorities.

Once a landfill is closed, a permit is needed to go through any landfill bottom-liner to reach bedrock to secure the turbine pole support. Therefore, an unlined landfill may pose fewer complications.

2. Zoning Restriction on Reuse

Height is an obvious way to restrict the siting of wind turbines. The Town of Truro sets a 100 foot high limitation on turbines and a

---

177 310 Mass. Code Regs. 7.00 app. A. Under this regulation, a facility is subject to emission offset and non-attainment review requirements if it is located in an area that is classified as a non-attainment area for any criteria pollutant and is classified as a Major Stationary Source for the pollutant. Such a facility would also be required to meet the Lowest Achievable Emission Rate for each subject pollutant. Id.

178 See Mass. Gen. Laws ch. 111, §§ 142B, 142D (2000); 310 Mass. Code Regs. 7.04. LFG open flares qualify as a Fuel Utilization Facility, because they combust LFG, generate heat, and emit the products of combustion, all of which are conditions that satisfy the definition of Fuel Utilization Facility under this regulation. 310 Mass. Code Regs. 7.00.

179 See, e.g., Allied Waste Operating Permit, supra note 159.

180 See, e.g., id.


183 See id. at 19.143(1).

set-back requirement of turbine height plus six feet. Truro zoning law prohibits all but the smallest residential-scale turbines. The Town of Orleans sets maximum turbine height at 300 feet. This height restriction contrasts sharply with the Truro height limitation of 100 feet. Local zoning laws that do not expressly address wind turbines often contain low height restrictions that were enacted many years ago, often stemmed from the fact that fire trucks were unable to pump water higher than the specified height of a few stories at the time the zoning bylaw was written. To go higher, a variance must be sought. Strict height restrictions appear to represent the most transparent barrier that a town can erect to prevent wind energy projects.

The zoning laws in Truro require that all persons seeking to construct a wind turbine or wind monitoring tower obtain a special permit. The special permit will only be issued if the project meets detailed design, environmental, and safety standards. Standards for design include limitations on color, completion of a visual impact study, and enclosures for accessory equipment. The Wareham, Massachusetts bylaw allows wind turbines to be constructed on properties of at least five acres with a special permit from the Zoning Board of Appeals.

185 Town of Truro, Mass., Zoning Bylaw § 40.4B(3.1), (3.2) (2006).
188 Id.; Town of Truro, Mass., Zoning Bylaw § 40.4B(3.1).
190 Town of Truro, Mass., Zoning Bylaw § 40.4B(1), (C).
191 Id. § 40.4C.
192 Id. § 40.4C(2).
193 Warrant, Town of Wareham, Mass., Special Town Meeting art. 37 (Apr. 24, 2006), available at http://www.wareham.ma.us/Public_Documents/warehamMA_townmeeting/ (click on “Spring Special 4-24-06” hyperlink). The special permit application process includes various site plans, photographs of the current site with the turbine superimposed over it, landscape plans, and sight-line representations showing the turbine’s visibility from nearby property. It requires that the turbine be a neutral color, and prohibits any lighting unless required by Federal Aviation Administration regulations. Id. The stated purpose of the bylaw is:

[T]o encourage by special permit the use of wind energy and to minimize the impacts of wind facilities on the character of neighborhoods, on property values, on the scenic, historic, and environmental resources of the Town; and to protect health and safety, while allowing wind energy technologies to be utilized.
The American Wind Energy Association’s model zoning ordinance provides no height limitations on wind turbines that are located on property greater than one acre;\textsuperscript{194} it restricts tower height to eighty feet on properties between one-half and one acre;\textsuperscript{195} and it allows “small wind energy systems,” defined as one turbine with a maximum generating capacity of 100 kilowatts, in all zoning districts where “structures of any sort are allowed.”\textsuperscript{196}

Some towns provide barriers to wind siting when the purpose or scale of the project is of a wholesale or commercial nature. Orleans, Massachusetts’ zoning law inhibits development of larger, commercial-scale wind energy projects,\textsuperscript{197} classifying commercial and non-commercial wind turbine developments separately.\textsuperscript{198} Commercial projects are defined as “those facilities which have less than fifty percent of their electrical output used on site.”\textsuperscript{199} The law sets out detailed requirements for approval of all projects, but allows the zoning board to exempt non-commercial wind projects from any of the requirements.\textsuperscript{200}

3. Species Protection

The Massachusetts Natural Heritage and Endangered Species Program reviews all proposed wind energy projects if the property on which the wind turbine will be built is located in a “Priority Habitat” as defined by state regulations.\textsuperscript{201} A Priority Habitat is a geographical area known to include the habitat of state-listed rare plant and animal species.\textsuperscript{202} An Estimated Habitat is an area within a Priority Habitat where

\textsuperscript{195} Id.
\textsuperscript{196} Id.
\textsuperscript{197} See Orleans, Mass., Zoning § 164-35.1(C)–(D) (2004) (comparing regulation for commercial projects with the ability of a waiver for noncommercial projects.)
\textsuperscript{198} Id.
\textsuperscript{199} Id. § 164-35.1(C).
\textsuperscript{200} Id. § 164-35.1(D).
\textsuperscript{201} 321 Mass. Code Regs. 10.02, 10.18 (2005). It is the responsibility of a person seeking to build a project to determine on their own whether the project property falls within a Priority or Estimated Habitat. Massachusetts Division of Fisheries & Wildlife, Natural Heritage & Endangered Species Program, Regulatory Review: Priority Habitat and Estimated Habitat for Rare Species, http://www.mass.gov/dfwle/dfw/nhesp/nhenypriohab.htm (last visited April 22, 2007) [hereinafter Priority Habitat]. An interactive map providing a current list of all Priority and Estimated Habitats is available at http://www.mass.gov/dfwle/dfw/nhesp/nhregmap.htm.
\textsuperscript{202} 321 Mass. Code Regs. 10.02.
state-listed rare wildlife live. As any type of construction in a Protected Habitat could result in a taking of a state-listed species, permission from the Natural Heritage and Endangered Species Program is required before any project can commence.

4. Large Project Approvals

Large wind projects need to be approved prior to construction by the Massachusetts Energy Facilities Siting Board. Even smaller-scale wind projects require approval if the project will require a new transmission line that is over one mile long or rated at over sixty-nine kilovolts. The Board reviews projects with the goal of ensuring a “reliable energy supply for the commonwealth with a minimum impact on the environment at the lowest possible cost.”

The Federal Aviation Administration (FAA) also deals with height issues, and requires that persons constructing structures exceeding 200 feet in height submit a “Notice of Proposed Construction or Alteration.” This federal requirement resulted in blocking two proposed wind developments on a landfill in the town of Yarmouth, Massachusetts. The town initiated two different proposals to site wind turbines on a town landfill and on the grounds of a public school. The FAA denied both proposals because of the turbines’ distance from the Barnstable Municipal Airport and its resulting potential interference with flight space.

---

203 Priority Habitat, supra note 201.
204 See 321 Mass. Code Regs. 10.02; Priority Habitat, supra note 201. “Take” is defined as: “in reference to animals to harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding or migratory activity or attempt to engage in any such conduct, or to assist such conduct, and in reference to plants, to collect, pick, kill, transplant, cut or process or attempt to engage or to assist in any such conduct.” Mass. Gen. Laws ch. 131A, § 1 (2005).
206 See id. §§ 69H, 69G.
207 Id. § 69H.
210 Id.
211 See id.
5. Historical Protections

The Massachusetts Historical Commission reviews new construction projects that require licenses or permits from a state or federal government agency, regardless of whether the proposed project is on or near a property listed on the National or State Registers of Historic Places.212 As many wind energy projects can require permits of some sort from at least a state agency,213 a project would be reviewed by the Commission for compliance with the National Historic Preservation Act of 1966 and equivalent mirror-image state regulation.214 The review process includes identification of historic properties and the project’s effect on them, as well as a determination of how to prevent or minimize any adverse effects.215

IV. Regulatory Incentives

A. Renewable Subsidies: System Benefits Charges and Renewable Trust Funds216

The system benefits charge is a tax or surcharge mechanism for collecting funds from electric consumers, the proceeds of which then support a range of activities. In order to support demand-side management (DSM) or renewable resources, funds are collected through a non-bypassable system benefits charge to users of electric distribution services. The money raised from the system benefits charge is then used to “buy down” the cost of power produced from sustainable technologies on both the supply and demand side, so that they can compete with more conventional technologies. More than a dozen states have adopted these programs.

Between 1998 and 2012, approximately $3.5 billion will be collected by fourteen states with existing renewable energy funds. More than half the amount collected, at least $135 million per year, comes just from California. The funding level taxes range from $0.07 per megawatt-hour (MW-h) in Wisconsin up to almost $0.6 per MW-h in

---

215 See, e.g., 950 MASS. CODE REGS. 17.07.
216 The following material refers to data available at the conclusion of this Article. See infra Appendix, tbl.4.
Massachusetts. Most only provide assistance to new projects, and not existing renewable projects.

The form of administration of renewable trust funds varies. Many states administer them through a state agency, while others use a quasi-public business development organization. Some funds are managed by independent third-party organizations, some by existing utilities, while two states allow large customers to self-direct the funds. For distribution, some states utilize an investment model, making loans and equity investments. Other states provide financial incentives for production or grants to stimulate supply-side development. Some other states use research and development grants, technical assistance, education, and demonstration projects.

As Table 4, infra, indicates, the funding level is in the range of $175 to $250 million annually for the cumulative impact of the fourteen state system benefit charge programs. While many of these programs are set up to run indefinitely, others have set lifespans. The level of per capita funding ranges between $0.90 to $4.40 annually for renewable energy. Expressed another way, for each MW-h sold in the state, the level of subsidy ranges from $0.07 to $0.59.

B. **Renewable Resource Portfolio Requirements**

A resource portfolio requirement requires certain electricity sellers and/or buyers to maintain a predetermined percentage of designated clean resources in their wholesale supply mix. A number of variations of resource portfolios are possible, including a renewable resource portfolio requirement, a DSM portfolio requirement, and a fossil plant efficiency portfolio requirement.

Twenty states have adopted the renewable portfolio standard (RPS); two additional states have goals. The key to making the portfolio requirements work is to establish trading schemes for “portfolio obligations.” Portfolio standards are flexible in that certain technologies can be included in the renewables definition, or certain subgroups of technologies can be targeted for inclusion at distinct levels. The standard allows market competition to decide how best to achieve these standards. The standards become self-enforcing as a condition of retail sale licensure.

The renewable resource measures that states have incorporated into electricity restructuring and deregulation statutes vary. Some re-

---

217 The following material refers to data available at the conclusion of this Article. See infra Appendix, tbls.5 & 6.
newable energy measures create portfolio standards; others create trust funds to invest in the development and utilization of renewable resources. Some adopt both concurrently. How each defines an eligible renewable resource varies significantly. Table 5, infra, illustrates how states have deployed these two options. Each defines differently what is an eligible renewable resource. The diverse pattern of “renewable” resources included under state definitions is set forth in Table 6, infra.

The percent of power that must come from renewables in most RPS state systems escalates on a set schedule each year. For example, in Massachusetts, it began at one percent and increases at an additional one-half percent annually until it reaches four percent of power from new renewable resource in 2009.\(^\text{218}\) Against this backdrop there has been from the beginning a shortfall of available renewable energy credits (RECs). The RPS system in Massachusetts, as one example, has not created sufficient RECs to satisfy required regulatory provisions and private sector demand.\(^\text{219}\) The alternative compliance cost in Massachusetts for 2006 is approximately 5.5¢ per kilowatt-hour (kW-h) for REC non-compliant projects.\(^\text{220}\) This value increases each year with the consumer price index.\(^\text{221}\)

Therefore, this shortfall guarantees that RECs will trade in the market at very near the alternative compliance price of more than 5¢ per kW-h, and climb over time. A REC at this value basically doubles the wholesale all-in price of power that renewable energy generators can receive, compared to conventional energy generation sources.\(^\text{222}\) In New England, approximately sixty percent of the RECs generated in 2004 were from LFG projects, with biomass projects generating thirty-five percent, anaerobic digesters four percent and wind and solar about


\(^{220}\) Id.

\(^{221}\) Id.

\(^{222}\) This calculation is based on a typical 5¢ or 6¢ per kilowatt-hour (kW-h) average price for power sales. Associated Indus. of Mass. Found., Massachusetts Renewable Portfolio Standard: Context and Considerations 4 (2004), available at http://www.aimnet.org (go to “Business & Economic Information” pull-down menu and follow “Surveys and Publications” hyperlink; then follow “AIM Foundation Reports” hyperlink; then follow “Renewable Portfolio Standard 10/01/2004” hyperlink).
one percent or less.\footnote{223} LFG projects generate more than fifty percent of RPS certificates created in 2005 in Massachusetts.\footnote{224}

### C. Carbon Credits

Using renewable sources of energy entering service after 2004 creates CO2 credits that can to be traded voluntarily. Members of the Chicago Climate Exchange, which include many leading American companies, have voluntarily committed to reduce their greenhouse gas emissions by one percent per year between 2003 and 2006 against a 1998–2001 baseline.\footnote{225} Prices for these voluntary reductions typically traded, as of February, 2007, from three to five dollars per ton.\footnote{226} Landfills that are not required by federal law and New Source Performance Standards (NSPS) to collect and combust LFG can qualify for “additionality,” and can create Chicago Climate Exchange voluntary greenhouse gas reductions by capturing and utilizing LFG.

The current voluntary greenhouse gas reduction registration process pursuant to section 1605(b) of the Energy Policy Act of 1992 expressly recognizes as creditable carbon reduction attributable to LFG recovery, as well as anaerobic digestion at municipal wastewater treatment plants.\footnote{227} If realized and registered now, these reductions are likely to mature into valuable tradable credits when and if the United States adopts a carbon reduction requirement or joins the Kyoto Protocol.

Nine Northeast & Mid-Atlantic states have created the Regional Greenhouse Gas Initiative (RGGI) to limit carbon emitted by large power plants. LFG projects create tradable carbon offsets.\footnote{228} Any projects to create offsets must occur after 2005 and prior to 2009.\footnote{229}

---

\footnote{223}{\textit{RPS Compliance Report for 2004, supra} note 219, at 6.}
\footnote{225}{Chicago Climate Exchange, http://www.chicagoclimatex.com/about/program.html (last visited Apr. 19, 2007).}
\footnote{228}{Regional Greenhouse Gas Initiative, About RGGI, http://www.rggi.org/about.htm (last visited Apr. 22, 2007).}
not allowed to register under the RGGI program and other carbon programs simultaneously.\textsuperscript{230} Offsets also cannot be awarded for voluntary participation in programs or for elements required by law.\textsuperscript{231} If a project is located outside of a participating RGGI state, the sponsor of the offset project can pick any RGGI state in which to file its credits.\textsuperscript{232}

Under the RGGI’s draft rule, as long as offset credits for carbon were selling for less than seven dollars per ton, carbon reductions created outside the participating RGGI states were discounted by fifty percent to determine their credit value.\textsuperscript{233} The final rule eliminated this discount of externally created offsets, but did not change the percent of allowable credits from outside the RGGI area. Under the prior rule, two tons of external carbon reductions created only a single ton of offset credit. Once offsets were trading in the market at greater than seven dollars per ton over a one-year period, credits created from anywhere in North America were valued at full value without any discount,\textsuperscript{234} and up to five percent of compliance (as opposed to 3.3\% normally) could be satisfied by the purchase and trading of offset credits.\textsuperscript{235} Once the market price of offsets increased for a year above ten dollars per ton, offsets could be obtained from anywhere in the United States without any discount, and up to twenty percent of an entity’s emissions in year four of the program and after could be obtained utilizing offsets.\textsuperscript{236} The purpose of this was to increase the number of available offsets if prices for them rise because of a lack of adequate supply.

\textbf{D. Net Metering}

Eighty percent of the states have adopted “net metering,” a regulatory innovation to implement decentralized renewable power alternatives.\textsuperscript{237} While only fifteen states have elected statutory initiatives to

\textsuperscript{230} \textit{Regional Greenhouse Gas Initiative Model Rule} subpt. XX-10.3(d)(4) (2007), \textit{available at} http://www.rggi.org/docs/model_rule_corrected_1_5_07.pdf.

\textsuperscript{231} \textit{Id.} subpt. XX-10.3(d)(1).

\textsuperscript{232} \textit{Id.} subpt. XX-10.3(g).


\textsuperscript{234} \textit{Id.}


\textsuperscript{236} \textit{Id.} at 3–4.

\textsuperscript{237} “Net metering” or “net billing” is a system that utilizes a single bi-directional meter (or the mathematically netted result of two unidirectional meters) to measure and bill
implement renewable energy system benefit charges, and thirteen have elected to implement renewable portfolio standards or goals, more than twenty-five states to date are implementing net metering.\textsuperscript{238} Through net metering, the retail utility meter runs backwards when a decentralized or renewable energy generator puts power back to the grid. Net metering provides the most significant government policy tool—both qualitatively and quantitatively—to decentralize American power sources.\textsuperscript{239}

Net metering can pay the eligible renewable energy source approximately four times more for this power than independent power generators; much more than the time-dependent value of power to the purchasing utility.\textsuperscript{240} A 400 percent price advantage over the competition provides a nationwide platform in these thirty-six states to support decentralized energy production.\textsuperscript{241}

By turning the meter backwards, net metering effectively compensates the generator at the full retail rate for transferring the wholesale energy commodity.\textsuperscript{242} While most states compensate the generator for excess generation at the avoided cost or market-determined wholesale electric energy purchased and sold by a customer. Brief of Respondent-Appellant at 9, MidAmerican Energy Co. v. Iowa Util. Bd., No. 99-1529 (Iowa Ct. App. Aug. 18, 2000). The single meter connects a Qualifying Facility or small power producer directly to an electric utility. \textit{See id.} Net metering allows consumers with small generating facilities (usually photovoltaic solar panels, a fuel cell, or a wind turbine system) to use a single reversible meter to measure the difference between the total electric generation exported to the grid and their total consumption of electricity from the grid. Net metering enables consumer with on-site generation systems to employ any excess electricity that they generate to offset their electric bills. As the consumer’s generation system produces electricity, the kilowatts are first used for on-site (sometimes called “station power”) needs. Then, if the consumer creates more electricity than needed, the excess generation is fed back into the utility grid and sold back to the utility. Typically, the small producer produces power primarily for his own needs, but when an excess is generated it is sold to the utility and the meter turns backwards. \textit{Id.} Likewise, if the small producer consumes additional power, it may be obtained from the utility through the same meter, turning the meter forward. \textit{Id.} Finally, at the end of the billing cycle, the meter is read and the small producer pays the utility, at the retail rate, for any electricity the utility has supplied to the customer-generator during the billing cycle.


\textsuperscript{240} See Ferrey, \textit{supra} note 12, at 2.

\textsuperscript{241} \textit{Id.}

\textsuperscript{242} The following material refers to data available at the conclusion of this Article. \textit{See infra} Appendix, tbl.7.
rate, as Table 7, *infra*, illustrates, some states compensate the wholesale energy seller for the excess at the fully loaded, and much higher, retail rate.

Electricity is a unique energy form: it cannot be stored or conserved with any efficiency. Therefore, electricity has substantially different value at different hours of the day, different seasons of the year, and at different places in the utility system. Contrary to this physical reality, net metering and billing treats all power at all hours as being tangibly storable or bankable and having equal value, when in fact it does not.

By ignoring interim actual physical transfers of power occurring at all the minutes and hours of the month, and recognizing only the net balance of the transactions at the end of the month or quarter, net metering assumes all electricity generated and transmitted to have equal average value. This is not accurate at the wholesale level, it is not the case with power trading, and it is not the case in those eighteen states where retail competition has been promoted with deregulated competitive retail markets. In deregulated states, wholesale power is differentially valued and priced each hour of each day of the year. It is possible even to “game” the system with net metering—selling power to the utility at the netted average retail price in off-peak late evening hours when the customer/generator has no need for the power and the utility has surplus power. Other utility ratepayers ultimately will be left to make up the revenue deficit that occurs.243

Table 7, *infra*, sets forth in representative states the types of technologies eligible for net metering, the types of eligible participating customers, size limits, and what is done with the credit, if any, earned by the customer. Notice that while most states include renewable energy technologies, there is significant variation. Some states do not include municipal solid waste (MSW) trash-to-energy technologies as eligible, because of objection to the burning of municipal trash (as opposed to landfilling or recycling of the trash). States also vary greatly in how large an installation is eligible.

How states treat net energy generation (NEG) is one of the more controversial aspects of net metering. NEG is the net surplus of electricity sold to the utility compared to electricity purchased from the utility over a given (typically monthly) billing period. Some states allow any such surplus to be carried over as a credit against the next month. Some limit the duration of this carry-over to a year. At the end of the

---

243 Ferrey, *supra* note 12, at 120.
year, the surplus is either forfeited to the utility, or to low-income energy assistance programs administered by the utility (which effectively pay the utility bill of customers who have not paid). Yet other programs allow the customer to receive cash for the NEG. Collectively, net metering provides the single greatest policy incentive for on-site distributed generation in the United States. Table 7, infra, illustrates many of the states’ net metering programs and distinctions.

E. Financing

While there are many financing alternatives, landfill brownfields projects can take advantage of special bond financing and tax incentives.

1. Clean Renewable Energy Bonds

Under the federal Clean Renewable Energy Bond (CREB) program, electric cooperatives, public power systems and municipal utilities can issue or benefit from the issuance of clean renewable tax credit bonds (CREBs) to finance renewable energy projects as a less expensive alternative to traditional tax-exempt bonds. The bond authorization is limited to $800 million for the period between January 1, 2006 and December 31, 2007 as allocated by the Secretary of the Treasury Department. The issuer of CREBs receives an allocation from the Secretary of the $800 million available for CREBs. Qualified issuers include:

- A clean renewable energy bond lender;
- A cooperative electric company; or
- A government body.

---

244 See generally Ferrey, supra note 132, § 3:49–:50.
245 Part IV.E.1 of this Article is derived from a work previously published by the author. Ferrey, supra note 132.
246 Id. § 3:49–:50.
247 Id.
248 Id.
249 A clean renewable energy bond lender is a lender which is a cooperative owned by, or holding outstanding loans to, 100 or more cooperative electric companies. It must have been in existence on February 1, 2002, and shall include any affiliated entity which is controlled by such lender.
250 A cooperative electric company is a mutual or cooperative electric company described in section 501(c)(12) or section 1381(a)(2)(C), or a not-for-profit electric utility which has received a loan or loan guarantee under the Rural Electrification Act.
A mutual or cooperative electric company or governmental body can borrow CREB proceeds from the qualified issuer.\(^{252}\) An owner of a CREB is entitled to a tax credit, which is designed to be in lieu of or in substitution for any interest payments on the CREBs.\(^{253}\) Thus, it is interest-free borrowing. A CREB holder can deduct the amount of the tax credit from total income tax liability, with the proviso that the value of the tax credit is treated as taxable income.\(^{254}\)

Ninety-five percent or more of the CREB proceeds must be used for capital expenditures by qualified borrowers for qualified projects. “Qualified projects” includes any of the following producing electricity:

- Wind facilities
- Closed-loop or open loop biomass facilities
- Geothermal or solar energy facilities (solar energy facilities must be placed in service before January 1, 2006)
- Small irrigation power facilities.

2. Tax Incentives

The original section 29 tax credit was enacted in 1979 and extended repeatedly thereafter.\(^{255}\) It currently expires in 2007.\(^{256}\) For

\(^{251}\) A governmental body is any state, territory, possession of the United States, the District of Columbia, Indian tribal government and any political subdivision thereof.

\(^{252}\) A qualified project may be refinanced with proceeds from clean renewable tax credit bonds (CREBs) if the indebtedness being refinanced was incurred by the qualified borrower after the date of enactment of the CREB legislation. CREBs may be used to reimburse a qualified borrower for amounts paid after the date of enactment of the CREB legislation if (1) the qualified borrower declares its intent to reimburse its expenditures with CREBs prior to the payment of the original expenditure, (2) the qualified issuer adopts an official intent to reimburse the original expenditure with CREB proceeds not later than sixty days after payment of the original expenditure, and (3) the reimbursement is made not later than ten months after the date the original expenditure was paid.

\(^{253}\) A CREB must provide for an equal amount of principal to be paid by the qualified issuer during each calendar year that the CREB issue is outstanding. The issuer must satisfy the “arbitrage” requirements of Section 148 of the Code with respect to the proceeds of a CREB issue, or bonds of such issue will not be considered CREBs. Issuers of CREBs must submit information reports similar to those required by section 149(e) of the Code.

\(^{254}\) The CREB principal cannot be stripped from the tax credit and the components sold separately.


LFG projects, it requires the sale of a “qualified fuel” to an unrelated third party. This tax credit generates cash equivalent to about seventy-five percent of the capital cost of an LFG project during the first ten years of the project. It is a substantial incentive.

In its newer iteration, the old section 29 tax credits, now redesignated as section 45(k) tax credits, provide credits for both direct thermal use of, and electric generation from, LFG. By comparison, the section 45 tax credit applies only to electric generation. While the section 29 credit benefits the owner of the LFG collection system, the section 45 credit benefits the facility producing electricity from LFG. While less generous than the old section 29 credit, it is worth about $350,000 annually for five years for a five megawatt LFG project.

The section 45 credit was originally authorized for wind projects and later expanded to other technologies, and for wind projects is worth approximately 1.8¢ per kW-h for ten years of project operation. This credit is related to the amount of electricity produced and sold to a third party, while by contrast the section 29 credit is earned from the sale of a “qualified fuel” to a third party. These two tax credits cannot be taken simultaneously or “double dipped.” These tax credits can be carried back one year or forward up to twenty years for federal income tax purposes.

Also available to some is the Renewable Energy Production Incentive (REPI) to subsidize local and state government owners of renewable energy projects, LFG projects, as well as non-profit electric cooperatives, during the first ten years of LFG project operation.

---

257 Somerville Presentation, supra note 255, at 8.
258 Id.
259 See id. at 12.
260 See id. at 8.
261 See id. at 13.
262 Id. at 10–11.
263 Somerville Presentation, supra note 255, at 8, 11.
264 Id. at 8. Questions remain as to whether additional LFG gas supply wells would be eligible for the new section 45 credit, where the existing system and original gas supply wells have already taken the section 29 credit.
265 Id. at 8.
266 Id. at 12.
Up to forty percent of the REPI incentive program can be allocated to LFG projects; the remainder goes to other renewable power opportunities, including wind. These payments continue for a ten-year period and are worth approximately 1.5¢ per kW-h, adjusted for inflation after 1993. There are ways to utilize and monetize the private tax credits even for municipal project owners, with careful legal guidance and proper project structuring and contractual relationships. This can also be done to monetize the REPI incentives, through the use of partnerships and LLCs.

V. THE LANDFILL BROWNFIELDS PARADIGM SHIFT

A. Economic Hierarchies

So where does this leave landfill brownfields seven years into the twenty-first century? From a cost-effective energy development perspective, LFG-to-energy development is the first option at a landfill. LFG has an energy content of about 550 BTU per cubic foot, or roughly half the energy density of pipeline quality gas. However, it is still capable at this energy density of running traditional electric-producing turbines or reciprocating engines.

EPA estimates the levelized generating costs of LFG-to-electricity technology as $45.67 per MW-h (4.57¢ per kW-h), which makes LFG electricity less expensive than either wind, geothermal, or solar photovoltaic resources, the other widely used renewable sources, and com-
petitive with fossil fuel generated electricity. For every 1 million tons of MSW in a landfill, under anaerobic conditions, approximately 800 kilowatts of renewable electricity can be produced from the approximately 432,000 cubic feet per day of LFG creation. From the perspective of regulatory fit, LFG makes sense as a brownfield development strategy.

Approximately two thirds of the methane productively captured at landfills is utilized for electricity production, as opposed to direct thermal application. This methane could also be utilized in fuel cells or converted to methanol or ethanol. While the work horse of the LFG-to-electricity industry is reciprocating engines, there are approximately one dozen micro-turbines in operation at LFG facilities.

Landfills actively capturing and utilizing LFG for productive energy purposes tend to congregate in areas where there are extra incentives, such as renewable portfolio standards (RPSs). All states that have adopted an RPS system have elected, as a matter of state law, to recognize LFG as an eligible “renewable” fuel. Landfill gas is eligible as a “green” energy source in those thirty states that allow green power marketing and commands a price premium ranging from 0.5¢ to 5¢ per kW-h. In addition, LFG projects placed in service by 2006, under current legislation, unless and until it is extended or renewed, receive a section 45 tax credit of 1¢ per kW-h during their first five years of operation.

272 See Landfill Gas Overview, supra note 267, at 5. If not collected and controlled, this LFG escapes as fugitive emissions from the landfill and contributes both to smog and global warming. Id.


276 See infra Appendix, tbl.6.

277 See infra Appendix, tbl.6.

278 See Ferrey, supra note 132, § 10:98.
eration.\textsuperscript{279} These tax credits historically have been extended in subsequent legislation. LFG projects are economically viable, environmentally positive, and add to the inventory of non-greenhouse-gas-producing energy sources.

B. Reconfiguring Landfill Land Uses

In an era of high world oil and gas prices, access to non-curtailable, reliable energy sources is a key advantage. With the rising cost of natural gas,\textsuperscript{280} landfills that can produce and deliver LFG and/or power become attractive sites for industries or commercial facilities that need reliable and/or low-cost natural gas or methane supply. Such facilities would normally not think about locating at a landfill, but for these rising energy prices.

The bulk of landfills in the country are municipally owned.\textsuperscript{281} Moreover, since the private sector has already developed LFG projects at many larger private sites, the majority of remaining best-candidate LFG-to-energy projects are at municipally owned landfills.\textsuperscript{282} This makes for many smaller landfill projects at sites owned by municipal entities—which traditionally have not collected LFG and are not familiar with LFG-to-electricity projects—prime candidates for application of this technology. Even a very small municipal project can yield net revenues to the municipality of $250,000 annually or more.

It is axiomatic to note that not all landfills are created equal. Some are better candidates than others for energy development. Like many things in life, this is a function of physical and longevity factors related to carbon-based molecules.

Key landfill development parameters include landfill size, years since closure, the type of waste accepted, and whether an LFG collect-


tion and control system is in place. Any landfills that accepted large quantities of ash, demolition, stump, sludge or soil offer less in terms of potential LFG generation. Larger sized landfills produce more LFG, since they have a larger waste mass. LFG production decreases annually after closure, therefore producing less LFG in older landfills. Any landfill with at least twenty to twenty-five acres or more and approaching approximately 1 million tons of MSW waste, closed in the past decade, offers potential.

Not all regulatory environments are created equal. The economic incentives for turning the organic content of waste into energy are greatest in Massachusetts and similarly disposed states for a variety of reasons: Massachusetts has the highest tipping fees for landfills in the United States, some of the highest electricity prices, and some of the highest natural gas prices. Of the approximately 701 inactive and closed landfills in Massachusetts, sixteen landfills have been developed with some type of LFG-to-energy project.

From a perspective of what energy source to develop first at a landfill, an LFG capture program should take priority for evaluation. Methane destruction has been a prime target of the campaign against global warming, because as a greenhouse gas methane is deemed to have twenty-one times the impact, molecule-by-molecule, compared to CO₂. When utilized productively, LFG is considered a carbon-neutral fuel, since its combustion releases carbon that was recently sequestered by the organic source materials before being placed in the landfill; those source materials, when degrading anaerobically, generate and release their methane content.

---

283 These waste types tend to contain large amounts of inert materials that do not produce methane.
285 These figures reflect the author’s own calculations from development experience. Waste in place totals are not available for all landfills. Landfill acreage can be used to estimate volume.
286 The tipping fees for landfills in Massachusetts average $72.60 per ton, the highest in the United States. Kaufman et al., supra note 11, at 38 tbl.7. The average U.S. tipping fee at waste-to-energy combustion facilities is $62.07 per ton. Id.
287 NSTAR Boston Edison’s residential prices in 2006 were approximately 20¢ per kWh.
289 Ferrey & Cabraal, supra note 89, 9 tbls.1 & 2.
290 Weeks, supra note 275, at 51.
VI. BROWNFIELD LIABILITY FOR THE HAZARDOUS COCKTAIL

A. The CERCLA Scheme for Operator Liability

Operators of contaminated sites inherit legal liability, jointly and severally, for their cleanup under both federal Superfund and many state environmental statutes. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) imposes a strict, joint and several liability for clean-up costs incurred as a result of releases or threats of release of hazardous substances on four categories of responsible parties: (1) owners and operators of a facility from which hazardous substances were threatened to be released or actually released; (2) persons who owned or operated a facility at the time of hazardous substance disposal; (3) persons who arranged for disposal of hazardous substances; and (4) persons who transported hazardous substances and selected the disposal sites.291 Both government and private parties can recover response costs292 which they have incurred.293

Although the final version of CERCLA deleted all reference to joint and several liability,294 courts have held that potentially responsible party (PRP) liability is joint and several if no basis exists for dividing the harm of the contamination and the response costs.295 In addition, CERCLA incorporates by reference section 311 of the Clean Water

---

292 Response costs are those costs associated with removal and remediation actions at the waste site. Id. § 9601(25).
293 Id. § 9607(a) (4) (A)–(D). The plaintiffs can impose liability on potentially responsible parties (PRPs) by bringing claims under section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which provides for the recovery of: (A) all costs of removal and remedial action incurred by the United States Government or a State or an Indian tribe not inconsistent with the national contingency plan; and (B) any other necessary costs of response incurred by any other person consistent with the national contingency plan. Id.
294 See Colorado v. ASARCO, Inc., 608 F. Supp. 1484, 1486 (D. Colo. 1985) (“It is clear, however, that the deletion of all references to joint and several liability from [CERCLA] did not signify that Congress rejected these standards of liability.”).
295 See Amoco Oil Co. v. Borden, Inc., 889 F.2d 664, 672 (5th Cir. 1989); United States v. Monsanto Co., 858 F.2d 160, 169–70 (4th Cir. 1988); ASARCO, Inc., 608 F. Supp. at 1486. Courts have used different standards when determining whether or not a basis of divisibility exists. See, e.g., In re Bell Petroleum Servs., Inc., 3 F.3d 889, 903 (5th Cir. 1993) (holding that joint and several liability should be imposed only in “exceptional circumstances” unless the “expert testimony and other evidence establishes a factual basis for making a reasonable estimate that will fairly apportion liability,” and that the court should not be dissuaded from dividing liability just because apportionment is difficult to determine with certainty).
Act, where case law thereunder holds violators strictly liable for damages. Courts have interpreted this provision as allowing plaintiffs to recover all costs of remediation jointly and severally against these defined categories of responsible parties.

Correspondingly, courts overwhelmingly hold parties strictly liable for cost recovery actions under CERCLA section 107, regardless of negligence by owners, operators, or others. According to these decisions, the plaintiffs (often the government) can entirely shift the cost burden to any one or more of the PRPs, who could bear the financial cleanup burden in its entirety. Plaintiffs who bring suit under section 107 of CERCLA therefore are not required to link their response costs with specific releases or activities of particular defendant PRPs. Courts also hold that a showing of proximate cause is not required before liability may be imposed on current or former owners or operators of disposal sites.


297 See, e.g., United States v. Chem-Dyne Corp., 572 F. Supp. 802, 806–08 (S.D. Ohio 1983); see also Ferrey, supra note 172, at 359–60. As Senator Randolph explained, “Unless otherwise provided for in this act, the standard of liability is intended to be the same as that provided in section 311 of the Federal Water Pollution Control Act (33 U.S.C. § 1321). I understand this to be a standard of strict liability.” Chem-Dyne Corp., 572 F. Supp. at 806–08 (citing 126 Cong. Rec. S14964 (Nov. 24, 1980)).

298 See, e.g., Chem-Dyne Corp., 572 F. Supp. at 804–08 (stating that where the harm is indivisible, each liable party is responsible for the entire harm).

299 See Monsanto, 858 F.2d at 167–68 (observing and following “the overwhelming body of precedent that has interpreted section 107(a) as establishing a strict liability scheme”). Moreover, liability applies retroactively to actions which occurred prior to the enactment of CERCLA. See, e.g., United States v. Ne. Pharm. & Chem. Co., 579 F. Supp. 823, 839, 844 (W.D. Mo. 1984) aff’d in part, rev’d in part on other grounds, 810 F.2d 726, (8th Cir. 1986) (stating that section 107(a) was intended to apply retroactively to off-site generators, which can be held strictly liable).

300 See Monsanto, 858 F.2d at 168 (“Under section 107(a)(2), any person who owned a facility at a time when hazardous substances were deposited there may be held liable for all costs of removal or remedial action.”); Ne. Pharm. & Chem. Co., 579 F. Supp. at 844.

301 See Violet v. Picillo, 648 F. Supp. 1283, 1292 (D.R.I. 1986) (stating that with regard to the harm caused by the release of waste at a particular site, “CERCLA only requires that the plaintiff prove . . . that the defendant deposited his hazardous waste at the site and that the hazardous substances contained in the defendant’s waste are also found at the site”); see also Colorado v. Idarado Mining Co., 707 F. Supp. 1227, 1232, 1243 (D. Colo. 1989), rev’d on other grounds, 916 F.2d 1486 (10th Cir. 1990) (stating that the state is not required to “fingerprint” the defendant’s wastes in order to establish liability under CERCLA).

302 See Pennsylvania v. Union Gas Co., 491 U.S. 1, 53 n.5 (1989) (asserting that states can also be held strictly liable under CERCLA); New York v. Shore Realty Corp., 759 F.2d 1032, 1044 (2d Cir. 1985); see also United States v. Price, 523 F. Supp. 1055, 1073–74 (D.N.J. 1981) (holding subsequent landowners liable merely by virtue of “studied indifference” to hazardous condition), aff’d, 688 F.2d 204 (3d Cir. 1982).
Thus, plaintiffs establish the requisite causation against an operator of a business at a contaminated site where there are hazardous substances once they show that: the defendant is an operator of a facility where there was a release or threatened release of hazardous substances, and that it caused the incurrence of response costs. Unless defendant parties can avail themselves of one of the extremely limited defenses provided by the statute, or equitable defenses developed at common law, such as laches, estoppel, or unclean hands, which typically are not countenanced in section 107 actions, liability is joint, several, and strict. Furthermore, when a municipality, country, or state agency owns or operates the disposal site, CERCLA treats the en-


304 See 42 U.S.C. § 9607(b) (2000 & Supp. IV 2004). These defenses are available when releases of hazardous materials are caused by (1) acts of God, (2) acts of war, or (3) acts or omissions of unrelated third parties with whom a PRP has direct or indirect contractual link, where the PRP exercises due care with respect to any hazardous substances and where the PRP took precautions against foreseeable acts or omissions of any such third party. See id.

305 A few courts find laches is a possible defense to a section 107(a) suit, which is essentially an equitable claim seeking reimbursement for monies spent. See Conservation Chem. Co., 619 F. Supp. at 206. But see United States v. Mottolo, 605 F. Supp. 898, 909 (D.N.H. 1985) (finding that doctrine of laches would not bar the government from suing in its sovereign capacity for reimbursement of remedial and response costs under CERCLA).

306 Although the equitable defense of estoppel has not been reviewed by the courts in CERCLA cases, the district court in Conservation Chem. Co. stated in dictum that estoppel would be an appropriate defense in section 107 actions. 619 F. Supp. at 206.


tity like a private person. “Operation” is generally deemed to involve “control” of the site.

Therefore, in operating an energy project at a landfill site wholly unrelated to the deposition or management of solid waste, such as an LFG-to-energy, biomass, wind, or other renewable energy project, a private energy project operator can inherit under applicable law liability for the entire cleanup of the landfill contamination problem. While this may seem grossly unfair, this is the way the law has been drafted and interpreted.

While prosecutorial discretion under Superfund is delegated to EPA, this does not necessarily solve the problem. EPA has the discretion to prosecute one, another, some, or all, of the PRPs at a landfill site contaminated by hazardous substances, including otherwise “innocent” operators of the facility. It is much easier for a plaintiff to prove damages against a lesser number of defendants; if section 107 is employed, only a single defendant need be named to shift potentially the entire liability to the named defendants. This is much easier than bearing the burden of proof severally against every PRP.

Municipalities may be liable just as any other “person,” under CERCLA section 107, as owners or operators of disposal sites or as persons who arranged for disposal of hazardous substances. For instance, in the seminal case of B.F. Goodrich Co. v. Murtha, PRPs brought an action against owners and operators of a landfill to recover past and future clean-up costs under CERCLA.

In fact, EPA has shown a predilection to not prosecute municipalities for solid waste problems, and instead to prosecute private parties that might have some association with the landfill. Where munici-

309 42 U.S.C. § 9601(21); see Artesian Water Co. v. Gov’t of New Castle County, 605 F. Supp. 1348, 1354–55 (D. Del. 1985) (finding that Congress did not intend to differentiate between governmental and nongovernmental entities for purposes of CERCLA liability); see also Ferrey, supra note 66, at 232.
311 Ferrey, supra note 172, at 367.
312 See id. at 234–35.
314 958 F.2d 1192, 1196–99 (2d Cir. 1992). In turn, the defendant landfill owner filed third-party claims for contribution and indemnification from various municipalities. Therefore, the PRP complaints were amended to add the municipalities as defendants in the original action. The court of appeals held that CERCLA does impose liability on a municipality that arranges for disposal or treatment of municipal solid waste that contains a hazardous substance, even though such solid waste contains primarily household solid waste. Second, CERCLA’s definition of hazardous substance makes no distinction based on whether the substance’s source was industrial, commercial, municipal or household.
315 See id.
palities are found liable, there are provisions at third-party landfills for municipalities to pay a diminished share of liability. In response to litigation, EPA stated in a written stipulation that its municipal settlement policy is not a rule and has no binding force or effect. Yet, energy project operators at landfills still could end up with legal liability not of their making.

B. Legal Mitigation Strategies

Potential private landfill developers have shied away from projects at or involving existing solid waste facilities, because their counsel have advised them that the risks of derivative legal liability, jointly and severally, at the site exceed the benefits of the development. Conventional statutory and equitable protections in most cases do not address these issues. For example, while CERCLA contains relatively recent amendments under federal law that exempt “innocent owners,” these do not include “innocent operators,” although some courts could interpret this provision to extend to “operators.” Therefore, it is conceivable that as a matter of federal law an owner of a waste landfill could be “innocent,” while the “operator” of the en-

316 In 1997, EPA implemented a new method to allocate responsibility at waste sites that contain both municipal waste and hazardous waste. EPA adopted a formula to charge municipalities less. EPA now multiplies the known quantity of municipal solid waste contributed by a PRP, by an estimated unit cost for remediating municipal solid waste at a typical representative municipal solid waste-only landfill. This estimated cost is derived from data on clean, non-problem municipal solid waste-only landfills that are not subject to CERCLA response actions or RCRA corrective action. Of course, CERCLA hazardous waste sites, in fact, are not model or typical clean municipal waste landfills. Where the municipality is the owner of the hazardous waste landfill, the EPA uses a twenty percent baseline share to reflect response cost liability. Announcement and Publication of the Policy for Municipality and Municipal Solid Waste; CERCLA Settlements at NPL Co-Disposal Sites, 63 Fed. Reg. 8197, 8199 (Feb. 18, 1998).

317 Subsequent litigation was filed contesting the policy. EPA sought dismissal on the basis that should EPA choose to apply this policy, appropriate court review would be of the settlement reached in such a specific instance. The court dismissed this challenge as not contesting “final agency action” of a policy ripe for judicial review and therefore not reviewable under the Administrative Procedure Act. Chemical Mfrs. Ass’n v. EPA, 26 F. Supp. 2d 180, 182 (D.D.C. 1998).

318 This assertion is derived from the experience of the author in counseling various energy market participants.


320 See id.

321 See id. § 9607(a), (b)(3).
nergy facility at a landfill could become a prime target for liability associated with prior disposal of solid waste.322

This anomaly calls for special legal protections to be invoked. For a number of years, EPA issued so-called “comfort letters,” to memorialize an enforcement position regarding liability for subsequent owners or operators of previously contaminated sites.323 These EPA comfort letters can take four forms.

First, a comfort letter can indicate “no previous federal Superfund interest.” This indicates that there has been no previous federal involvement with hazardous substance remediation at a particular site, but makes no promises as to the future.324 The second type of comfort letter is a “no current federal Superfund interest” letter, discretionarily issued where a site has been sufficiently addressed or remediated, and is no longer the target it once was for possible federal involvement to compel remediation.325 The third type of comfort letter is a “federal interest” letter, which merely informs the recipient that EPA is interested in addressing the site as a matter of federal law enforcement and provides a current status report. The fourth type of comfort letter is a “state action letter,” which indicates that the state is taking the lead on cleanup oversight.326

While such letters may provide some “comfort,” they do not provide any legal guarantee that EPA will not take a later enforcement action against unrelated parties who operate subsequent energy facilities. Therefore, they are an unenforceable “handshake,” limited by time, rather than a legal guarantee.327 Comfort letters may be modified to include a covenant-not-to-sue, which releases the new “operator” from liability for cleanup of pre-existing contamination.328 How-


325 See, e.g., id.

326 Id. A state can participate as the lead agency under separate cooperative agreement between the state and regional EPA office or under a memorandum of agreement.

327 See, e.g., id. at 4624.

328 See, e.g., id.
ever, absent such language of release, the comfort letter does not really offer any significant protection, other than an indication of current thinking of the enforcement agency.

Under the relatively recent “bona fide purchaser” amendments to Superfund, which can allow a subsequent purchaser of real property to take title knowing of pre-existing contamination, and still not inherit clean-up liability under certain conditions, subject to certain “windfall” federal liens, EPA has recently been issuing fewer “comfort letters.” However, neither the “innocent owner” nor “bona fide purchaser” amendments to the federal CERCLA statute relieve the liability of an innocent “operator” operating an energy facility at an existing landfill owned by another private or municipal entity. Therefore, those third parties who would operate an energy facility at a landfill are left to fall between the legal cracks of existing Superfund statute and agency policy. This is a significant gap that has worked as a serious discouragement to third parties tapping the existing landfill energy potential across the nation. As a consequence, rational national energy goals have suffered.

Many states, such as Massachusetts, also can execute covenants-not-to-sue. These typically are negotiated with the state attorney general, are subject to discretion in crafting terms, and require public comment before execution. These state covenants, however, can be negotiated with operators as well as owners. The state’s attorney general will bargain for a certain level of site remediation prior to granting the covenant and must determine that the proposed development would not proceed but for the covenant. Often, a showing that liability relief is not otherwise available, and that the site would not otherwise be developed for an energy-related brownfield purpose, is necessary.

---

330 Id. § 9607 (r).
331 See id. § 9607 (q) (1) (C).
332 See, e.g., Mass. Gen. Laws ch. 21E, § 3A (j) (3) (2004); 940 Mass. Code Regs. 23.00-23.09 (2004). The Massachusetts covenant not to sue was enacted pursuant to the Brownfields Act of 1998, Chapter 206 of the Acts of 1998. They often require as a prerequisite that the site achieve a certain degree of remediation, and typically only exempt recipients of these letters from preexisting contamination liability.
333 940 Mass. Code Regs. 23.03 (1) (g); see Mass. Gen. Laws ch. 21E, § 3A (j).
334 940 Mass. Code Regs. 23.03 (1). One particular advantage of the covenant is that it can protect not only against liability to the state, but also against third-party claims for contribution, response costs, and property damage under both statutory and common law. State claims are relieved once a permanent remedy or Remedy Operation Status (ROS) is achieved. Parties who receive ninety days notice are allowed to join the agreement. Id. at
These covenants can be critical to energy project development. Otherwise, the liability uncertainties and impediments, which notably are a creation solely of law and not of any technical impediments, can swamp the energy revenue and environmental benefits perceived by third parties to develop energy projects at landfill sites. The joint and several liability risk of the Superfund statute often bludgeons the economic incentives and environmental benefits that many well-meaning parties and entrepreneurs would otherwise attempt to realize at these sites. It is the legal issues which create the most profound disincentives to landfills’ productive reuse and development. These same issues have received by far the least attention, judging by the literature regarding landfills and EPA funding initiatives.

**Conclusion**

There are ways to bridge these chasms utilizing creative legal techniques. Before more of the tens of thousands of existing municipal landfills become too aged to support landfill gas-to-energy projects—and in the interest of methane containment and mitigation, renewable energy development goals, and energy efficiency—there should be greater effort redirected to providing the legal templates to insulate new energy project operators from preexisting legal liability at brownfields/landfills. Temporarily, we can adopt more aggressive agreements embodying legal covenants not to sue third party energy project operators. Longer term, state and federal statutes must distinguish between environmental negatives and energy positives in sculpting a more discerning division among liable and non-liable parties. Creative legal reforms, not technical seminars, are the most urgently needed changes in this market. This can be a win-win situation for municipalities, the public, and state and federal enforcement agencies across the United States.

When covenants not to sue are in place, the critical joint and several liability risks associated with prior conditions are mitigated. This

23.06. To obtain this covenant, one must demonstrate that the benefits of this project create new permanent jobs and/or provide some other public benefit. *Id.* at 23.03. There must be a substantial likelihood that the project would not occur without the covenant. There also are funds available as loan or grant (with twenty percent owner matching) up to $50,000 for site assessments and up to $500,000 for site remediation. MassDevelopment, Financing: Brownfields Redevelopment Fund, http://www.massdevelopment.com/financing/lg_brownfields.aspx (last visited Apr. 22, 2007). There also is a brownfield tax credit worth twenty-five percent of remediation costs upon completion of clean-up. Mass. Gen. Laws ch. 63, § 38Q.
is one essential change to accomplish in order to make development possible at brownfields landfills. For private sector developers, these legal risks subsume the development opportunities.

A second essential factor is to cause municipal landfill owners to change their landfills paradigm. Most municipalities view their landfills as environmental negatives that must be hidden or ignored. They raise issues of contamination and liability. In fact, these landfills can be opportunities, at best, to capture landfill gas as an energy source, and at least to control landfill methane to mitigate global warming. There are opportunities both to utilize this methane, as well as to utilize the land area of existing landfills for wind or biomass facility siting.

The regulatory environment provides significant incentives for such renewable energy developments. Tax credits, tax-preferred Clean Renewable Energy Bonds, and renewable energy credits under state renewable portfolio standard laws in twenty-two states, as well as direct renewable trust fund subsidies in sixteen states, provide significant financial incentives for such renewable energy developments. Net metering also is available in forty states. Combined, these incentives should compel a much more vigorous development of energy generation potential at those brownfields that are existing landfills. Collectively, these factors create a new and different landfill paradigm, viewed through the lens of renewable energy potential, not just waste and contamination.
# Appendix

## TABLE 1: Comparison of Residential Waste Composition in the State of California (Weight Percent)

<table>
<thead>
<tr>
<th>Component</th>
<th>North Santa Clara County</th>
<th>Santa Cruz Co.¹</th>
<th>Richmond²</th>
<th>San Diego³</th>
<th>Santa Monica⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sum.</td>
<td>Autumn</td>
<td>Winter</td>
<td>Spring</td>
<td>Sum.</td>
</tr>
<tr>
<td>Mixed Paper</td>
<td>15.6</td>
<td>20.2</td>
<td>19.9</td>
<td>14.1</td>
<td>12.5</td>
</tr>
<tr>
<td>Newspaper</td>
<td>14.0</td>
<td>10.1</td>
<td>12.2</td>
<td>14.6</td>
<td>15.3</td>
</tr>
<tr>
<td>Corrugated</td>
<td>10.6</td>
<td>18.0</td>
<td>16.1</td>
<td>12.9</td>
<td>12.7</td>
</tr>
<tr>
<td>Plastic</td>
<td>4.7</td>
<td>9.6</td>
<td>5.6</td>
<td>5.7</td>
<td>5.6</td>
</tr>
<tr>
<td>Yard Waste</td>
<td>26.9</td>
<td>26.5</td>
<td>20.8</td>
<td>24.2</td>
<td>31.6</td>
</tr>
<tr>
<td>Food Waste</td>
<td>4.4</td>
<td>3.1</td>
<td>8.5</td>
<td>6.5</td>
<td>4.1</td>
</tr>
<tr>
<td>Other Organic</td>
<td>6.4</td>
<td>2.3</td>
<td>1.6</td>
<td>5.4</td>
<td>5.0</td>
</tr>
<tr>
<td>Ferrous</td>
<td>6.0</td>
<td>3.4</td>
<td>2.9</td>
<td>4.1</td>
<td>3.1</td>
</tr>
<tr>
<td>Aluminum</td>
<td>0.7</td>
<td>0.9</td>
<td>1.3</td>
<td>0.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Glass</td>
<td>10.6</td>
<td>4.4</td>
<td>8.2</td>
<td>9.8</td>
<td>8.5</td>
</tr>
<tr>
<td>Other Inorganic</td>
<td>0.1</td>
<td>1.5</td>
<td>2.9</td>
<td>1.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

¹ Reference 10.
² Reference 9.
³ Reference 11.
⁴ Reference 12.
NM = Not Measured.

<table>
<thead>
<tr>
<th>Element</th>
<th>North Santa Clara County*</th>
<th>San Diego</th>
<th>Ame RDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>3700</td>
<td></td>
<td>13,600</td>
</tr>
<tr>
<td>Antimony</td>
<td>&lt; 70</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Arsenic</td>
<td>7</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Barium</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beryllium</td>
<td>&lt; 0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bismuth</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boron</td>
<td>&lt; 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium</td>
<td>&lt; 3</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Calcium</td>
<td>5600</td>
<td></td>
<td>4900</td>
</tr>
<tr>
<td>Cerium</td>
<td>&lt; 24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>21</td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>Cobalt</td>
<td>&lt; 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>450</td>
<td></td>
<td>572</td>
</tr>
<tr>
<td>Gallium</td>
<td>&lt; 11</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Germanium</td>
<td>&lt; 13</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Gold</td>
<td>&lt; 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>1,880</td>
<td></td>
<td>4,200</td>
</tr>
<tr>
<td>Lanthanum</td>
<td>&lt; 0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>49</td>
<td>354</td>
<td>613</td>
</tr>
<tr>
<td>Lithium</td>
<td>&lt; 0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium</td>
<td>730</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manganese</td>
<td>150</td>
<td></td>
<td>194</td>
</tr>
<tr>
<td>Mercury</td>
<td>2.0</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>&lt; 13</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Nickel</td>
<td>&lt; 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platinum</td>
<td>&lt;12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium</td>
<td>4300</td>
<td></td>
<td>3200</td>
</tr>
<tr>
<td>Selenium</td>
<td>&lt; 0.4</td>
<td>0.5</td>
<td>8</td>
</tr>
<tr>
<td>Silicon</td>
<td>22,000</td>
<td></td>
<td>29,200</td>
</tr>
<tr>
<td>Silver</td>
<td>&lt; 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strontium</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thallium</td>
<td>&lt; 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tin</td>
<td>&lt; 20</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>Vanadium</td>
<td>2.8</td>
<td></td>
<td>154</td>
</tr>
<tr>
<td>Zinc</td>
<td>310</td>
<td>871</td>
<td>763</td>
</tr>
<tr>
<td>Zirconium</td>
<td>&lt; 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Processable composite.

<table>
<thead>
<tr>
<th>Compound</th>
<th>Concentration (ppb)*</th>
<th>Rear Loader</th>
<th>Front Loader</th>
<th>Debris Box</th>
<th>Processable Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chlorinated Pesticides</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aldrin</td>
<td>28</td>
<td>40</td>
<td>62</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>BHC</td>
<td>214</td>
<td>87</td>
<td>104</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>Chlordane</td>
<td>&lt; 12</td>
<td>&lt; 59</td>
<td>&lt; 30</td>
<td>&lt; 35</td>
<td></td>
</tr>
<tr>
<td>DDE</td>
<td>&lt; 11</td>
<td>&lt; 110</td>
<td>&lt; 13</td>
<td>&lt; 45</td>
<td></td>
</tr>
<tr>
<td>DDT</td>
<td>&lt; 11</td>
<td>&lt; 207</td>
<td>&lt; 38</td>
<td>&lt; 92</td>
<td></td>
</tr>
<tr>
<td>Dieldrin</td>
<td>&lt; 5</td>
<td>&lt; 220</td>
<td>&lt; 8</td>
<td>&lt; 85</td>
<td></td>
</tr>
<tr>
<td>Endrin</td>
<td>&lt; 5</td>
<td>&lt; 17</td>
<td>&lt; 10</td>
<td>&lt; 11</td>
<td></td>
</tr>
<tr>
<td>Heptachlor</td>
<td>23</td>
<td>22</td>
<td>&lt; 22</td>
<td>&lt; 23</td>
<td></td>
</tr>
<tr>
<td>Heptachlor Epoxide</td>
<td>&lt; 4</td>
<td>&lt; 22</td>
<td>&lt; 16</td>
<td>&lt; 14</td>
<td></td>
</tr>
<tr>
<td>Kepone</td>
<td>&lt; 6</td>
<td>&lt; 26</td>
<td>&lt; 12</td>
<td>&lt; 15</td>
<td></td>
</tr>
<tr>
<td>Methoxychlor</td>
<td>&lt; 7</td>
<td>&lt; 32</td>
<td>&lt; 19</td>
<td>&lt; 20</td>
<td></td>
</tr>
<tr>
<td>Mirex</td>
<td>&lt; 6</td>
<td>&lt; 29</td>
<td>&lt; 15</td>
<td>&lt; 17</td>
<td></td>
</tr>
<tr>
<td>PCB</td>
<td>&lt; 19</td>
<td>&lt; 80</td>
<td>&lt; 44</td>
<td>&lt; 49</td>
<td></td>
</tr>
<tr>
<td>Toxaphene</td>
<td>&lt; 75</td>
<td>&lt; 320</td>
<td>&lt; 190</td>
<td>&lt; 200</td>
<td></td>
</tr>
<tr>
<td><strong>Phosphate Pesticides</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diazinon</td>
<td>180</td>
<td>350</td>
<td>330</td>
<td>290</td>
<td></td>
</tr>
<tr>
<td>Ethyl Parathion</td>
<td>300</td>
<td>&lt; 1100</td>
<td>&lt; 180</td>
<td>&lt; 560</td>
<td></td>
</tr>
<tr>
<td>Melathion</td>
<td>&lt; 207</td>
<td>&lt; 1700</td>
<td>&lt; 460</td>
<td>&lt; 830</td>
<td></td>
</tr>
<tr>
<td>Methyl Parathion</td>
<td>&lt; 4500</td>
<td>&lt; 1813</td>
<td>&lt; 2600</td>
<td>&lt; 2930</td>
<td></td>
</tr>
<tr>
<td><strong>Chlorinated Phenoxyacid Herbicides</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,4-D</td>
<td>510</td>
<td>400</td>
<td>510</td>
<td>470</td>
<td></td>
</tr>
<tr>
<td>2,4,5-T</td>
<td>&lt; 23</td>
<td>&lt; 23</td>
<td>&lt; 23</td>
<td>&lt; 23</td>
<td></td>
</tr>
<tr>
<td>2,4,5-TP (Silvex)</td>
<td>&lt; 12</td>
<td>&lt; 12</td>
<td>&lt; 12</td>
<td>&lt; 12</td>
<td></td>
</tr>
</tbody>
</table>

* "Results presented on an oven-dry basis. The < sign, where used, indicates the detection limit for individual samples and that no substance was found above the given detection limit." Cal. Recovery Systems, Inc., North Santa Clara County Comprehensive Waste Characterization Study (1982-83) T. VI-7, at 46 (1984).
<table>
<thead>
<tr>
<th>State</th>
<th>Approximate Annual Funding ($ millions)</th>
<th>Per-Capita Annual Funding ($)</th>
<th>Per-MWh Funding ($)</th>
<th>Funding Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>135</td>
<td>4.0</td>
<td>0.58</td>
<td>1998 – 2011</td>
</tr>
<tr>
<td>CT</td>
<td>15 – 30</td>
<td>4.4</td>
<td>0.50</td>
<td>2000 – indefinite</td>
</tr>
<tr>
<td>DE</td>
<td>1 (maximum)</td>
<td>1.3</td>
<td>0.09</td>
<td>10/1999 – indefinite</td>
</tr>
<tr>
<td>IL</td>
<td>5</td>
<td>0.4</td>
<td>0.04</td>
<td>1998–2007</td>
</tr>
<tr>
<td>MA</td>
<td>30 – 20</td>
<td>4.7</td>
<td>0.59</td>
<td>1998 – indefinite</td>
</tr>
<tr>
<td>MT</td>
<td>2</td>
<td>2.2</td>
<td>0.20</td>
<td>1999 – 2005</td>
</tr>
<tr>
<td>NJ</td>
<td>30</td>
<td>3.6</td>
<td>0.43</td>
<td>2001–2008</td>
</tr>
<tr>
<td>NM</td>
<td>4</td>
<td>2.2</td>
<td>0.22</td>
<td>2007 – indefinite</td>
</tr>
<tr>
<td>NY</td>
<td>6 – 14</td>
<td>0.7</td>
<td>0.11</td>
<td>7/1998 – 6/2006</td>
</tr>
<tr>
<td>OH</td>
<td>15 – 5 (portion of)</td>
<td>1.3</td>
<td>0.09</td>
<td>2001 – 2010</td>
</tr>
<tr>
<td>OR</td>
<td>8.6</td>
<td>2.5</td>
<td>0.17</td>
<td>3/2002 – 2/2011</td>
</tr>
<tr>
<td>PA</td>
<td>10.8 (portion of)</td>
<td>0.9</td>
<td>0.08</td>
<td>1999 – indefinite</td>
</tr>
<tr>
<td>RI</td>
<td>2</td>
<td>1.9</td>
<td>0.28</td>
<td>1997 – 2002</td>
</tr>
<tr>
<td>WI</td>
<td>1 – $4.8</td>
<td>0.9</td>
<td>0.07</td>
<td>4/1999 – indefinite</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State Name</th>
<th>Renewable Energy Trust Fund</th>
<th>Portfolio Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>2002–2006: $135 million/yr.</td>
<td>15% by 2025</td>
</tr>
<tr>
<td></td>
<td>2007–2011: $150 million/yr.</td>
<td>20% by 2010</td>
</tr>
<tr>
<td>California</td>
<td>$860,265 in the first year</td>
<td>20% by 2020 (IOUs)</td>
</tr>
<tr>
<td></td>
<td>$1.3 million/year thereafter</td>
<td>10% by 2020 (co-ops)</td>
</tr>
<tr>
<td>Colorado</td>
<td>$20 million annually</td>
<td>10% by 2010</td>
</tr>
<tr>
<td>Delaware</td>
<td>$1.5 million annually</td>
<td>10% by 2019</td>
</tr>
<tr>
<td>D.C.</td>
<td>2005: $9.5 mil. collected;</td>
<td>11% by 2022</td>
</tr>
<tr>
<td></td>
<td>2006: $10.5 mil. collected</td>
<td></td>
</tr>
<tr>
<td>Hawaii</td>
<td></td>
<td>20% by 2020</td>
</tr>
<tr>
<td>Illinois</td>
<td>1998–2007: ~ $10 million</td>
<td>8% by 2013</td>
</tr>
<tr>
<td>Iowa</td>
<td>105 MW</td>
<td></td>
</tr>
<tr>
<td>Maine</td>
<td>Dependent on voluntary contributions by electric customers</td>
<td>30% by 2000</td>
</tr>
<tr>
<td>Maryland</td>
<td>7.5% by 2019</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1998–2002: $150 million;</td>
<td>4% by 2009 + 1% annual increase</td>
</tr>
<tr>
<td></td>
<td>$25 million/yr. thereafter</td>
<td></td>
</tr>
<tr>
<td>Minnesota</td>
<td>$16 million annually</td>
<td>25% by 2025</td>
</tr>
<tr>
<td>Montana</td>
<td>$14.9 million annually</td>
<td>15% by 2015</td>
</tr>
<tr>
<td>Nevada</td>
<td>20% by 2015</td>
<td></td>
</tr>
<tr>
<td>New Jersey</td>
<td>2001–2008: $1.23 billion</td>
<td>22.5% by 2021</td>
</tr>
<tr>
<td>New Mexico</td>
<td></td>
<td>20% by 2020 (IOUs)</td>
</tr>
<tr>
<td></td>
<td>10% by 2020 (co-ops)</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>$1.86 billion through 2011</td>
<td>24% by 2013</td>
</tr>
<tr>
<td>Ohio</td>
<td>$100 million over 10 years</td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td>$12 million over 10 years</td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Varies by fund</td>
<td>18% by 2020</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>~$2.4 million over 10 years</td>
<td>15% by 2020</td>
</tr>
<tr>
<td>Texas</td>
<td>5880 MW by 2015</td>
<td></td>
</tr>
<tr>
<td>Vermont</td>
<td>Receives $6–$7.2 million/year</td>
<td>RE meets load growth by 2012</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>Annual amount varies</td>
<td>10% by 2015 (varies by utility)</td>
</tr>
</tbody>
</table>

1 These figures represent the total fund for renewables. Information about various state Renewable Energy Trust Funds can be found at: http://www.dsireusa.org/library/includes/type.cfm?EE=0&RE=1.
3 State Goal.
4 Id.
<table>
<thead>
<tr>
<th>State</th>
<th>Solar</th>
<th>Wind</th>
<th>Fuel Cell</th>
<th>Methane/Landfill</th>
<th>Biomass</th>
<th>Trash-to-Energy</th>
<th>Hydro</th>
<th>Tidal</th>
<th>Geothermal</th>
<th>Photo Voltaic</th>
<th>Dedicated Crop</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Connecticut</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Illinois</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Maine</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Nevada</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>New Jersey</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>New Mexico</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>New York</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Oregon</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Texas</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Note: “Photovoltaic” is likely included within “solar” in some states; “methane” and or “trash-to-energy” may be included within a broad definition of “biomass.”

**Sources:**
<table>
<thead>
<tr>
<th>State</th>
<th>Eligible Technology</th>
<th>Eligible Customers Limits</th>
<th>Size Limits</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>Varies by Utility Renewables, fuel cells</td>
<td>All customer classes</td>
<td>≤ 10 kW</td>
<td>NEG purchased monthly by utility @ average monthly market price minus a price adjustment</td>
</tr>
<tr>
<td>Arkansas</td>
<td>Renewables, fuel cells and microturbines</td>
<td>All customer classes</td>
<td>≤ 25 kW residential ≤ 300 kW commercial</td>
<td>Monthly NEG credited to customer’s @ retail rate; annual NEG granted to utility</td>
</tr>
<tr>
<td>California</td>
<td>Renewables</td>
<td>All customer classes</td>
<td>≤ 1000 kW</td>
<td>Monthly NEG credited to customer; annual NEG granted to utilities</td>
</tr>
<tr>
<td>Colorado</td>
<td>Renewables and fuel cells</td>
<td>Varies by utility</td>
<td>≤ 2000 kW</td>
<td>NEG carried forward month-to-month</td>
</tr>
<tr>
<td>Connecticut</td>
<td>Renewables, MSW cogeneration, and fuel cells</td>
<td>Commercial and residential customers</td>
<td>≤ 50 kW cogeneration ≤ 100 kW renewables</td>
<td>NEG purchased by utility at spot-market energy rate</td>
</tr>
<tr>
<td>Delaware</td>
<td>Renewables</td>
<td>Commercial, residential</td>
<td>≤ 25 kW</td>
<td>Varies</td>
</tr>
<tr>
<td>Florida</td>
<td>Photovoltaics, wind</td>
<td>All classes</td>
<td>&lt;10kW</td>
<td>Monthly NEG granted to customer</td>
</tr>
<tr>
<td>Georgia</td>
<td>Photovoltaics, wind, fuel cells</td>
<td>All classes</td>
<td>≤ 10 kW residential ≤ 100 kW commercial</td>
<td>Monthly NEG or total generation purchased at avoided cost or higher rate if green priced</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Solar, wind, biomass, hydro</td>
<td>Residential, commercial, and government</td>
<td>≤ 50 kW</td>
<td>Monthly NEG carried forward; annual NEG granted to utilities</td>
</tr>
<tr>
<td>Idaho</td>
<td>Varies by utility</td>
<td>Agricultural, residential and commercial</td>
<td>≤ 25 kW residential; ≤ 100 kW commercial (Avista ≤ 25 kW)</td>
<td>NEG varies by utility</td>
</tr>
<tr>
<td>Illinois</td>
<td>Photovoltaics and wind</td>
<td>All customer classes; (Commonwealth Edison only)</td>
<td>≤ 40 kW</td>
<td>NEG purchased at avoided cost monthly plus annual payment to bring payment to retail rate</td>
</tr>
<tr>
<td>Indiana</td>
<td>Photovoltaics, Wind, and small Hydro electric</td>
<td>Residential and Schools</td>
<td>≤ 10kW</td>
<td>Monthly NEG credited forward</td>
</tr>
<tr>
<td>State</td>
<td>Energy Sources and Technologies</td>
<td>Customer Classes</td>
<td>Power Limit</td>
<td>NEG Treatment</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------</td>
<td>------------------</td>
<td>----------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Iowa</td>
<td>Renewables and MSW</td>
<td>All customer classes</td>
<td>≤ 500 kW</td>
<td>NEG credited to customer’s next bill</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Photovoltaics</td>
<td>All customer classes</td>
<td>≤ 15 kW</td>
<td>Monthly NEG granted to customer</td>
</tr>
<tr>
<td>Louisiana</td>
<td>Renewables, cogeneration and fuel cells</td>
<td>Residential, commercial, agricultural</td>
<td>≤ 25 kW residential; ≤ 100 kW commercial and farm</td>
<td>Monthly NEG credited to customer @ utility's retail rate</td>
</tr>
<tr>
<td>Maine</td>
<td>Renewables and fuel cells</td>
<td>All customer classes</td>
<td>≤ 100 kW</td>
<td>Credited forward monthly; annual NEG granted to utilities</td>
</tr>
<tr>
<td>Maryland</td>
<td>Renewables</td>
<td>Commercial, residential, government and schools</td>
<td>≤ 500kW</td>
<td>Monthly NEG granted to customers</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>MSW, renewables and cogeneration (qualifying facilities)</td>
<td>All customer classes</td>
<td>≤ 60 kW</td>
<td>Monthly NEG credited forward @ average monthly market rate</td>
</tr>
<tr>
<td>Michigan</td>
<td>Renewables, MSW</td>
<td>All classes</td>
<td>&lt; 30 kW</td>
<td>NEG credited forward; annual NEG forfeited</td>
</tr>
<tr>
<td>Minnesota</td>
<td>Renewables, MSW, and cogeneration (qualifying facilities)</td>
<td>All customer classes</td>
<td>≤ 40 kW</td>
<td>NEG purchased at utility average retail energy rate</td>
</tr>
<tr>
<td>Montana</td>
<td>Solar, wind, and hydro</td>
<td>All customer classes</td>
<td>≤ 50 kW</td>
<td>Monthly NEG credited forward; annual NEG granted to utilities at the end of each calendar year</td>
</tr>
<tr>
<td>Nevada</td>
<td>Renewables</td>
<td>All customer classes</td>
<td>≤ 30 kW</td>
<td>NEG carried forward indefinitely</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>Solar, wind and hydro</td>
<td>All customer classes</td>
<td>≤ 25kW</td>
<td>NEG credited to next month</td>
</tr>
<tr>
<td>New Jersey</td>
<td>Renewables and fuel cells</td>
<td>Residential and commercial</td>
<td>≤ 2 MW</td>
<td>Monthly NEG credit to customer; annualized NEG purchased at avoided cost</td>
</tr>
<tr>
<td>State</td>
<td>Technologies</td>
<td>Customer Classes</td>
<td>Capacity Limits</td>
<td>NEG Crediting Method</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>New Mexico</td>
<td>Renewables, MSW and cogeneration</td>
<td>All classes</td>
<td>≤ 80 MW</td>
<td>NEG credited to next month, or monthly NEG purchased at avoided cost (utility choice)</td>
</tr>
<tr>
<td>New York</td>
<td>Biogas, wind, and Photovoltaics</td>
<td>Agricultural and residential only</td>
<td>≤ 10 kW solar residential; ≤ 25 kW wind residential; ≤ 400 kW farm biogas systems ≤ 125 kW farm wind</td>
<td>Monthly credited forward; annualized NEG purchased at avoided cost</td>
</tr>
<tr>
<td>North Carolina</td>
<td>Renewables</td>
<td>All classes</td>
<td>≤ 20 kW residential; ≤ 100 kW non-residential</td>
<td>NEG credited forward to customer; annual granted to utility</td>
</tr>
<tr>
<td>North Dakota</td>
<td>Renewables, MSW and cogeneration</td>
<td>All classes</td>
<td>≤ 100 kW</td>
<td>Monthly NEG purchased at avoided cost</td>
</tr>
<tr>
<td>Ohio</td>
<td>Renewables, microturbines and fuel cells</td>
<td>All classes</td>
<td>No limit per system</td>
<td>NEG purchased at unbundled generation rate</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>Renewables, MSW and cogeneration</td>
<td>All classes</td>
<td>≤ 100 kW or ≤ 25,000 kWh/year</td>
<td>Monthly NEG granted to utility or credited to customer’s next bill (varies by utility)</td>
</tr>
<tr>
<td>Oregon</td>
<td>Solar, wind, fuel cells and hydro</td>
<td>All classes</td>
<td>≤ 25 kW</td>
<td>NEG purchased at avoided cost or credited to following month</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Renewables and fuel cells</td>
<td>All classes</td>
<td>≤50 kW residential; ≤ 1MW non-residential</td>
<td>Customer compensated monthly at utility’s avoided cost</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>Renewables, MSW and fuel cells</td>
<td>All classes</td>
<td>≤ 25kW (up to 1MW in Narragansett service territory)</td>
<td>Monthly NEG credited forward; annual NEG granted to utilities</td>
</tr>
<tr>
<td>Texas</td>
<td>Renewables only</td>
<td>All classes</td>
<td>≤ 50 kW</td>
<td>Monthly NEG purchased at avoided cost</td>
</tr>
<tr>
<td>Utah</td>
<td>Solar, Photovoltaics, wind, hydro and fuel cells</td>
<td>All classes</td>
<td>≤ 25kW</td>
<td>NEG credited within billing cycle at avoided cost, any unused credit granted to utility at end of calendar year</td>
</tr>
<tr>
<td>State</td>
<td>Technologies</td>
<td>Customer Classes</td>
<td>Capacity Limits</td>
<td>Energy Sold to Utilities</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------</td>
<td>------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Vermont</td>
<td>Photovoltaics, wind, fuel cells, anaerobic digesters</td>
<td>All customer classes</td>
<td>≤15 kW residential; ≤ 150 kW farm biogas</td>
<td>Monthly NEG carried forward, annual NEG granted to utilities</td>
</tr>
<tr>
<td>Virginia</td>
<td>Renewables and MSW</td>
<td>All customer classes</td>
<td>≤10 kW residential; ≤ 500 kW non-residential</td>
<td>Monthly NEG carried forward; annual NEG granted to utilities (power purchase agreement is allowed)</td>
</tr>
<tr>
<td>Washington</td>
<td>Solar, wind, fuel cells and hydro</td>
<td>All customer classes</td>
<td>≤ 100 kW</td>
<td>Monthly NEG carried forward; annual NEG granted to utility</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>Renewables, MSW and cogeneration</td>
<td>All customer classes</td>
<td>≤ 20 kW</td>
<td>Monthly NEG purchased at retail rate for renewables, avoided cost for non-renewables</td>
</tr>
<tr>
<td>Wyoming</td>
<td>Solar, wind, hydro and biomass</td>
<td>All customer classes</td>
<td>≤ 25 kW</td>
<td>Monthly NEG carried forward; annual NEG purchased at avoided cost</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>Renewables</td>
<td>Residential</td>
<td>≤ 50 kW</td>
<td>Excess carried over month-to-month; excess purchased at avoided cost month-to-month</td>
</tr>
</tbody>
</table>


**Table Abbreviation Key:**

**KW** is a kilowatt, a measure of electric generation capacity.

**MSW** is municipal solid waste-to-electricity conversion, usually accomplished by combusting the waste in a boiler to drive a generator.

**NEG** is net electric generation, the surplus of electricity sold to the utility over the amount of electricity purchased from the utility over a given period (month or year).
FUNDING OPPORTUNITIES FOR BROWNFIELD REDEVELOPMENT

JULIANNNE KURDILA*
ELISE RINDFLEISCH**

Abstract: Many financial tools are available to redevelopers of former industrial and commercial sites, commonly known as “brownfields.” Because the money is often tied to federal, state, or local government programs, time is usually a factor in such transactions. This Article explores the various financial mechanisms available to brownfield redevelopers, including government funding sources, insurance claims, and cost recovery from parties who are found responsible for the contamination.

INTRODUCTION

Not long ago, the discovery of contamination or the perceived impact of past industrial practices at a site would have left a seller with few options.1 Even if a buyer was interested, traditional financing institutions were hesitant to lend money for such a transaction, and consequently, many brownfield sites were left abandoned.2

In today’s market and with today’s sophisticated real estate, environmental, and legal professionals, brownfield sites should be considered as real estate deals with manageable environmental issues.3 Envi-

* Chief Assistant Director of Law for Health, Environment, & Enterprise Funds, City of Cleveland (Ohio) Department of Law. The author received her J.D. from Boston College Law School, where she served as Executive Editor of the Boston College Environmental Affairs Law Review, and her B.A. magna cum laude from the University of Pittsburgh. The author acknowledges Director of Law Robert J. Triozzi, Chief Counsel Barbara Langhenry, and Chief Corporate Counsel Richard F. Horvath of the City of Cleveland Department of Law for their dedication to public service and their professionalism. The author also acknowledges economic development staff Belinda Pesti and Brooke Furio for their dedication to revitalizing the City of Cleveland.


2 Id.

3 Robert A. Simons, Creative Financing of Brownfields Sites, in BROWNFIELDS GUIDE, supra note 1, at 96.
Environmen\ntal remediation should be viewed in the context of development potential, not development in the context of remediation.\footnote{Id.}

Obviously, however, the potential for excess costs—such as assessment, remedial plans, and cleanup—\footnote{See Charles Bartsch & Barbara Wells, Northeast-Midwest Inst., Financing Strategies for Brownfield Cleanup and Redevelopment 1, 7 (2003), available at http://www.nemw.org/BFinancingredev.pdf.}—means that many brownfield redevelopment projects have a financing gap as lenders will not finance beyond the market value of the property.\footnote{Id. at 97.} This situation is where non-traditional funding sources must be found.

The public sector already plays a strong role in establishing and maintaining infrastructure, such as roads, sewers, drinking water, public safety, and community networks.\footnote{See Matt Kane, Northeast-Midwest Inst., Public Sector Economic Development: Concepts and Approaches 1, 11 (2004), available at http://www.nemw.org/econ-development.pdf.} Arguably, the public benefits when measures are taken to spur growth in areas where infrastructure is already established, instead of at locations where additional investment in infrastructure would be necessary.\footnote{Id. at 10.} In addition to this societal benefit argument, many view the government as the essential contributor to brownfield financing gaps in order for such projects to be economically viable,\footnote{See Bartsch & Wells, supra note 5.} or to stimulate interest from other private financial and technical resources.\footnote{SRA Int’l Inc. & Northeast Midwest Inst., U.S. Envtl. Prot. Agency, Brownfields Federal Programs Guide EPA-560-F-05-230 6 (2005), available at http://www.epa.gov/swerosps/bf/index.html (Follow “Federal Programs Guide” hyperlink) [hereinafter Federal Programs Guide].}

Brownfield success stories demonstrate that innovative funding on the federal, state, and local levels is necessary.\footnote{Id. at 60.} Public funding recipients, however, must understand what goes along with public funds: deadlines, paperwork, time, and the public record implications of submitting an application.\footnote{Id. at 102.} For those who have the time and patience to seek public funding, Part I of this Article examines federal funding sources, Part II examines state funding sources, and Part III examines alternative sources of brownfield financing. Part IV of this Article discusses the availability of insurance mechanisms, both past and present, that may provide financial support. Finally, Part V briefly examines the
legal option of seeking contribution from other entities for the costs of assessment and cleanup.

I. Federal Funding

The type and amount of federal resources vary as greatly as brownfield projects vary. Redevelopers should think broadly about projects, plan early, and determine the effect of their project on seemingly unrelated issues such as transportation, public health, green space, and job creation. These tangential effects may point the way toward funds that are not necessarily designated as “brownfield” funds but are nonetheless available.

A. U.S. Environmental Protection Agency

The Small Business Liability Relief and Brownfields Revitalization Act provides, in part, for federal funding of assessment and cleanup at brownfield sites. The statute requires that twenty-five percent of the funds be used at petroleum-contaminated sites, with the remainder available for hazardous substance cleanups. Generally, the following sites are ineligible for any of the funds: facilities listed or proposed for listing on the National Priorities List; facilities subject to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) administrative or court orders or consent decrees; and property that is within the control, custody, or jurisdiction of the federal government. In addition, entities that are Potentially Responsible Parties (PRPs) at a site under CERCLA may not receive funding for that site.

---

14 Id.
15 Id.
19 Proposal Guidelines, supra note 18, at 4. Potentially Responsible Parties (PRPs) are defined generally as owners or operators of facilities now and at the time that hazardous substances were disposed of; those who arranged for transportation, treatment, or disposal of the hazardous substances; and transporters. See 42 U.S.C. § 9607(a)(1)–(4) (2000). Thus, one may not be responsible for the contamination but still may be a PRP.
The U.S. Environmental Protection Agency (EPA) implements the statute and manages the grant program.\textsuperscript{20} The fourth round of funding was announced in October 2006, and applications were due in December 2006.\textsuperscript{21} Three types of funding are available through this program: grants for environmental assessments (either for a specific site or for a community-wide project);\textsuperscript{22} grants to establish a revolving loan fund for brownfield efforts at the state or local level;\textsuperscript{23} and cleanup grants.\textsuperscript{24} In addition, EPA has other funding mechanisms and technical assistance grants, all of which are described below.

1. Assessment Grants

Assessment grants are available to governmental organizations, including state, tribal and local governments; regional council or redevelopment agencies; and quasi-governmental entities.\textsuperscript{25} The assessments must be categorized as hazardous substance or petroleum, because there are two separate funds for the grants.\textsuperscript{26} One may select a specific site for the funding, and answer questions to demonstrate that the site is eligible for funding.\textsuperscript{27} In the alternative, if one seeks funding for a community-wide project, then the application must explain the rationale for how specific sites will be selected when the funds become available, and then eligibility must be demonstrated for each site before work begins on that site.\textsuperscript{28} Assessment grant funds may be used to conduct planning for the area, take inventory of the sites, assess the sites, and support community involvement.\textsuperscript{29}

The maximum amount of money available for assessment grants is $200,000 per site or per community-wide application for hazardous substances, and $200,000 per site or per community-wide application for petroleum.\textsuperscript{30} Applicants may request a waiver of this cap for site-specific applications and receive $350,000 per site for hazardous substances and $350,000 per site for petroleum, which waiver is based on

\begin{itemize}
\item \textsuperscript{20} See Proposal Guidelines, supra note 18, at 1.
\item \textsuperscript{21} See generally id. (announcing that the total estimated funding is expected to be approximately $72 million, which will be awarded to approximately 200 sites).
\item \textsuperscript{22} Id. at 6.
\item \textsuperscript{23} Id. at 6, 9.
\item \textsuperscript{24} See id. at 6, 10–11.
\item \textsuperscript{25} Id. at 14; Federal Programs Guide, supra note 10, at 27.
\item \textsuperscript{26} See Proposal Guidelines, supra note 18, at 8.
\item \textsuperscript{27} See id. at 21.
\item \textsuperscript{28} See id. at 7.
\item \textsuperscript{29} Id. at 6; Federal Programs Guide, supra note 10, at 27.
\item \textsuperscript{30} Proposal Guidelines, supra note 18, at 7.
\end{itemize}
anticipated levels of contamination, size of the site, or ownership status. 31

2. Revolving Loan Grants

The revolving loan grant program has similar parameters, and the same eligible applicants as assessment grants. 32 The maximum amount that an entity can request for this grant is $1 million. 33 Several entities, however, can form a “coalition” and jointly request the total amount of money that they could have received individually. 34 For instance, two entities, such as a county and city, could jointly ask for $2 million because separately they could each get $1 million. Revolving loan funds may be used, sub-loaned, or sub-granted to clean up sites contaminated with hazardous substances or petroleum. 35 A revolving loan recipient must provide a twenty percent cost share, which may be in the form of labor, material, services, or money put toward eligible costs. 36

3. Cleanup Grants

The cleanup fund is available to the same recipients as the other grant programs, and also to non-profits. 37 The entity requesting the funding must own the property, or demonstrate that it will own the property by June 30, 2007. 38 The maximum award available is $200,000 per site, and each applicant can request cleanup funds for up to three sites. 39 Cleanup funds require a twenty percent cost share, which may be in the form of services, labor, materials, or money. 40 A written American Society for Testing and Materials E1527-05 Phase I environmental site assessment must be complete by the time of application, and a Phase II must be complete or underway. 41

31 Id. at 8.
32 See id. at 14.
33 Id. at 9.
34 Id. at 9–10.
35 Id.
36 PROPOSAL GUIDELINES, supra note 18, at 10.
37 See id. at 14.
38 Id. at 11.
39 Id. at 10.
40 Id. at 11.
In addition to direct funding, EPA may grant funds to states or tribes for their respective response programs.\textsuperscript{42} Up to $400,000 may be spent per site, with a $200,000 cap on both assessment and cleanup.\textsuperscript{43} A state or tribe must either be a party to an EPA Memorandum of Agreement, or be in the process of entering into such an agreement.\textsuperscript{44} In addition, the state or tribe must maintain a public record naming the sites at which response actions will take place in the coming year, and the ones for which a response action was completed in the prior year.\textsuperscript{45}

4. Targeted Brownfield Assessments

Another similar fund is available for Targeted Brownfield Assessments (TBAs), namely Phase I and Phase II assessments that meet “all appropriate inquiry” standards, and remedial action plans that establish available remedies and associated costs.\textsuperscript{46} Generally, TBAs are not used on properties where the current owner is responsible for contamination.\textsuperscript{47} Other program rules vary by EPA region, which manage the funds.\textsuperscript{48}

5. Clean Water State Revolving Loan Funds

One EPA funding mechanism that is underutilized—except notably in Ohio, New York, and New Mexico—is the Clean Water State Revolving Loan Fund.\textsuperscript{49} This fund has considerable potential at sites where water quality is an issue.\textsuperscript{50} The funds are funneled to states and other governmental or quasi-governmental entities to establish revolving loan programs, where loans can be made for as long as twenty years, as long as there is a method for repayment.\textsuperscript{51} Each lender provides its own priorities and eligibility guidelines,\textsuperscript{52} but the following activities are generally eligible for funding: Phase I and Phase II assessments; excavation and disposal of Underground Storage Tanks; capping wells; re-

\textsuperscript{42} \textit{Federal Programs Guide, supra} note 10, at 28.
\textsuperscript{43} \textit{See id.}
\textsuperscript{44} \textit{Id.}
\textsuperscript{45} \textit{Id.}
\textsuperscript{46} \textit{Id.} at 29.
\textsuperscript{47} \textit{Id.}
\textsuperscript{48} \textit{Federal Programs Guide, supra} note 10, at 29.
\textsuperscript{49} \textit{Id.} at 28.
\textsuperscript{50} \textit{Id.}
\textsuperscript{51} \textit{See id.}
\textsuperscript{52} \textit{See id.}
moval and disposal of contaminated soil or sediments; and well abandon-
ment.  

B. U.S. Department of Housing & Urban Development

The U.S. Department of Housing & Urban Development also has
several funding programs available for brownfields. These programs
include Community Development Block Grant (CDBG) funding, sec-
tion 108 loan guarantees, the Brownfields Economic Development Ini-
tiative (BEDI), and four additional programs.  

CDBG funds may be used for site acquisition, assessments, prepara-
tion, clearance, demolition, building renovations, site remediation, and
infrastructure costs, although funding for the program has not kept
pace with need. CDBG funds are directly appropriated to over 1100
entitlement communities, and to non-entitlement communities through
the state in which they are located.

Section 108 provides federally guaranteed loans for large economic
development projects, public infrastructure, and housing. These are
directed like CDBG funds, and may be used for site acquisition, infra-
structure, site clearance and improvements, any CDBG-eligible eco-
nomic development activities, housing construction, and finance-related activities.

BEDI targets brownfield redevelopment projects and is intended
to stimulate further public and private investment. BEDI loans must
be used in tandem with Section 108 loan guarantees. Although BEDI
was specifically created for brownfield redevelopment projects, the
funds are not easily available for small communities because they are
tied to the section 108 program, which like CDBG heavily favors enti-
tlement communities.

53 Id. at 29.
54 Federal Programs Guide, supra note 10, at 39. The other four programs are the
Empowerment Zones and Enterprise Community Initiative, Lead-Based Paint Hazard Con-
trol Grant Program, HOME Investment Partnership Program, and Office of Community
Renewal Funds. Id.
55 Id.; see also Bartsch & Wells, supra note 5, at 2–3.
56 Bartsch & Wells, supra note 5, at 6.
58 Id. at 40.
59 Id.
60 Id. at 41.
61 Id.
62 Bartsch & Wells, supra note 5, at 6.
Other federal funding mechanisms for brownfield redevelopment projects include grants, loans, and technical assistance from the U.S. Army Corps of Engineers, the U.S. Department of Transportation, and the U.S. Department of Commerce’s Economic Development Agency.

II. State Funding

States are using many different but effective approaches to meet the challenges posed by brownfield redevelopment projects. Often, these approaches are linked to development programs to ensure that projects are completed from assessment to remediation to construction. States may provide direct financing through grant or loan programs, or may provide tax incentives such as abatements, credits, or rebates. This section of the Article provides a snapshot view of what some states offer.

A. Massachusetts

The Massachusetts Brownfields Act was enacted in 1998 to encourage cleanup and redevelopment of brownfields in the Commonwealth of Massachusetts. The Act includes financial incentives, as well as means of liability relief. Three mechanisms in the Act provide financial incentives—the Brownfields Redevelopment Fund (BRF), the Brownfields Redevelopment Access to Capital (BRAC) Program, and the Brownfields Tax Credit.

The BRF, a $30 million fund administered by MassDevelopment, finances environmental site assessments and remediation. Eligibility

---

63 Id. at 3–4.
64 Id. at 4.
65 Id. at 3.
66 Federal Programs Guide, supra note 10, at 60.
67 Id.
68 Id. at 61.
69 Id. at 60–61.
72 Summary of Massachusetts Brownfields Act, supra note 70.
is contingent upon three factors: (1) projects must be located in “Economically Distressed Areas” and must create new jobs or contribute to the economic or physical revitalization of the area; (2) the funding must be necessary for the project’s financial feasibility; and (3) the eligible applicant cannot be subject to any outstanding environmental enforcement action within Massachusetts.\footnote{Summary of Massachusetts Brownfields Act, supra note 70.} Grants are only given to municipalities; redevelopment and economic development authorities and agencies; and economic development, community development, and industrial corporations.\footnote{Id.} Loans are given to applicants that can provide matching funds.\footnote{Id.} The BRF’s Brownfields Site Assessment Program provides up to $50,000 per project for an environmental site assessment.\footnote{MassDevelopment, supra note 73.} For environmental cleanup, the Brownfields Remediation Program of the BRF finances up to $500,000.\footnote{Id.} Funding is only available for cleanup that is part of a redevelopment project.\footnote{Id.}

The BRAC Program is a $15 million fund, administered by MassBusiness, that encourages private lending on brownfield sites.\footnote{Abelson et al., supra note 71, at 647.} BRAC backs private sector loans for site assessment and cleanup with environmental insurance to guarantee that cleanups are completed and loans repaid.\footnote{Id.} Program assets pay for insurance premiums, excess deductibles, loan guarantees, and cleanup costs if a project is not completed.\footnote{Id.} BRAC Program assistance is available for loans on any brownfield site in Massachusetts.\footnote{Id.} However, borrowers must borrow from Massachusetts lenders that signed a participation agreement with MassBusiness.\footnote{Id.}

The Brownfields Tax Credit covers a portion of the costs incurred in the rehabilitation of contaminated property.\footnote{Massachusetts Department of Environmental Protection, Cleanup of Sites & Spills, Tax Incentives, http://www.mass.gov/dep/cleanup/brtxinc.htm (last visited Apr. 14, 2007) [hereinafter Tax Incentives].} If the taxpayer uses an Activity and Use Limitation (AUL), the credit is twenty-five percent of the rehabilitation costs.\footnote{Id.} If an AUL is not used, a fifty percent credit is
given. The credit is given after cleanup is complete, and can be carried over for five years. The site for which the credit is received must be located in an “Economically Distressed Area.” Credits are not allowed to be taken on funds from the BRF or BRAC Program. The following taxpayers are eligible: corporate trusts, corporations included in a combined return, corporations, non-profit organizations, partnerships, S corporations, sole proprietors, and trusts. The taxpayer must own or lease the site for business purposes, and must not have owned or operated the site at the time of the contamination, or have caused or contributed to the contamination. The taxpayer must complete the cleanup by January 1, 2007. If the taxpayer does not maintain a “permanent solution or remedy operation status” before property is sold or the lease terminated, the tax credit will be lost.

B. New York

New York State has an extensive array of programs and resources to foster brownfield cleanup and remediation within its jurisdiction. The programs span numerous state agencies and entities. Central to New York’s brownfield financing scheme is New York’s Superfund/Brownfield law. Enacted in 2003, this law contains three major financial incentives for brownfield redevelopment—the Brownfield Cleanup Program (BCP), the Brownfield Opportunity Areas (BOA) Program, and the 1996 Clean Water/Clean Air Bond Act’s Environmental Restoration Program (ERP). These three programs are administered by the New York State Department of Environmental Conservation. To further encourage brownfield redevelopment, partnerships exist with various other state agencies and entities, and provide additional financial incen-

87 Id.
88 Id.
89 Id.
90 Id.
91 Tax Incentives, supra note 85.
92 Summary of Massachusetts Brownfields Act, supra note 70.
93 Id.
94 Id.
96 Id. at 2-3.
97 Id.
98 Id. at 2-4.
atives in three areas: (1) grants, reimbursements, and contractual funding; (2) loans and loan guarantees; and (3) tax incentives. 99

The BCP provides financial incentives for brownfield redevelopment through tax credits, as well as liability release and technical assistance. 100 There are three components of the redevelopment tax credit: (1) site preparation credits; (2) tangible property credits; and (3) on-site groundwater remediation credits. 101 For each component, there are credits of twelve percent for business taxes and ten percent for personal taxes. 102 However, if there are no use restrictions after cleanup, these credits increase to fourteen percent and twelve percent, respectively. 103 If at least half the site is located in an area deemed an “environmental zone” by the Commissioner of Economic Development—an

99 In addition to the three major financial incentives for brownfield redevelopment in New York’s Superfund/Brownfield law, as discussed above, grants, reimbursements, and contractual funding are also provided through the following programs: Department of Environmental Conservation’s Hudson River Estuary Grants Program, Water Quality Improvement Projects; Department of Health’s Drinking Water State Revolving Fund Program; Department of Labor, Division of Safety and Health’s Occupational Safety and Health Training and Education Grants; Department of Motor Vehicles, Governor’s Traffic Safety Committee’s Highway Safety Grant Program; Department of State, Division of Coastal Resources’ Local Waterfront Revitalization Program; Department of Transportation’s Industrial Access Program, Transportation and Community and System Preservation Pilot Program, and Transportation Enhancements Program; Education Department’s Local Government Records Management Improvement Fund; Empire State Development’s New York State Incentive Programs; Energy Research and Development Authority’s New York Energy Smart New Construction Program; Governor’s Office of Small Cities’ Community Development Strategic Plan Technical Assistance Grant Program and Small Cities Community Development Block Grants Program; Housing Finance Agency’s New York State Affordable Housing Corporation’s Affordable Home Ownership Development Program; Housing Trust Fund Corporation’s HOME Program and Low-Income Housing Trust Fund Program; Hudson River Valley Greenway’s Communities Council Planning Grants, Greenway Compact Grant Program, and Greenway Water and Land Trail Grants; Office of Parks, Recreation and Historic Preservation’s Acquisition Program, Heritage Areas Program, Historic Preservation Program, and Parks Program. Id. at 2-7 to -8.

Loan and loan guarantees are provided through the following entities’ programs: Department of Health’s Drinking Water State Revolving Fund Program; Department of Transportation’s Industrial Access Program; Division of Housing and Community Renewal’s Housing Development Fund and Senior Housing Initiative; Empire State Development’s New York State Incentive Programs; Environmental Facilities Corporation’s Clean Water State Revolving Fund Program; Industrial Finance Program; Housing Finance Agency’s Secured Loan Rental Housing Program; Housing Trust Fund Corporation’s HOME Program, Homes for Working Families Program, and Low-Income Housing Trust Fund Program. Id. at 2-7 to -9. Tax incentives also are provided through Empire State Development’s New York State Incentive Programs. Id. at 2-7 to -9.

100 Id. at 2-13.

101 N.Y. BROWNFIELDS FINANCIAL RESOURCES MANUAL, supra note 95, at 2-14.

102 Id.

103 Id.
area with a poverty rate of at least twenty percent and an unemployment rate that is one and a quarter times the state’s average unemployment rate—the credit will be increased by eight percent.\textsuperscript{104} Credits for real property taxes are also included in the BCP.\textsuperscript{105} Tax credits are based on the number of employees the developer employs, up to 100 employees, and are increased for employment in environmental zones.\textsuperscript{106} Both “participants” and “volunteers” are eligible to participate in the program.\textsuperscript{107} Participants are parties that owned or operated the site at the time of the contamination, or caused or contributed to the contamination.\textsuperscript{108} Volunteers are parties other than participants that have taken “reasonable steps” regarding the site’s contamination.\textsuperscript{109} Credits cannot be received until the party completes remediation of the site.\textsuperscript{110}

The BOA Program provides grants and technical assistance to municipalities and community-based organizations to conduct brownfield redevelopment planning and site assessments.\textsuperscript{111} Grants are provided to cover up to ninety percent of these costs.\textsuperscript{112} Community-based organizations are eligible if they have 501(c)(3) tax-exempt status, have a mission dedicated to brownfield redevelopment in their area, represent a community with demonstrated financial need, and have one quarter of their board members living in the community.\textsuperscript{113} Sites must be owned by a municipality or a volunteer.\textsuperscript{114} A site designated as a BOA receives priority consideration for ERP funding.\textsuperscript{115}

The ERP provides financial incentives for brownfield redevelopment through reimbursement grants, as well as liability protection and technical assistance.\textsuperscript{116} A fund of $200 million was created for the ERP under the 1996 Clean Water/Clean Air Bond Act.\textsuperscript{117} Out of this fund, municipalities can be reimbursed up to ninety percent for on-site investigation and remediation, and 100% for off-site remediation, if re-\textsuperscript{104} Id.
\textsuperscript{105} Id.
\textsuperscript{106} Id.
\textsuperscript{107} N.Y. BROWNFIELDS FINANCIAL RESOURCES MANUAL, supra note 95, at 2-13.
\textsuperscript{108} Id.
\textsuperscript{109} Id.
\textsuperscript{110} Id. at 2-15.
\textsuperscript{111} Id. at 2-3.
\textsuperscript{112} Id. at 2-17.
\textsuperscript{113} N.Y. BROWNFIELDS FINANCIAL RESOURCES MANUAL, supra note 95, at 2-17.
\textsuperscript{114} Id.
\textsuperscript{115} Id. at 2-17, 2-19.
\textsuperscript{116} Id. at 2-19.
\textsuperscript{117} Id.; see N.Y. ENVTL. CONSERV. LAW § 56-0601 (McKinney Supp. 2004).
quired by the Department of Environmental Conservation. Remedia-
tion can include cleanup of soil and groundwater contamination. A
municipal cost share is required. Costs incurred for building and as-
bestos removal, if included, may be reimbursed up to fifty percent.
Projects are evaluated for grants under five criteria: (1) benefit to the
environment; (2) economic benefit to the state; (3) potential for public
or recreational use of the property; (4) real property in a BOA; and (5)
availability of other funding sources. Sites may be used for industrial,
commercial, residential, or public use.

C. Pennsylvania

Pennsylvania provides loans, grants, and tax credits as financial in-
centives to encourage brownfield redevelopment. Financial incentives
fall under numerous programs. Prominent amongst the assessment
and cleanup funding sources are the Industrial Sites Reuse Program, the
Infrastructure Development Program, the Brownfield Inventory Grants
(BIG) Program, and Pennsylvania Infrastructure and Investment Au-
thority (PENNVEST) loans. Through the Industrial Sites Reuse Pro-
gram, municipalities and private entities are provided with loans and
grants for site assessment and remediation. Up to $200,000 is given
for site assessments from the Industrial Sites Cleanup Fund and $1 mil-

119 Id. at 2-3.
120 Id.
121 Id. at 2-3 to 2-4.
122 Id. at 2-19.
123 Id.
124 Programs include: Brownfield Inventory Grants (BIG), Growing Greener Initiative,
Industrial Sites Reuse Program, Infrastructure Development Program, Job Creation Tax
Credit Program, Key Sites Initiative, Keystone Opportunity Zones and Expansion Zones,
Business in Our Sites, Building PA, Tax Increment Financing Guarantee Program, Infra-
structure Facilities Improvement Program, New PA Venture Guarantee Program, New PA
Venture Capital Investment Program, 2nd Stage Loan Program, Pennsylvania Infrastruc-
Agency, State Brownfields and Voluntary Response Programs: An Update From
the States 45 (2006), available at http://epa.gov/brownfields/pubs/st_res_prog_re-
port.htm [hereinafter State Brownfields Programs]; see also Pa. Land Recycling Pro-
gram, Financial Incentives (on file with author) [hereinafter Pa. Land Recycling].
More financial incentives are available for brownfield redevelopment in Pennsylvania.
Commonwealth of Pennsylvania, Department of Environmental Protection, Financial In-
centives, http://www.depweb.state.pa.us (click on “Brownfield Redevelopment” hyperlink
in pull-down menu under “Land Topics;” then expand “Brownfield Redevelopment” hy-
perlink and click on “Financial Incentives”).
125 State Brownfields Programs, supra note 124.
lion per year is given for remediation from the Industrial Sites Environmental Assessment Fund.\textsuperscript{126} However, funding cannot exceed seventy-five percent of the total costs.\textsuperscript{127} Loans have a two percent interest rate for terms of five years for assessments and fifteen years for remediation.\textsuperscript{128} Both loans and grants require a twenty-five percent match.\textsuperscript{129} Both private and public developers can receive grants and loans for site clearance, remediation, and construction through the Infrastructure Development Program.\textsuperscript{130} Funding cannot exceed $1.25 million per project.\textsuperscript{131} Loans carry a three percent interest rate for fifteen years.\textsuperscript{132} The BIG program provides up to $50,000 to cities and economic development agencies for brownfield inventories.\textsuperscript{133} Thirty percent of PENNVEST’s Clean Water State Revolving Loan Fund is earmarked for municipalities for brownfield redevelopment financing.\textsuperscript{134} Loans up to $11 million are made per project, per municipality.\textsuperscript{135} If projects serve more than one municipality, the loan amount is increased to $20 million.\textsuperscript{136}

Significant tax incentive programs for brownfield redevelopment in Pennsylvania include Keystone Opportunity Zones (KOZ), Keystone Opportunity Expansion Zones (KOEZ) and the Tax Increment Financing (TIF) Guarantee Program.\textsuperscript{137} In areas designated as KOZs or KOEZs, certain state and local taxes may be forgiven for property owners, residents, and businesses\textsuperscript{138} until 2010 for KOZs or 2013 for KOEZs.\textsuperscript{139} Through the TIF program, municipalities can take loans for

\begin{footnotes}
\footnote{126}{Pa. Land Recycling, supra note 124.}
\footnote{127}{State Brownfields Programs, supra note 124; Pa. Land Recycling, supra note 124.}
\footnote{128}{State Brownfields Programs, supra note 124; Pa. Land Recycling, supra note 124.}
\footnote{129}{State Brownfields Programs, supra note 124; Pa. Land Recycling, supra note 124.}
\footnote{130}{State Brownfields Programs, supra note 124; Pa. Land Recycling, supra note 124.}
\footnote{131}{State Brownfields Programs, supra note 124.}
\footnote{132}{Id.}
\footnote{133}{Id.}
\footnote{134}{Id.}
\footnote{135}{Id.}
\footnote{136}{Id.}
\footnote{137}{State Brownfields Programs, supra note 124; Pa. Land Recycling, supra note 124.}
\footnote{138}{Pa. Land Recycling, supra note 124.}
\footnote{139}{State Brownfields Programs, supra note 124.}
\end{footnotes}
development of “blighted areas.”\textsuperscript{140} New tax revenues, generated as a result of the redevelopment, are used to repay the loan.\textsuperscript{141}

\section*{D. Ohio}

Ohio has many funding mechanisms available for brownfield projects. In 2000, Ohio voters approved a $400 million bond issuance to establish a grant program to fund the assessment and remediation of brownfields, preserve green space and farmland, and create trails.\textsuperscript{142} The $200 million brownfield portion of these funds is administered by the Ohio Department of Development’s (ODOD) Office of Urban Development, in cooperation with the Ohio Environmental Protection Agency.\textsuperscript{143} The brownfield funding is split into two distinct funds: the Clean Ohio Assistance Fund and the Clean Ohio Revitalization Fund.\textsuperscript{144} As of October 2006, $145.6 million had been expended on brownfield projects from both funds, with an expected leveraging of $2.2 billion from other funding sources.\textsuperscript{145}

The Clean Ohio Assistance Fund is a $10 million annual fund that is available in eligible areas of the state.\textsuperscript{146} The funds may be used for Phase I and Phase II site assessments, cleanup activities, and projects that benefit public health.\textsuperscript{147} Eligible areas are those defined as distressed or located in an inner city area, and those that constitute an area of situational distress or a labor surplus area.\textsuperscript{148} Eligible applicants include townships, municipalities, counties, port authorities, and conservancy districts.\textsuperscript{149}

\begin{itemize}
\item \textsuperscript{140} Id.
\item \textsuperscript{141} Id.
\item \textsuperscript{143} Ohio Department of Development, Urban Development in Ohio, http://www.odod.state.oh.us/ud (last visited Apr. 17, 2007).
\item \textsuperscript{144} See id.
\item \textsuperscript{145} Clean Ohio Fund, Governor Bob Taft’s Clean Ohio Fund Site Tour (Oct. 4, 2006), available at http://www.taftnews.com/releases (click on “10/04/06—Taft Announces Statewide Clean Ohio Projects” hyperlink; then click on “Complete list of statewide Ohio funds awarded to date” hyperlink).
\item \textsuperscript{146} Ohio Department of Development, Clean Ohio Assistance Fund, http://www.odod.state.oh.us/ud/COAF.htm (last visited Apr. 17, 2007).
\item \textsuperscript{147} Id.
\item \textsuperscript{148} Ohio Dept. of Dev., Clean Ohio Assistance Fund Policies § 1.03, at 1 (2006), available at http://www.odod.state.oh.us/UD (click on “Clean Ohio Assistance Fund” hyperlink; then click on “General COAF Policies” hyperlink) (promulgated pursuant to Ohio Rev. Code Ann. § 122.656 (West 2002)).
\item \textsuperscript{149} Id. § 1.01.
\end{itemize}
If the $10 million allotment is not awarded in a calendar year, ODOD may carry the balance forward to the following year.\textsuperscript{150} Although ODOD may set deadlines for applications,\textsuperscript{151} to date applications have been accepted and reviewed on an on-going basis. The maximum amount awarded is $8,000 for a Phase I assessment, $15,000 for a Phase I assessment plus asbestos survey, $300,000 for a Phase II assessment, and $750,000 for cleanup activities, unless the Director of Development determines that more investment is necessary to further economic development goals.\textsuperscript{152}

The Clean Ohio Revitalization Fund is a competitive grant program that most recently announced Round 4 of the program, with $43 million available for that round.\textsuperscript{153} Eligible applicants include townships, municipalities, counties, port authorities, and conservancy districts.\textsuperscript{154} Eligible activities do not include site assessments, but only cleanup or remediation, such as infrastructure costs, removal of hazardous or petroleum waste, and soil and water cleanup to applicable standards.\textsuperscript{155} Removal of tires and solid waste are also not eligible costs.\textsuperscript{156} The maximum amount available per project from this fund is $3 million.\textsuperscript{157}

The selection criteria for Clean Ohio Revitalization Funds include the following considerations: economic improvement, which includes known end-user, property valuation, infrastructure usage, tax revenues, job creation or retention, job quality, vacant property designation, and ownership status; environmental improvement, including remedy selection, proximity to receptors, exposure potential, sustainable redevelopment and green building practices, orphan property designation, contribution from potentially responsible parties (PRPs), and reuse of existing structures or materials; match, including percentage participation in project, percentage participation by the applicant, and private

\textsuperscript{150} Id. § 8.01, at 7–8.
\textsuperscript{151} Id. § 5.01, at 5.
\textsuperscript{152} Ohio Dept. of Dev., Clean Ohio Assistance Fund Revised Eligible Cost Policies (2004), available at http://www.odod.state.oh.us/UD (click on “Clean Ohio Assistance Fund” hyperlink; then click on “Policies on Size of Grants” hyperlink).
\textsuperscript{155} See id. § 3, at 2.
\textsuperscript{156} Id. § 3.10, at 3.
\textsuperscript{157} Id. § 8.03, at 11.
match contributions; benefit to low-income communities; project viability, including the percentage of dollars used toward cleanup and demolition, strategic plan existence, community outreach, and industrial or research and development end user; combination of uses; and whether the applicant requests that a portion of the funds be awarded as a loan rather than a grant.\footnote{158}{See generally \textit{Clean Ohio Fund}, 2006 \textit{Clean Ohio Revitalization Fund Round Four Application, Guidance for Part C} (2006), available at http://www.odod.state.oh.us/ud/CORFRoundFour.htm (click on “CORF Part C Scoring Guidance” hyperlink).}

In addition to the Clean Ohio Fund programs, ODOD offers below-market rate loans from a Brownfield Revolving Loan Fund.\footnote{159}{\textit{Ohio Dept. of Dev., Brownfield Revolving Loan Fund (BRLF) Program Policies} 1 (2006), available at http://www.odod.state.oh.us/ud/BCRFL.htm (click on “Brownfield Revolving Loan Fund Policies” hyperlink) [hereinafter BRLF Program Policies].} In 2005, ODOD, along with three other applicants, received joint funding in the amount of $4 million from EPA.\footnote{160}{See \textit{U.S. Envtl. Prot. Agency, Brownfields 2005 Grant Fact Sheet: Ohio Department of Development} 560-F-05-197 (2005), available at http://www.epa.gov/brownfields/05grants/ohiodod.pdf.} Eligible borrowers include both public and private entities who are not subject to CERCLA liability for the site in question.\footnote{161}{BRLF Program Policies, supra note 159, at 1–2.} Eligible activities for funding include any costs associated with removing, mitigating, or preventing the release or threatened release of contaminants, including fencing, site security measures, drainage control, removing or capping contaminated soils, bioremediation, removing hazardous substances, and disposal of hazardous materials.\footnote{162}{Id. at 2.} Site assessments are not an eligible cost.\footnote{163}{Id. at 3.} This fund requires collateral, as well as the payment of a non-refundable application fee of $1500 and a processing or servicing fee for loans over $1 million.\footnote{164}{Id.}

Ohio uses parts of its Water Pollution Control Loan Fund to address brownfield sites that affect water quality.\footnote{165}{See generally Ohio Environmental Protection Agency, Division of Environmental and Financial Assistance, Water Pollution Control Loan Fund, http://www.epa.state.oh.us/defa/wpclf2.html (last visited Apr. 17, 2007).} This fund is available to both private and public entities.\footnote{166}{Id.} This money may be used for site
assessments, design, and remediation to the extent that they affect wa-


Finally, property that is taken through Ohio’s Voluntary Action Program (VAP) is granted a tax exemption by the State and receives a covenant not to sue from Ohio’s Environmental Protection Agency.\footnote{See Ohio Rev. Code Ann. § 5709.87 (West 2002).} The tax exemption covers the increased assessed value of land improvements, buildings, fixtures, and structures that exist at the time the tax abatement order is granted.\footnote{Id. § 5709.87(A)(2)(c).} The County Auditor’s Office maintains a list of properties in that county that have received the abatement.\footnote{Id.}

The states discussed above are not the only states that offer brown-

field funding assistance. For help in finding what individual states offer, call or visit the homepage of one of eight Environmental Finance Centers,\footnote{See U.S. Environmental Protection Agency, Environmental Finance Program, Environmental Finance Center Network, http://www.epa.gov/efinpage/efc.htm (last visited Apr. 17, 2007).} EPA’s State Brownfield and Voluntary Response Program update,\footnote{See State Brownfields Programs, supra note 124.} or the Northeast-Midwest Institute.\footnote{See Northeast-Midwest Institute, http://www.nemw.org (last visited Apr. 17, 2007).}

### III. Other Funding Options

Local governments are also potential sources for brownfield funding. In addition to money that has been funneled through cities from the federal or state governments for brownfield or economic development projects, municipalities, counties, and port authorities often have bonding authority.\footnote{See, e.g., Ohio Rev. Code §§ 761.03, 4582.06; see also Bartsch & Wells, supra note 5, at 29–35.} Local governments also may offer loans, loan guarantees, tax incentives, and grants.\footnote{See generally Bartsch & Wells, supra note 5, at 29–35.} One tax incentive is called “tax increment financing,” wherein the increased tax revenue derived from a project is set aside into a special fund to pay for infrastructure, remediation, or other costs associated with that project.\footnote{See U.S. Environmental Protection Agency, Brownfields Cleanup and Redevelopment: Available Funding Mechanisms, http://www.epa.gov/brownfields/funding.htm (last visited Apr. 17, 2007) [hereinafter U.S. EPA, Available Funding]; see also Ohio Department of Development, Ohio Economic Development Analysis Program: Environmental Costs/Incentives for Business, http://www.oedep.state.oh.us/comp/ (last visited Apr. 17, 2007).}
Private sector funding for brownfield redevelopment is increasing.\footnote{177} Such financial assistance comes from both non-profit organizations and for-profit corporations. Non-profit corporations, such as those with 501(c)(3) tax-exempt status, and intellectual or philanthropic foundations, are the two types of entities providing private funding in the non-profit sector.\footnote{178} Non-profit corporations leverage public funding with private capital.\footnote{179} This is often accomplished through revolving funds.\footnote{180} Revolving funds provide loans to parties who, in turn, reimburse the fund with the principle plus interest.\footnote{181} This payback allows the fund to continue providing the same or increased levels of funding.\footnote{182} Revolving funds typically finance the cleanup of the brownfield site, which induces for-profit lenders and developers to finance the site’s redevelopment.\footnote{183} On the other hand, foundations provide grants, rather than loans, for brownfield revitalization.\footnote{184} While each foundation has its own specific focus, many provide grants to foster environmental or economic redevelopment in urban areas.\footnote{185}

Private financing from for-profit entities comes from venture capital firms—which are usually associated with developers—and lending institutions.\footnote{186} Venture capital and development companies typically do not become involved with a site until funding is leveraged for site assessments, demolition, remediation, infrastructure improvements, and general site preparation.\footnote{187} Securing funding in these areas supports liability protection and financial incentives, and reduces or quantifies remediation costs—three factors that encourage venture capital and development companies to acquire the site.\footnote{188} Lending institutions, such as commercial banks, often require venture capital or private non-profit involvement.\footnote{189} Banks often look to prior brownfield redevelop-
ment experiences when considering loans.\textsuperscript{190} Furthermore, a sole lender may be reluctant or unable to finance an entire project.\textsuperscript{191} If all parties contributing to the financing are credit-worthy borrowers, the commercial lender will often enter into a partnership agreement with them.\textsuperscript{192} Commercial lenders also consider insurance and the proposed land leases in their loan considerations.\textsuperscript{193}

### IV. Insurance Options

The real estate lawyer of yore was primarily concerned with issues such as clear title, zoning restrictions, and financing when representing a buyer of property, as well as with selling the property “as is” when representing a seller.\textsuperscript{194} These remain important issues, but the possibility that the real estate is contaminated and that liability will transfer with title is now an additional concern.\textsuperscript{195} As a result of this new liability issue, litigation arose between insureds and their carriers who argued over coverage for site conditions.\textsuperscript{196} By 1986, absolute pollution exclusions in insurance policies were common.\textsuperscript{197}

Nevertheless, sites today may be covered under historic insurance policies, regardless of whether property title has transferred.\textsuperscript{198} Many types of old policies may cover residual contamination, such as comprehensive general liability, auto, garage, environmental impairment, first-party property, and personal injury policies.\textsuperscript{199} Many offered coverage first for accidents, then for occurrences, or sudden events, all of which in some way could cover spills and contamination.\textsuperscript{200} It was not until 1985 that the insurance industry implemented what is commonly called the “absolute pollution exclusion.”\textsuperscript{201} Before then, any ambiguity in the policy, which was basically a contract, had to be resolved in favor of the insureds.\textsuperscript{202}

\textsuperscript{190} Id. at 2-270 to 2-271.
\textsuperscript{191} Id. at 2-271.
\textsuperscript{192} Id.
\textsuperscript{193} Id.
\textsuperscript{194} Fersko & Waeger, supra note 1.
\textsuperscript{195} See id. at 165–66; Simons, supra note 3.
\textsuperscript{196} See Fersko & Waeger, supra note 1, at 166.
\textsuperscript{197} Id.
\textsuperscript{198} See Simons, supra note 3, at 101.
\textsuperscript{200} Id. at 177.
\textsuperscript{201} Id. at 178.
\textsuperscript{202} Id. at 176.
There are several steps to determining coverage under old policies. First, one has to look for the policies in the current and previous owners’ records, which may be in warehouses, basements, or other storage facilities. The best evidence is the actual executed policy, with secondary evidence including certificates, partial policies, letters that contain policy numbers, management and corporate records, financial ledgers, schedules, and correspondence. Some use the phrase “insurance archeology” to describe the systematic recovery and analysis of old policies to determine coverage.

Issues may arise with successor corporations or with new property owners, especially if the policies were not assignable by their own terms. Courts have held that corporate mergers or consolidations, or transfers of liability to a new property owner coupled with an event that would have been covered for the predecessor, are enough to deem that coverage is appropriate.

However, defenses surely exist when trying to collect on an old policy. Coverage may be denied if certain persons in the organization knew or could reasonably have been expected to know that a pollution condition existed prior to purchasing the policy, but failed to disclose the condition. Other defenses include late notice, dispute over whether property damage is equal to the cost of remediation, whether the property damage took place during the policy period, and the transferability of the policy to successor corporations or property owners. In addition, coverage may be denied if the insured made payments toward remedial measures or assumed the obligation to clean up the site.

Newer insurance mechanisms can offer protection for on-site or off-site remediation, property damage, and bodily injury resulting from contamination. Insurance providers have realized that the reward of investing in brownfield projects outweighs the risk, and coverage is

---

203 Id. at 175.
204 Id.
205 Archangeli & Torrey, supra note 199, at 175.
206 See id. at 177.
207 Id.
209 Archangeli & Torrey, supra note 199, at 180–82.
210 Id. at 183–84.
211 Fersko & Waeger, supra note 1, at 167.
evolving rapidly.\textsuperscript{212} The two most common policies are liability-related policies and cost cap policies.

Pollution liability policies are widely used and protect against claims for third-party cleanup costs, bodily injury, and property damage, as well as certain legal fees.\textsuperscript{213} Cost cap insurance is available for sites where assessments are complete and a remediation plan is in place, but cleanup costs exceed the estimated amount.\textsuperscript{214} Cost cap insurance may be combined with liability coverage.\textsuperscript{215}

Secured lender policies are also available; these protect lenders from losses due to site contamination.\textsuperscript{216} These policies benefit property owners and developers because they may increase a lender’s willingness to provide financing for the project.\textsuperscript{217} Coverage is usually conditional on loan default, and the lender usually receives the loan balance or the cost of remediation.\textsuperscript{218}

V. Contributions From Potentially Responsible Parties

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),\textsuperscript{219} commonly referred to as Superfund, may provide avenues for funding brownfield cleanups. It provides three avenues for actions against potentially responsible parties (PRPs), through section 107—cost recovery—and two through section 113—contribution.\textsuperscript{220}

Specifically, section 107 provides that PRPs\textsuperscript{221} are liable for costs of removal or remediation incurred by the U.S. government\textsuperscript{222} and for “any other necessary costs of response incurred by any other person consistent with the national contingency plan.”\textsuperscript{223} Courts have construed this provision as a cost recovery provision, which is avail-

\begin{footnotesize}
\textsuperscript{212} Id. at 166.
\textsuperscript{213} Yount & Meyer, supra note 208, at 1.
\textsuperscript{214} Id. at 1–2.
\textsuperscript{215} Id. at 28.
\textsuperscript{216} Id. at 3.
\textsuperscript{217} Id.
\textsuperscript{218} Id.
\textsuperscript{220} See Cooper Indus. v. Aviall Servs., Inc., 543 U.S. 157, 163 (2004); Consol. Edison Co., v. UGI Utilities Inc., 423 F.3d 90, 94–95 (2d Cir. 2005); see also 42 U.S.C. §§ 9607(a), 9613(f). This Article provides only a summary of cost recovery; a thorough discussion of this concept would constitute a separate law review article.
\textsuperscript{221} See 42 U.S.C. § 9607(a); Aviall, 543 U.S. at 161.
\textsuperscript{222} 42 U.S.C. § 9607(a) (4) (A); Aviall, 543 U.S. at 161.
\end{footnotesize}
able to innocent parties who voluntarily clean up property.\textsuperscript{224} Courts are divided, however, on whether PRPs can recover from other parties under this section. The U.S. Court of Appeals for the Third Circuit has held that a PRP cannot seek cost recovery under CERCLA section 107,\textsuperscript{225} while other circuits have held that section 107 cost recovery is available both to innocent parties and PRPs.\textsuperscript{226} However, it is required that the National Contingency Plan be followed, which may not be a requirement for state voluntary cleanup programs and thus may effect an entity’s ability to recover costs under section 107.\textsuperscript{227}

Section 113(f)(1) of CERCLA provides for contribution from other PRPs as follows:

Any person may seek contribution from any other person who is liable or potentially liable under section 9607(a) of this title, during or following any civil action under section 9606 of this title or under section 9607(a) of this title. Such claims shall be brought in accordance with this section and the Federal Rules of Civil Procedure, and shall be governed by federal law. In resolving contribution claims, the court may allocate response costs among liable parties using such equitable factors as the court determines are appropriate. Nothing in this subsection shall diminish the right of any person to bring an action for contribution in the absence of a civil action under section 9606 of this title or section 9607 of this title.\textsuperscript{228}

Similarly, section 113(f)(3)(B) provides that a PRP who settles its claims with the U.S. government or a state can seek contribution from other non-settling PRPs.\textsuperscript{229} Cost recovery for PRPs might thus be limited to those situations where the government has sued the PRP, or at least settled its CERCLA claims.\textsuperscript{230}

\textsuperscript{224} E.I. DuPont de Nemours & Co. v. United States, 460 F.3d 515, 530 (3d Cir. 2006) (citing New Castle County v. Halliburton NUS Corp., 111 F.3d 1116, 1120 (3d Cir. 1997)).
\textsuperscript{225} E.I. DuPont de Nemours, 460 F.3d at 518, 541–42.
\textsuperscript{226} See, e.g., Atlantic Research Corp. v. United States, 459 F.3d 827, 829 (8th Cir. 2006); Consol. Edison Co. v. UGI Utilities Inc., 423 F.3d 90, 100 (2d Cir. 2005). The Court in Aviall declined to address the issue because Aviall wrapped its section 107 claim into its section 113 claim in the lower court. Aviall, 543 U.S. at 168–70. The U.S. Supreme Court did address the issue tangentially, but not directly, in Key Tronic Corp. v. United States, by noting that section 107 and section 113 are distinct remedies. 511 U.S. 806, 812–13, 815–16 (1994). It is likely that the Court will consider the issue directly in the near future.
\textsuperscript{227} See supra note 223.
\textsuperscript{228} 42 U.S.C. § 9613(f)(1).
\textsuperscript{229} Id. § 9613(f)(3)(B).
\textsuperscript{230} Cost recovery under federal law is currently an ongoing issue in many courts.
States may also offer cost recovery as part of their cleanup programs, whether they are CERCLA-type programs or voluntary programs.\textsuperscript{231} CERCLA-type programs may be subject to the same issues that are being litigated today; namely, the difference between the cost recovery mechanism that is available to PRPs versus non-PRPs. The voluntary cleanup cost recovery actions available in states logically will differ just as each program differs.

**Conclusion**

There are many brownfield funding mechanisms available for patient and diligent developers—both for- and not-for-profit—as well as governmental entities. Brownfield projects often take time and money to overcome unknown site conditions or known environmental contamination. It is imperative that brownfield sites be revitalized, however, to re-energize our cities and prevent urban sprawl.\textsuperscript{232} Grant and loan programs are available on the federal, state, and local levels. These programs include funding for both environmental assessments and clean-up requirements. Most funding programs prohibit a potentially responsible party from receiving the monetary assistance. Recipients of state money often must follow that state’s voluntary clean-up program requirements at the site to be eligible for funding. Most grant and loan programs take a significant amount of time from putting together the application to receipt of award. Nevertheless, these federal and state dollars can contribute a significant amount of money to a project.

In addition, old insurance policies may cover the cleanup of contamination that is discovered during property revitalization activities. Likewise, newer insurance mechanisms can make buyers and sellers of property more comfortable with moving the transaction forward. Finally, cost recovery through federal or state laws might be an option on certain sites. These provisions generally allow a volunteer to obtain cost recovery from Potentially Responsible Parties (PRPs), and PRPs to obtain contribution from other PRPs. This process also can be time-consuming, but nonetheless remains an option.

\textsuperscript{231} See, e.g., Ohio Rev. Code Ann. § 3746.23 (West 2006).

\textsuperscript{232} Many resources are available to help craft brownfield funding portfolios. These resources include EPA’s brownfield and environmental finance programs; the Environmental Finance Center Network (which has finance centers located across the country); the Rocky Mountain Institute; the Environmental Council of States; the Northeast-Midwest Institute; and the National Association of Local Government Environmental Professionals.
A TALE OF TWO BROWNFIELD SITES: MAKING THE BEST OF TIMES FROM THE WORST OF TIMES IN WESTERN PENNSYLVANIA’S STEEL VALLEY

Nancy Perkins*

Abstract: In the past decade, two attractive multi-use developments have sprung up on the banks of western Pennsylvania’s Monongahela River, improving vast brownfields where large steel plants once stood. The communities that are home to these projects—Homestead and Pittsburgh’s South Side neighborhood—have unquestionably benefited from these developments, but those benefits have not been evenly distributed. This Article compares these two projects from an environmental justice perspective. It concludes that Homestead is an environmental justice community, and that it has not fared as well as the Southside in the distribution of the benefits associated with brownfield redevelopment. The benefits that are most lacking in Homestead are those related to community empowerment and community identity as reflected in the development itself. Professor Perkins suggests that states amend their brownfield programs to better prepare environmental justice communities well in advance of development in order to assure that projects maximize these important community identity features.

INTRODUCTION

As the Monongahela River meanders its final six miles before meeting the Ohio River at Pittsburgh’s famed “Point,” it makes two subtle curves, moving gently to the north and retreating slightly to the

* Professor of Law, Duquesne University School of Law. The author would like to thank the following people: Rick Belloli, Executive Director, South Side Local Development Company; Holly Cairns, Environmental Advocate, Pennsylvania Department of Environmental Protection, Southwest Regional Office; Mark S. Dellana, Vice President of Development, Soffer Organization; Jerry Detorre, Executive Director, Urban Redevelopment Authority of Pittsburgh; Judy Dyda, Manager of Community Planning, South Side Local Development Company; Barry Ford, President of Development, Continental Real Estate; Donald J. Guter, Dean, Duquesne University School of Law; and John Mitviya, Environmental Protection Manager for Environmental Cleanup, Pennsylvania Department of Environmental Protection, Southwest Regional Office. Special thanks are owed to Erin McCurdy, Duquesne University School of Law 2008 J.D. candidate, for her invaluable and enthusiastic research assistance on this project.
south, before continuing on its western course. The flat plains that abut these two curves were at one time home to massive steel making facilities. The eastern-most site, located in Homestead, Pennsylvania, boasted U.S. Steel Corporation’s enormous Homestead Works, which produced one third of the nation’s steel during the first half of the twentieth century.\(^1\) The smaller site to the west, lying within the city of Pittsburgh’s South Side neighborhood, was most recently occupied by the LTV South Side Works.\(^2\) For over one hundred years, the steel facilities at these sites employed hundreds of thousands of Pittsburghers, many of whom were second and third generation employees or immigrants working their first jobs in a new homeland. The mills made millionaires out of their owners and pumped vast sums of money into the surrounding areas.\(^3\) However, as big steel died in the Mon Valley in the 1980s, both facilities shut down, forcing the declining communities to come to grips with economic hardship and brownfield expanses littered with bulky skeletal reminders of the sites’ former greatness.\(^4\)

Today, these two sites have been transformed and they continue to have much in common aside from their steel heritage. Both the “Waterfront”—which now covers the former U.S. Steel site in Homestead—and the “South Side Works”—which occupies the former LTV site—are mixed-use developments. Both bustle with shoppers and joggers, residents and workers, diners and movie-goers. Both are widely praised for their aesthetic appeal and economic success.\(^5\) But there are differences. The Waterfront underwent private remediation and redevelopment with minimal public participation, while the South Side Works was redeveloped pursuant to Pennsylvania’s brownfield law, Act 2, with signifi-

---


\(^4\) See id. at 367.

cant public input. The Waterfront is an island of prosperity that is very much isolated from the rest of the still-distressed city of Homestead, while the South Side Works blends nearly seamlessly into the adjoining city blocks of Pittsburgh’s South Side.

This Article aims to compare the sites through the lens of environmental justice. There is a body of scholarship that questions the justice of the tiered cleanup levels and minimal participation opportunities that characterize most brownfield programs. This Article, however, will look at distributive justice as it relates to the benefits of brownfield development. It finds that pre-development Homestead was an environmental justice community, but the South Side was not. It concludes that the South Side is reaping more of the benefits associated with brownfield development than Homestead, and suggests a strategy to avoid such outcomes.

Some of the forces that implicate the environmental justice concerns addressed here can cut both ways; for example, without tax increment financing, which withholds tax revenues from struggling host communities for many years, these two projects would never have moved forward. That reality, however, is not a reason to ignore the potential environmental injustice of brownfield redevelopment. Rather, developers’ efforts to secure beneficial financing and to build near strong markets need to be informed by a wider understanding of the social justice consequences of those decisions. A commitment to sustainability demands nothing less. In order for a brownfield redevelopment to make the best of times for environmental justice communities facing the worst of times, more is required than private remediation and planning, or adhering to state brownfield laws such as Act 2, even when those efforts are pursued with the best of intentions. It additionally requires an understanding that identifying and empowering environmental justice communities before development may be the best way to avoid disparities.

6 See infra text accompanying notes 56, 105, 135.
7 See infra text accompanying notes 162–70.
8 Telephone Interview with Jerome N. Dettore, Executive Dir., Urban Redevelopment Auth. of Pittsburgh, Pittsburgh, Pa. (July 27, 2006) [hereinafter Dettore Interview]; Telephone Interview with Barry Ford, President of Dev., Continental Real Estate, Pittsburgh, Pa. (June 22, 2006) [hereinafter Ford Interview].
I. THE WATERFRONT

The 260-acre, two-mile stretch of land that comprises the Waterfront is located in three neighboring boroughs: Homestead, Munhall, and West Homestead. Nevertheless, Homestead is the symbol of the three towns and the U.S. Steel plant that once graced the land. For this reason, except when used in comparison to the other two boroughs, “Homestead” should be read to refer to all three boroughs.

A. SITE HISTORY

Homestead, Pennsylvania was, and to some extent still is, a quintessential company town. Site of the massive U.S. Steel’s Homestead Works, its fortunes and psychology were inextricably linked to the plant for nearly a century. Twenty years after U.S. Steel left the town in a state of disbelief and despair, the legacy of the plant and its workers remains a newsworthy topic.

In its heyday, the Homestead Works boasted 450 buildings sprawled over 430 acres. The vast majority of the plant embraced Homestead at the wide base of a slope on the southern bank of the Monongahela River; the giant Carrie Furnace operated across the river, connected to the fabrication plants by a hot metal bridge.

Steel manufacturing began at the site in 1881. Andrew Carnegie purchased the mill two years later, and by 1901 had established U.S. Steel, which would become the country’s first billion-dollar corporation. Throughout most of the twentieth century the plant flourished. A major expansion during World War II added several new furnaces and mills to the plant, which eventually employed 15,000 workers.

10 Barnet D. Wolf, Steeled for Success, COLUMBUS DISPATCH, Sept. 15, 1999, at 1F.
13 See, e.g., Roth, supra note 1.
14 Id.
15 Id.
16 CMU Homestead, supra note 12.
17 Modell, supra note 11, at 5.
18 Id.
19 Serrin, supra note 3, at 262, 283.
21 CMU Homestead, supra note 12, at 1.
Homestead’s glory days continued into the early 1950s, but the denouement of the great Homestead Works and the nation’s steel industry had already begun. Throughout the 1960s, thousands of American steel jobs were cut, and during the next decade many plants closed. The Homestead Works was no exception. In 1979, U.S. Steel shut down two of its mills that had been operating for over 100 years, and in 1982 the great Carrie Furnace closed. Three years later, more components of the Homestead Works ceased operation, and on July 25, 1986, U.S. Steel permanently closed the plant.

B. The Community

Homestead, Munhall, and West Homestead benefited enormously from the plant’s presence. The plant provided job security for generations of families, and workers furnished many municipal services. Local politicians were all too happy to take credit and to be spared concerns that were routine for most municipal governments.

By the mid-1980s the mood of the steel valley was glum. People were moving into town, but they were no longer immigrants flocking to well-paying steel jobs; instead, they were poor, looking to take advantage of plummeting property values and bringing with them the common problems of poverty. There was widespread despair and loss of self-esteem among the town’s young people, who had been brought up to believe that the plant would furnish them with jobs for the duration of their working lives. Families broke apart; suicides were not uncommon. Fires left behind vacant lots which, coupled with the even-

---

22 Serrin, supra note 3, at 282–83.
23 Id.
24 Id. at 305 (linking the flood of pink slips to a massive firing that U.S. Steel hoped would address a pervasive over-manning problem).
25 Id. at 329–30 (noting the “dismemberment” of U.S. Steel). During these years aluminum continued to gain market share while plastics began gaining market share as well. Id.
26 Id. at 346.
27 Id. at 367.
28 See Serrin, supra note 3, at 289.
29 Workers were routinely dispatched to salt streets, rebuild bridges, and maintain playgrounds. Id. at 287–88.
30 Id. at 288.
31 Corruption eventually became a way of life at the mill and in town. Id. at 289. Gambling and prostitution were common. Id.
32 Id. at 347, 369.
33 Id. at 382.
34 See Modell, supra note 11, at 265–66; Serrin, supra note 3, at 368, 398.
tual demolition of the plant, radically changed the only landscape that residents had ever known. Thirty-five

Local officials were dispirited and seemed incapable of confronting Homestead’s difficulties. Thirty-six They faced staggering financial and population losses. Homestead’s deficit had reached $300,000 and its population was eighteen percent lower than it was just ten years earlier. Thirty-seven The borough became a “bad place,” with crime and hard drug use on the rise. Thirty-eight

The City Council was almost paralyzed by the crisis, although it had never really been in control while U.S. Steel operated the plant. Thirty-nine The Council simply had little idea how to run a town. It lacked a strong tradition of leadership and had no solutions to offer its residents. Instead, it became mired in internal squabbles. Forty Planning for the town’s future seemed impossible given its financial crisis and demoralized, apathetic population. Forty-one Homestead’s citizens, so concerned about their own lives, showed little interest in government. Forty-two They remained in a state of disbelief, Forty-three resented having to take minimum wage jobs, Forty-four and felt betrayed by a nation that they believed cared only for corporate interests. Forty-five It was as if the community’s fiber was dissolving. Forty-six

Data from the 2000 census, presented in Table 1, paints a picture of Homestead, Munhall, and West Homestead after their adjustment to the plant closure and before the Waterfront was complete. Table 2 reveals further population loss, low to modest incomes, and high poverty rates for all three boroughs.

---

35 Modell, supra note 11, at viii; Serrin, supra note 3, at 411. To some residents the mill created a natural landscape: “Puffs of smoke, an elderly woman said . . ., ‘looked like clouds’ in the sky. A young man recalled slag heaps that were like ‘big mountains’ for him and his friends.” Modell, supra note 11, at 17.
36 See Serrin, supra note 3, at 411.
37 Id. at 393.
38 Modell, supra note 11, at 296.
39 Serrin, supra note 3, at 383.
40 Id.
41 Modell, supra note 11, at 297.
42 See Serrin, supra note 3, at 383. This was an odd response for a community that had for so long prided itself in its solidarity and activism. See Modell, supra note 11, at 250–51.
43 Modell, supra note 11, at 251.
44 Id. at 264 (noting that “[t]he personal meaning of being in hell belonged to the laid-off steelworkers and their families”).
45 Id. at 13.
46 Serrin, supra note 3, at 387. Serrin observed in the early 1990s that “Homestead remains a fractious, suspicious place, unable to organize, unable to confront its enemies.” Id. at xxiii.
Table 1: Tri-Borough Population Data 1990 and 2000 Census

<table>
<thead>
<tr>
<th>Borough</th>
<th>1990 Population</th>
<th>2000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homestead</td>
<td>4,179</td>
<td>3,569</td>
</tr>
<tr>
<td>Munhall</td>
<td>13,158</td>
<td>12,264</td>
</tr>
<tr>
<td>West Homestead</td>
<td>2,495</td>
<td>2,197</td>
</tr>
</tbody>
</table>

Table 2: Tri-Borough Demographic Data 2000 Census

<table>
<thead>
<tr>
<th>Borough</th>
<th>% Population Change Since 1990</th>
<th>% Minority Population</th>
<th>Median Household Income ($)</th>
<th>% of Population Below Poverty Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homestead</td>
<td>-14.60</td>
<td>57.4</td>
<td>16,603</td>
<td>26.6</td>
</tr>
<tr>
<td>Munhall</td>
<td>-6.79</td>
<td>5.2</td>
<td>32,832</td>
<td>11.9</td>
</tr>
<tr>
<td>West Homestead</td>
<td>-11.94</td>
<td>10.5</td>
<td>33,309</td>
<td>13.7</td>
</tr>
</tbody>
</table>

C. Cleanup and Development

In 1988, Park Corporation purchased the Homestead Works site from U.S. Steel for $14 million. During the next seven years Park demolished nearly all of the plant’s structures and sold whatever equipment remained at the site.

Pennsylvania’s Act 2 did not yet exist, so Park conducted the cleanup privately. The primary environmental concern was contamination related to 120 above- and below-ground tanks that had stored the lubricants used on the various mills’ machines. Identifying the location and contents of the tanks was facilitated by the impeccable records

---

52 Homestead Borough Census Profile, supra note 48, at T.DP-1, DP-3.
54 West Homestead Borough Census Profile, supra note 50, at T.DP-1, DP-3.
55 Serrin, supra note 3, at 393; Ford Interview, supra note 8.
56 When the Park Corporation began the cleanup, Mr. Ford was employed by Park Corporation. Ford Interview, supra note 8.
maintained by U.S. Steel.\textsuperscript{57} Tanks were removed; leaks, if any, were identified; and contaminated soil was excavated and replaced with clean fill.\textsuperscript{58} Park’s comprehensive remediation records satisfied investors in the following years.\textsuperscript{59} There have been no fines or environmental problems at the site since it was cleaned up.\textsuperscript{60}

Park sold the property to Continental Real Estate in 1998 for $20 million.\textsuperscript{61} Continental focused on infrastructure, building a generous network of roads that set the stage for development. Unfortunately, access to the site was limited by railroad tracks that ran along the entire south side of the site. There ultimately would be only three access points to the project, only one of which would bring visitors through downtown Homestead.\textsuperscript{62} Continental did, however, make the most of the site’s steel heritage by erecting an imposing row of tall stacks that once emitted huge plumes of smoke at one of the project’s entrances, and by leaving other pieces of machinery in place.\textsuperscript{63}

Today, the Waterfront is fully built out. It includes a Power Center comprised of numerous big-box stores\textsuperscript{64} and “The Stacks,” a grouping of upscale stores surrounded by an entertainment and dining district.\textsuperscript{65} In addition, 650,000 square feet of office space and 700 apartment units line the river’s edge.\textsuperscript{66} The Waterfront has become a point of destination for residents from many of Pittsburgh’s surrounding neighborhoods, attracting shoppers and diners who are more wealthy and better educated than those who typically live near the major malls in the greater Pittsburgh area.\textsuperscript{67}

Two agreements were crucial to the project’s development. The first was a tax increment financing agreement (TIF agreement) that funnels real estate taxes into a TIF fund to pay debt service on twenty-

\textsuperscript{57} Id.
\textsuperscript{58} Id. The Pennsylvania Department of Environmental Protection signed off on the tank cleanup. Id. After the passage of Act 2, consideration was given to applying for the Act’s liability protection. Id. However, officials were confident that remediation was both adequate and complete, and because Act 2 does not protect against unknown contamination (the only kind of problem officials thought possible), the idea was not pursued. Id.
\textsuperscript{59} Id.
\textsuperscript{60} Id.
\textsuperscript{61} Id.
\textsuperscript{62} Ford Interview, supra note 8.
\textsuperscript{63} Id.
\textsuperscript{64} Continental Press Materials, supra note 5.
\textsuperscript{65} Id.
\textsuperscript{66} Id.
\textsuperscript{67} See id.
year municipal bonds. The three boroughs also created a revenue sharing district that allocates tax revenue based on the amount of land each borough owns at the project site, regardless of where building occurs. When the TIF agreement expires in 2018, the boroughs will receive taxes based on the actual buildings and tenants that exist on their separate parcels. That revenue will be both welcome and significant, since current estimates value the Waterfront at $300 million to $350 million.

D. Community Reaction

What the people of Homestead wanted most from the site’s redevelopment was industrial revitalization and jobs for out of work steel-workers. At best, residents were conflicted over what the new Homestead should be, but many wanted industrial or retraining facilities so people could stay in place, prepare themselves for new jobs, and “have control over their lives.”

Those who hoped the new development would address these desires likely feel disappointed by the Waterfront. Retail jobs do not support families, neither do they provide the unemployed with the sense of control Homesteaders so urgently need. Further, the TIF agreement

---


69 TIF Agreement, supra note 68, § 7. Of the approximate revenues allocated to the boroughs, Homestead receives fifty percent, Munhall thirty percent, and West Homestead twenty percent. Id. at Exhibit D-2.

70 Mitchell, supra note 68.


72 Serrin, supra note 3, at 407.

73 Id.

will divert tax revenues totaling close to $1 million per year from Homestead alone until 2018. Without those funds, Homestead remains a distressed municipality under the state’s Act 47. Nevertheless, the borough’s present tax revenue, which is only forty-four percent of what it would be without the TIF, is double what it was pre-development. Despite this improvement, residents are frustrated, a feeling that intensified in 2003 when Continental sold a portion of the site for $124 million.

The limited access to the site is another point of contention. It particularly disappoints Eighth Avenue merchants, whose view of the Waterfront is one of railroad tracks and the back of big-box stores. They regret that there was no comprehensive plan that might have improved the integration of the project with the heart of the borough.

In spite of these concerns, Homestead is better off than it was a few short years ago. Continental assumed a substantial risk in developing the parcel, and would not have proceeded without the TIF agreement. The towns are skeptical, however; they believe Continental was aware of the site’s “massive potential” and may have fared well without the TIF agreement. They believe their failure to conduct research to assess the true value of the site when the plant closed has hurt them in the long run. On balance, it seems that the TIF agreement, and perhaps the project as a whole, has been “good news/bad news” for the community.
II. THE SOUTH SIDE WORKS

A. Site History

LTV Steel operated the South Side Works on 123 acres in Pittsburgh’s South Side.\(^{84}\) Like so much of the flat plain along the Monongahela, the land had been used for steel making since the late nineteenth century.\(^{85}\) Jones and Laughlin Steel Company (J&L) opened a steel plant on the site in 1893, and was joined by Republic Iron Works and American Iron & Steel Works in 1905.\(^{86}\) By the 1950s the J&L plant was booming and employed thousands of workers. Like the Homestead Works, the South Side plant was connected to furnaces across the river by a hot metal railroad bridge.\(^{87}\) LTV acquired J&L in 1974,\(^{88}\) and eventually became the nation’s second largest steel producer.\(^{89}\)

After years of profitable production, the LTV facility experienced the same decline that plagued the rest of the Mon Valley steel plants. It halted nearly all operations in 1984.\(^{90}\) After idling the plant, it sold the site to Pittsburgh’s Urban Redevelopment Authority (URA) in 1993.\(^{91}\)

B. The Community

The parallels between the South Side and Homestead are striking. Pittsburgh’s South Side neighborhood was populated by a mix of immigrants who worked in the neighborhood’s once-famous glass factories before iron works and steel plants took hold in the twentieth cen-


\(^{86}\) Id.

\(^{87}\) Id.

\(^{88}\) Id.

\(^{89}\) Id.

\(^{90}\) Interview with Rick Belloli, Executive Dir., and Judy Dyda, Manager of Cmty. Planning, South Side Local Dev. Co., in Pittsburgh, Pa. (Sept. 15, 2006) [hereinafter Belloli/Dyda Interview]. LTV’s coke facility and steam plant remained in operation until 1998. URA Website, supra note 84.

\(^{91}\) LTV South Side Works, Background, supra note 85.
tury. Many residents thought it “inconceivable” that the LTV plant would ever close, and blamed the closure on union demands and management’s failure to reinvest in the facilities. LTV’s departure, like U.S. Steel’s in Homestead, left thousands of people without work, many of whom were psychologically devastated. And, like Homestead, mill employment by generations of family members left the community with a sense of history that remains inextricably linked to steel making.

The South Side is smaller than Homestead but its geography is similar. It covers a flat plain bordering the river, known as the South Side “Flats,” which gives way to a rising expanse called the “Slopes.” The neighborhood offers a mix of residential, commercial, and light industrial land concentrated in a fairly dense urban grid.

The 2000 census, taken at a time during the early stages of redevelopment at the South Side Works, showed a 10.2% population decline over 1990 figures. The number of twenty to twenty-nine year olds increased 7% during the same ten years. Still, people sixty-five and older accounted for the largest segment of the population even though their numbers were decreasing. The overall population decline was attributed to the loss of the steel industry and the trickle-down effect on commercial establishments in the neighborhood.

The South Side is predominantly white. Even with an increase in minority residents between 1990 and 2000, blacks comprise only 5.5% of the population compared to the greater Pittsburgh area’s 32%. Census figures also reveal that in 2000, the South Side was a low-income neighborhood. Just over half of its residents had low to moderate incomes, and 22.8% lived below the poverty level compared to 20.4% city-wide.

93 Id.
94 URA Website, supra note 84 (stating that 10,000 people lost their jobs).
95 Belloli/Dyda Interview, supra note 90.
96 Id. at 7.
98 See id.
99 Id. at 7.
100 Id. (reflecting, likely, that the South Side is home to many of the city’s college students).
101 Id.
102 Id.
103 SOUTH SIDE NEIGHBORHOOD PLAN, supra note 97, at 7.
104 Id.
C. Cleanup and Development

The South Side Works would not have been developed absent Act 2’s developer-friendly provisions.\textsuperscript{105} Like most state brownfield laws, Act 2 offers liability protection for voluntary cleanups.\textsuperscript{106} In Pennsylvania, parties may select a background, statewide health, or site-specific cleanup standard.\textsuperscript{107} The process for each standard is similar. A notice of intent to remediate must be filed with the Pennsylvania Department of Environmental Protection (DEP) and the municipality where the site is located, and a final report must be submitted to the DEP once remediation is complete.\textsuperscript{108} The DEP has sixty days to notify the remediator of deficiencies—ninety days for a site-specific standard—and if the DEP fails to do so, the report is deemed accepted.\textsuperscript{109} Act 2 provides for community involvement only for site-specific cleanups, but participation is not guaranteed.\textsuperscript{110}

Act 2’s liability protections are similar to those found in other state laws.\textsuperscript{111} A person whose final report is accepted by the DEP is released from further liability under Pennsylvania’s environmental laws for “any


\textsuperscript{106} \textit{See} Engel, \textit{supra} note 105, at 324.

\textsuperscript{107} A combination of standards may also be selected. 35 Pa. Cons. Stat. Ann. § 6026.301 (2006). Attainment of the background standard is achieved by testing representative samples from various environmental media in the area of contamination and cannot be achieved through the use of institutional controls. \textit{Id.} § 6026.302(b). The Statewide Health Standards (SHS) are medium-specific concentrations for regulated substances, which vary based on projected residential or nonresidential use of the land. \textit{Id.} § 6026.303(a), (b). Institutional controls may be used to maintain a SHS but not to attain it. \textit{Id.} § 6026.303(e)(3). Cleanups that are undertaken under a site-specific standard require the preparation of a remedial investigation report, risk assessment, and cleanup plan, and can be attained through a combination of treatment, removal, and engineering and institutional controls. \textit{Id.} § 6026.304(a), (i). Persons cleaning up a site to this standard must also comply with the deed acknowledgement requirements of Pennsylvania’s Solid Waste Management Act or Hazardous Sites Cleanup Act. \textit{Id.} § 6026.304(m).

\textsuperscript{108} \textit{Id.} § 6026.302(b)(2), (e)(1).

\textsuperscript{109} \textit{See} id. §§ 6026.302(e)(3), 6026.308(h)(3), 6026.304(n)(2)(ii).

\textsuperscript{110} The host municipality can request the remediator to develop a public involvement program. In such a case Act 2 calls for a “proactive” approach to community participation. \textit{Id.} § 6026.304(n)(1)(ii). The plan must involve the community throughout the remedial investigation, risk assessment, and cleanup planning process, and specific practices should be considered, such as doorstep notices, roundtable discussions, hearings, and document access. \textit{Id.} § 6026.304.

contamination identified in reports submitted to and approved by the department to demonstrate compliance with [the selected standard].”\textsuperscript{112} The protection applies to the developer and passes to successors,\textsuperscript{113} but is subject to reopeners.\textsuperscript{114}

During its first four years of ownership, the URA began work on a tax increment financing package, hired a consultant to develop a master development plan, engaged in community consensus efforts, and enhanced infrastructure. It also ordered environmental assessments and remediated two hot spots.\textsuperscript{115}

By 1997, the majority of environmental assessments were completed and the URA had entered into a Consent Order and Agreement (COA) with the DEP.\textsuperscript{116} The URA had already submitted Act 2 notices of intent to remediate soils and groundwater at the four parts of the parcel: the “Main Site,” the “Sarah Street Properties,” the “Tar Tank Area,” and the “Eliza Works Site.”\textsuperscript{117} The URA selected a combination of statewide-health and site-specific standards, and in 1997, submitted the required risk assessments and cleanup plans for all parcels.\textsuperscript{118} The COA authorized the URA to proceed with development as long as it performed the remediation detailed in the cleanup plans.\textsuperscript{119} Upon the DEP’s approval of a final report establishing the completion of the remediation at each parcel, the URA would receive Act 2’s liability protection.\textsuperscript{120} By 1998, most of the remediation was complete.\textsuperscript{121}

\textsuperscript{113} Id.
\textsuperscript{114} Id. § 6026.504–.505. Reopeners include new contamination caused by the person who cleans up a site, fraud, the discovery of previously unknown contamination, failure of the remediation method, and new risks associated with increased exposure. Id. § 6026.505.
\textsuperscript{115} URA Website, supra note 84.
\textsuperscript{116} Consent Order and Agreement of Urban Redevelopment Authority of Pittsburgh and the Commonwealth of Pennsylvania Department of Environmental Protection 3 (Apr. 16, 1998) (on file with author) [hereinafter COA].
\textsuperscript{117} Id.
\textsuperscript{118} Id. at 4, 8. The revised cleanup plan for Sarah Street Properties details the contamination at the site, including volatile organic compounds (VOCs) in the soil near underground storage tanks. LTV Act 2 Cleanup Plan, supra note 2, at 5. There were two PCB “hot spots” at the Main Site area, as well as petroleum hydrocarbon, metal, and polynuclear aromatic hydrocarbon (PAH) contamination of the soils. Id. at 14. The cleanup plan also reveals that deed restrictions would be used to restrict future groundwater use even though much of the site’s groundwater generally met statewide health standards. Id. at 12. Groundwater at the Tar Tank Area was, however, contaminated with benzene and naphthalene. Id. It was for this reason that the URA selected a site-specific standard for that area. Id. at 18.
\textsuperscript{119} COA, supra note 116, at 6.
\textsuperscript{120} Id. at 7.
During the next few years the URA finalized the Tax Increment Financing Plan (TIF Plan), continued to improve infrastructure, and sold parcels to developers. The eastern sixteen acres of the site now include a sports performance and medical office facility for the University of Pittsburgh Medical Center, and a training center for the Pittsburgh Steelers and University of Pittsburgh Panthers football teams. Other parcels house the regional headquarters of the Federal Bureau of Investigation and the International Brotherhood of Electrical Workers. The Soffer Organization, a real estate development firm in Pittsburgh, is developing thirty-five acres of the Main Site, and has completed two office buildings and various mixed-use, office/retail buildings, some of which include residential lofts. Its portion of the project has already received the U.S. Environmental Protection Agency’s Phoenix Award. A 270-unit apartment complex has been built on the western end of the site, and an affordable senior housing complex stands on the Sarah Street Properties. A park and trail that will run along the development’s riverfront is now partially complete.

Unlike Continental, Soffer did not have to deal with above-ground trains and associated access problems. Although over fifty trains traverse the South Side Works parcel daily, they do so by passing through a tunnel that was built in the 1800s. Today, four roads pass over and are perpendicular to the tunnel below, providing easy access to all

---

121 URA Website, supra note 84. Post-cleanup requirements were limited to the implementation of a health and safety plan for site workers and remediation of construction-related contamination. Id.

122 Id. The TIF agreement provided for $25 million in financing. Id. The project was funded with nearly $220 million in private investment and $103 million in public funding. Id.

123 Id.

124 Id.

125 Id.

126 Interview with Mark S. Dellana, Vice President of Dev., Soffer Org., in Pittsburgh, Pa. (Sept. 20, 2006) [hereinafter Dellana Interview].


128 Dellana Interview, supra note 126.

129 Belloli/Dyda Interview, supra note 90.

130 Dellana Interview, supra note 126.

131 Ford Interview, supra note 8.

132 Belloli/Dyda Interview, supra note 90.

133 Dellana Interview, supra note 126.
points of the site, and the remaining tunnel cover has been attractively landscaped.\textsuperscript{134}

The entire development process has been conducted with input from the South Side Local Development Company (SSLDC), the neighborhood’s community development corporation.\textsuperscript{135} The SSLDC was established by community residents in 1982, two years before the closing of the LTV plant.\textsuperscript{136} At the time, the community was concerned about the inevitability of the closure of the steel plant and a forty percent vacancy rate on Carson Street, the neighborhood’s commercial thoroughfare.\textsuperscript{137} The SSLDC’s objectives were twofold: to attract economic development and to preserve the neighborhood’s historic character.\textsuperscript{138} The group moved quickly; Carson Street was placed on the National Register of Historic Places within a year.\textsuperscript{139} Today, the SSLDC can boast the arrival of 150 new businesses to the neighborhood, 100 new homes, 120 renovated storefronts, and a commercial vacancy rate of only ten percent.\textsuperscript{140}

The SSLDC was over ten years old with a strong record of success when the URA purchased the LTV site in 1993. Around the same time a new mayor, Tom Murphy, encouraged Pittsburgh’s neighborhoods to engage in visioning and other planning activities, and demanded that public trails be built along all of the city’s waterfronts.\textsuperscript{141} The mayor’s policies, along with the strength of the SSLDC, coalesced to bring an unprecedented neighborhood perspective to the decision-making process. In fact, the SSLDC’s intervention helped thwart proposals that would have brought big-box stores and riverboat gambling to the site.\textsuperscript{142}

The SSLDC’s participation yielded other tangible results. Its overall concern was to ensure that the new development looked like a natural extension of Carson Street, which was lined with three- and four-story turn-of-the-century brick buildings with no setbacks. The group

\textsuperscript{134} Id.
\textsuperscript{137} Belloli/Dyda Interview, supra note 90.
\textsuperscript{138} See SSLDC History, supra note 136.
\textsuperscript{140} SSLDC History, supra note 136.
\textsuperscript{141} Belloli/Dyda Interview, supra note 90.
\textsuperscript{142} Id.
succeeded in extending Carson Street’s historic designation along a portion of Carson Street that bordered the LTV site. The SSLDC also lobbied for the senior housing units that were eventually built on the Sarah Street Parcel. Additionally, the high-density grid pattern of the neighborhood was kept intact at the insistence of the SSLDC, as were street names. The group also had success dealing with parking, setbacks, and building height restrictions, and persuaded Soffer to agree not to lure existing Carson Street businesses into the new development. The SSLDC remains committed to providing input as the remainder of the site develops.

The Soffer Organization had considerable experience working with community groups in Pennsylvania, and was prepared to work with the SSLDC, a group that brought historical perspective, commitment, and expertise to the project. The SSLDC’s involvement lengthened the development process, but assured the extension of the neighborhood’s ambiance into the South Side Works.

SSLDC officials believe that the group’s pervasive participation had little to do with Act 2’s participation requirements, but rather resulted from the SSLDC’s status in the community. They also feel that the URA, Soffer, and other developers recognized early on that the SSLDC was a capable and legitimate community force that could make things happen, and that any attempt to work around the group would be counter-productive.

D. Community Reaction

The SSLDC is clearly pleased with the South Side Works. The development retains the look and feel of the old South Side and has not robbed the rest of the community of its commercial tenants. It has provided the neighborhood with new affordable senior housing units and high-end rental units. Positive spillover effects have also been

---

143 Id.
144 Id.
145 Id.
146 Id.
147 Belloli/Dyda Interview, supra note 90.
148 Dellana Interview, supra note 126.
149 Id.
150 Id.
151 Id.
152 Id.
153 Id.
154 Dellana Interview, supra note 126.
felt elsewhere on Carson Street, including increased property values and reports by businesses of increased sales.\textsuperscript{155}

Further, the 2500 jobs lost by the LTV closing have already been replaced. That number of new employment positions is expected to jump to 5600 when the project is complete.\textsuperscript{156} The new jobs include professional jobs as well as retail and hospitality positions, many of which pay as much, if not more, than steelmaking jobs.\textsuperscript{157}

Complaints about the South Side Works include inadequate parking, lost sales by pre-existing businesses, and unwise design decisions, particularly the small number of authorized departures from height restrictions.\textsuperscript{158} Additionally, there is the occasional and inevitable complaint by Pittsburgh residents that a new state-of-the-art steel plant should have been built at the site.\textsuperscript{159} Nevertheless, the SSLDC—the development voice of the community—is very pleased with the results.\textsuperscript{160} It believes that the South Side Works reflects the community’s identity and that the neighborhood’s autonomy and sense of control have been heightened as a result of its input into the project.\textsuperscript{161}

\section*{III. Environmental Justice Implications}

For some time, scholarship has warned that brownfield development such as that described here may be environmentally unjust.\textsuperscript{162} To avoid this pitfall, brownfield programs must strive for distributive fairness in both substance and procedure. Unfortunately, most brownfield programs fail to make this goal a priority.

\begin{itemize}
\item \textsuperscript{155} Id.
\item \textsuperscript{156} Id.
\item \textsuperscript{157} Belloli/Dyda Interview, \textit{supra} note 90.
\item \textsuperscript{158} Id.
\item \textsuperscript{159} Id. Rick Belloli, Executive Director of the SSLDC, points out that those who longed for steel’s return to the site fail to realize that any new plant would hire fewer individuals, by far, than the facilities that now exist. \textit{Id}.
\item \textsuperscript{160} Id.
\item \textsuperscript{161} Id.
\item \textsuperscript{162} See generally Lincoln L. Davies, Note, \textit{Working Toward a Common Goal? Three Case Studies of Brownfields Redevelopment in Environmental Justice Communities}, 18 \textit{Stan. Envtl. L.J.} 285 (1999). Environmental justice exists “when everyone, [regardless of race, culture, national origin or income,] enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.” U.S. Environmental Protection Agency, Environmental Justice, \url{http://www.epa.gov/compliance/environmentaljustice/index.html} (last visited Mar. 25, 2007).
\end{itemize}
A. Brownfield Development Threats to Environmental Justice

Some believe that assuring environmental justice creates conflicts with the policies and objectives of state brownfield laws.\textsuperscript{163} The vast majority of brownfield sites are located in America’s urban cores, which are largely populated by minorities and the poor.\textsuperscript{164} Despite the fact that brownfield programs offer remediation that might otherwise not occur,\textsuperscript{165} and involve properties that tend not to be heavily contaminated,\textsuperscript{166} environmental justice issues are numerous.

A common concern targets the risk- and use-based cleanup standards that are typical of state voluntary programs. Commentators argue that these standards, which are normally less stringent than those mandated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),\textsuperscript{167} provide communities with “second-class” cleanups.\textsuperscript{168} In addition, the meager public participation provisions of many state programs allow developers to proceed with projects without any meaningful input from surrounding communities.\textsuperscript{169} Environmental justice communities also worry about development plans that are designed to lure white, affluent consumers to remediated sites.\textsuperscript{170} Further, land uses selected by developers that are more tolerant of residual contamination can lock in industrial uses, forever barring a community from using the land for residential purposes.\textsuperscript{171} Others argue that the gravitation of developers to predominantly white brown-

\textsuperscript{163} See, e.g., Engel, supra note 105, at 319–20.
\textsuperscript{165} See Engel, supra note 105, at 318, 326; Johnson, supra note 164, at 96 (noting that not all brownfield sites trigger a response from the Comprehensive Environmental Recovery, Conservation, and Recovery Act (CERCLA)).
\textsuperscript{166} Johnson, supra note 164, at 96; Freeland, supra note 164, at 190.
\textsuperscript{167} See Engel, supra note 105, at 318–19.
\textsuperscript{168} Id. at 319; see also Eisen, supra note 9, at 218 (arguing more generally that state brownfield programs fail to adequately address all of the elements of sustainability); Davies, supra note 162, at 295 (citing the likelihood of disagreements about the degree of cleanup).
\textsuperscript{169} Eisen, supra note 9, at 211; Freeland, supra note 164, at 194–95.
\textsuperscript{171} Engel, supra note 105, at 319.
field communities results in a disproportionately smaller number of cleanups in poor, minority neighborhoods.\(^\text{172}\)

**B. The Benefits of Brownfield Development—Substance and Procedure**

The potential inequities of brownfield programs are very real and pose threats to both substantive and procedural equity. The totality of the benefits associated with brownfield redevelopment is the substance against which the goals of environmental justice must be measured. The procedures used to obtain those substantive benefits also must be environmentally just.

The substantive benefits of state brownfield programs include a mix of economic and environmental advantages. Commonly cited benefits include contamination reduction and aesthetic improvement\(^\text{173}\) as well as job opportunities and additional tax revenue.\(^\text{174}\) An environmentally just brownfield remediation policy will ensure that poor minority communities enjoy these benefits to the same extent as affluent white communities.

The study of the Waterfront and the South Side Works suggests that other, less tangible substantive benefits should be distributed equitably as well, notably the embodiment of community identity in project design, as well as enhancement of community self-determination and empowerment.

The latter benefits are admittedly linked to the procedural shortcomings of state brownfield programs, which are designed to restrict community involvement.\(^\text{175}\) Developer avoidance or minimization of community participation is another problem,\(^\text{176}\) as are the social problems that overwhelm environmental justice communities and the resource limitations that prevent community leadership initiatives from taking hold.\(^\text{177}\) These procedural impediments contribute to the failure of some developments to capture community identity and instill pride in residents.

\(^{172}\) See Davies, *supra* note 162, at 295.

\(^{173}\) See id. at 318.

\(^{174}\) Robertson, *supra* note 111, at 1079.

\(^{175}\) See Freeland, *supra* note 164, at 194.

\(^{176}\) See Robertson, *supra* note 111, at 1090.

\(^{177}\) Id. at 1078–79 (noting the “hopeless poverty” of some environmental justice communities).
Various writers have offered suggestions to address these problems, but nearly all of those suggestions address the procedural inequities of state programs. They thus fail to recognize that the ends of community participation are just as important as the means. Those ends include the substantive benefits mentioned above: the reflection of each neighborhood’s sense of self in a project’s design, and the enhancement of a community’s self-determination and empowerment upon the completion of development. As important and necessary as procedural innovations may be, the substantive benefits inuring to community identity and empowerment must be analyzed separately, because the most inclusive and well-intentioned procedural process may not yield projects that empower communities and reflect their identity.

C. Homestead and the South Side as Environmental Justice Communities

An environmental justice community is typically one whose minority population is greater than that of the surrounding area. Low income is also an indicator; in fact, some early studies suggest that income correlates more closely with the siting of locally undesirable land uses than does race. Thus, it is not inaccurate to label a predominantly white community with income figures below county and state percentages as an environmental justice community.

A variety of methodologies are used to determine whether a neighborhood is an environmental justice community. For the purposes of this Article, race, median income, and poverty figures for the

178 Freeland, supra note 164, at 200 (suggesting that state programs can address inequities in community participation in their siting decisions); James T. O’Reilly, Environmental Racism, Site Cleanup and Inner-City Jobs: Indiana’s Urban In-Fill Incentives, 11 YALE J. ON REG. 43, 66 (1994) (suggesting community relations specialists); Ellen B. Sturm, Nonprofit Organizations in Brownfields Redevelopment: Leveling the Playing Brownfield, 8 BUFF. ENVTL. L.J. 99, 118–21 (2000) (suggesting the use of nonprofit intermediaries); D. Evan van Hook, Area-Wide Brownfield Planning, Remediation and Development, 11 FORDHAM ENVTL. L.J. 743, 758–59 (2000) (suggesting the use of steering committees made up of a variety of stakeholders).


181 See Davies, supra note 162, at 306 (labeling a largely Caucasian community an environmental justice community based on census data showing a higher level of poverty than the county and the state).

182 See Rechtschaffen & Gauna, supra note 179, at 70.
town of Homestead and the South Side neighborhood as a whole will be compared to those for the city of Pittsburgh, Allegheny County, and Pennsylvania. All comparisons are based on 2000 census numbers, compiled at a time when the Homestead and South Side steel plants had closed and redevelopment efforts were in their early stages.

This comparison is admittedly simplistic. Nevertheless, Table 3 indicates quite clearly that Homestead was an environmental justice community. Its minority population and poverty figures were well above those of Pittsburgh, Allegheny County, and Pennsylvania. Homestead’s median household income was also significantly lower than that of the other jurisdictions.

<table>
<thead>
<tr>
<th>Geographic Unit</th>
<th>% Minority Population</th>
<th>Median Household Income ($)</th>
<th>% Below Poverty Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homestead</td>
<td>57.4</td>
<td>16,603</td>
<td>26.5</td>
</tr>
<tr>
<td>South Side</td>
<td>5.5</td>
<td>28,588*</td>
<td>22.8</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>32.4</td>
<td>28,588</td>
<td>20.4</td>
</tr>
<tr>
<td>Allegheny County</td>
<td>15.7</td>
<td>38,329</td>
<td>11.2</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>14.6</td>
<td>40,106</td>
<td>11.0</td>
</tr>
</tbody>
</table>

* Source indicates that three of the South Side’s four census tracts are below this figure, which represents the median household income of Pittsburgh.

The South Side figures are more equivocal. In 2000, the neighborhood’s poverty level was only slightly above that of the city of Pittsburgh, but was nevertheless twice that of Allegheny County and Pennsylvania as a whole. Median income figures tell a similar tale; the South Side figure is equal to the city figure, but is well below county and state figures. Further, the neighborhood was less diverse, by far, than the four other jurisdictions.

The South Side was not a classic environmental justice community, yet some of its post-steel characteristics point in that direction.189 Nev-
ertheless, few persons walking down Homestead’s Eighth Avenue and the South Side’s Carson Street in 2000 would have described the communities similarly. At that time, Eighth Avenue was a sea of boarded up buildings and ramshackle structures. Carson Street, on the other hand, was packed with popular bars, restaurants, and coffee houses that catered to a large student population.\footnote{190} The South Side was also home to many young professionals.\footnote{191} Based on that reality, it would be difficult to label the South Side an environmental justice community. This conclusion paves the way for a comparison of two relatively contemporaneous developments of post-steel brownfields, one located in an environmental justice community and one situated in a more affluent, predominantly white city neighborhood.

\textbf{D. Disparities in Brownfield Redevelopment Benefits}

A good case can be made that the traditional environmental and aesthetic benefits of brownfield redevelopment have been equitably distributed at the Waterfront and the South Side Works. Both are beautiful projects that have vastly improved the aesthetics of their communities. Also, both properties are cleaner than they once were and offer a range of commercial and residential uses.

Some would nevertheless argue that aesthetic benefits have been inequitably distributed. The Waterfront is undeniably attractive, and its extensive use of brick echoes many of the old buildings that line Eighth Avenue. Yet the project is isolated; there is no integration with Eighth Avenue’s business district or the community at large,\footnote{192} a point made clear by the Avenue’s merchants.\footnote{193} On the other hand, positive remarks about the integration of the South Side neighborhood and South Side Works are common.\footnote{194} This integration is made even more apparent to diners and shoppers by a shuttle service that moves visitors and residents between the Southside Works and the rest of Carson Street.\footnote{195}

The distribution of the projects’ economic benefits is even more uneven. As noted, the revenue sharing and TIF agreements that were crucial to the development of the Waterfront have significantly de-
increased the amount of tax revenue that Homestead, Munhall, and West Homestead would otherwise enjoy. The loss of those funds has been keenly felt by Homestead, whose residents also argue that the retail and hospitality jobs created at the Waterfront offer wages that are too low to support a family, and pale in comparison to the jobs once enjoyed by steelworkers.

Negative remarks about tax revenues, jobs, and aesthetics are generally not heard in relation to the South Side Works. Even though the financing for that project involved a TIF, the effects of lost tax revenue are dispersed throughout the city of Pittsburgh, rather than visited solely upon the South Side. Further, the one million square feet of office space at Soffer’s portion of the South Side Works—which does not include the other non-retail facilities at the site such as the University of Pittsburgh Medical Center and Federal Bureau of Investigation buildings—is considerably more than the 400,000 square feet of office space at the Waterfront. The South Side Works’s office space provides a diverse array of jobs, many of which pay more than the steel jobs of the past. These facts suggest that the South Side Works, a much smaller and denser development, is bestowing more economic benefits to the community than is the Waterfront.

The brownfield benefits associated with community identity also are more evident at the South Side. The neighborhood’s dense, brick, grid design is clearly reflected throughout much of the South Side Works. SSLDC representatives strongly believe that the project not only reflects the neighborhood’s identity, but is a testament to the self-determination of nearby residents. While the use of brick and the forceful presence of mill machinery at the Waterfront are a reminder of the site’s legacy, the project’s low-density, big-box look and sprawling

196 See supra Part I.D.
197 See supra text accompanying note 69.
198 See Modell, supra note 11, at 304 (describing residents’ frustration with the small number of low-paying jobs created by a water park attraction built at another former steel site in Homestead). Homestead residents repeatedly expressed their desire for higher paying industrial jobs. See Serrin, supra note 3, at 407.
199 Belloli/Dyda Interview, supra note 90.
200 Mark Dellana, Vice President of Dev., Soffer Org., Chart of Southside Works Development Square Footage (Sept. 2006) (on file with author).
202 Belloli/Dyda Interview, supra note 90. When asked if he would have changed anything at the Waterfront, Barry Ford stated he may have developed more office space. Ford Interview, supra note 8.
203 Belloli/Dyda Interview, supra note 90.
parking lots contrast sharply with the higher density commercial and residential design of Eighth Avenue and nearby streets. Further, some residents complain that the development fails to include industrial or job training facilities that would more fully capture the spirit of the borough.  

The degree of community empowerment and satisfaction appears to be greater at the South Side Works as well. Complaints about lost revenues, low-paying jobs, and lack of accommodation of community desires are more prevalent in Homestead than in the South Side. The SSLDC considers its contribution to the South Side Works to be a job well done and looks forward to a continued partnership with developers as the project is completed. Homestead officials, on the other hand, are generally appreciative of the Waterfront, but still feel left behind. They point to missed planning opportunities and their failure to receive a fair share of the project’s economic benefits.  

The disparities between the projects’ success in reflecting community identity and respecting self-determination are mirrored by disparities in the procedural benefits associated with the projects. The SSLDC was a key player in South Side Works design decisions from the outset; even today it remains involved with the project on a daily basis. Additionally, its participation was welcomed by Pittsburgh’s Urban Redevelopment Authority and Soffer, both of which recognized the group’s legitimacy and expertise.  

There was no similar participation at the Waterfront; however, that reality was not due to private remediation or developer unwillingness. Homestead simply lacked a strong community development organization that was ready to inject itself into the decision-making process when Park Corporation purchased the land from U.S. Steel. Post-steel Homestead’s near free-fall in the face of an unprecedented crisis depleted the borough of the social capital that may have made it possible to develop and implement a coordinated public participation strategy.  

It is sad but not surprising that Homestead—the environmental justice community—received disproportionately fewer of the benefits associated with brownfield redevelopment when compared to the South Side. This result was neither intentional nor exploitive in any

204 See supra Part I.D.  
205 Belloli/Dyda Interview, supra note 90.  
206 See supra note 83 (noting the Homestead mayor’s positive remarks about the Waterfront); see also supra Part I.D.  
207 Belloli/Dyda Interview, supra note 90.  
208 Id.
way. In fact, the disparities suffered by Homestead, particularly those touching on aesthetics, were at least partially caused by the above-ground railroad tracks that not only prevented better integration with Eighth Avenue, but resulted in buildings backing up to, rather than facing, the town’s main thoroughfare. It is, however, inescapable that most of the inequity in Homestead resulted from disparities in community resources and political will, factors that are ubiquitous in environmental justice scenarios.

IV. TOWARD AN ENVIRONMENTALLY JUST BROWNFIELD POLICY

A number of writers have suggested ways to make brownfield programs more just. A recurring suggestion is to improve the public participation provisions of state brownfield laws. Again and again, authors emphasize the need to include the public from the beginning of the redevelopment process. Giving developers the freedom to make land use and remediation decisions may encourage and streamline the redevelopment process; however, the relatively brief history of these programs demonstrates that projects are more successful when developers act “with careful attention to the current and future needs of the cities in which sites are located, rather than proceeding in an ad hoc fashion.”

Amending brownfields laws to integrate all three parameters of sustainable development—the environment, economy, and equity—is another suggestion. State programs often are touted as sustainable, but the reality suggests otherwise. Serious attempts to inject the integrative policies of sustainable development into brownfield programs are needed. Mandating continuous government oversight throughout the lifespan of a project to ensure that environmental, economic, and social issues are being adequately addressed would help achieve this

---

209 Ford Interview, supra note 8.
210 See Rechtschaffen & Gauna, supra note 179, at 3.
212 Id. at 464.
213 See id. at 459–60.
214 Id. at 462.
215 Id. at 465.
216 Id. at 458 (citing President Clinton’s Council on Sustainable Development as promoting the link between brownfield redevelopment and sustainability).
goal. Developers currently escape such close scrutiny, particularly during project design and cleanup.

These suggestions hold promise, but there is no guarantee that more opportunities for participation and attention to sustainability will yield community satisfaction and projects that are reflective of community identity. In order for brownfield programs to generate these benefits in ways that alleviate the inequities between environmental justice and other communities, mechanisms must be in place to assess the political strength of communities well before a project begins. Further, communities with weak social capital must be provided with resources to help them identify concerns and bring them to the attention of developers.

These objectives could be addressed in various ways. Area-wide planning for communities with multiple brownfields through the use of community-based steering committees would coordinate planning on a larger scale and integrate community perspectives into the development process. Community relations specialists and nonprofit organizations that facilitate brownfield development have also been touted as a means of guaranteeing community input where social capital is weak. One can only wonder what area-wide planning of the Mon Valley’s steel-making brownfields would have yielded, or what the intervention of a community relations specialist or non-profit facilitator may have accomplished in Homestead.

The prospect of intermediary involvement once planning is underway could lead developers to steer clear of environmental justice communities in the future, especially when layered onto programs that are designed to be hands-off and efficient. This result could largely be addressed by pre-development intervention. As one writer suggests,

Communities that are not ready for redevelopment projects may at best be unable to help facilitate a project, and at worst may oppose an otherwise good project out of fear or uncertainty. Communities that are ready have organized a working consensus among the stakeholders, have clarity about their vi-

---

217 Eisen, supra note 211, at 462 (citing the importance of an “elaborate feedback mechanism”).
218 Id. at 462–63.
219 See van Hook, supra note 178, at 758, 763.
220 O’Reilly, supra note 178.
221 Sturm, supra note 178, at 105, 125–27 (noting that such groups can help obtain financial support and pro bono services for the community).
sion for the future, and have created the institutional vehicles needed to implement their plans.\textsuperscript{222}

The key is to have environmental justice communities “ready” for brownfield developers. States will have to play a role if this is to occur. They should take steps to help environmental justice communities prepare to be legitimate participants in brownfield remediation before projects are even contemplated.\textsuperscript{223} A first step would require states to identify candidate communities. A series of public hearings could be held to inform those communities about nearby brownfields, the brownfield process, and potential opportunities for development.\textsuperscript{224} States could also offer targeted funding to allow community organizations or other entities help residents prepare vision statements and plans, and form leadership teams that could be taught collaborative decision-making skills. Communities benefiting from these initiatives would be prepared to hit the ground running when a developer comes to town, and might even receive some sort of state certification of brownfield readiness. It is not up to developers to engage in community readiness activities. Rather, it is up to the states to take steps to ensure that communities are prepared to guide developer decisions in ways that will maximize all of the benefits associated with brownfield development.

Community development corporations and nonprofit brownfield facilitators alike could be part of the process, as could brownfield planning and community outreach centers sponsored by universities or coalitions of other regional organizations. Regardless of the mechanism, communities would work toward choosing leaders and formulating community visions and plans for their brownfields well before development decisions are made. Interested developers would have the advantage of working with legitimate participants from the outset; project development would not stall while an environmental justice community plays catch-up, scrambling to try to understand what is happening to its neighborhood and to inject itself into the process. A pre-development preparation approach would instead require developers and state regu-

\textsuperscript{222} Id. at 119 (quoting Harold J. Rafson & Robert N. Rafson, Brownfields: Redeveloping Environmentally Distressed Properties 161 (1999)).

\textsuperscript{223} See O’Reilly, supra note 178, at 60–61.

\textsuperscript{224} The need to fully inform environmental justice communities about brownfields and other environmental programs is widely accepted. See, e.g., Stephen M. Johnson, Economics v. Equity: Do Market-Based Environmental Reforms Exacerbate Environmental Injustice?, 56 Wash. & Lee L. Rev. 111, 123–24 (1999).
lators to take into account well-formulated, consensus-based community objectives at the optimum time.\textsuperscript{225}

The community readiness approach would certainly add time to a project that might otherwise require little or no public input. Nevertheless, developers would know from the beginning who they are dealing with, what the community’s vision is,\textsuperscript{226} and that the community team is committed and legitimate. Brownfield developments that have succeeded in environmental justice communities share these characteristics,\textsuperscript{227} as does the South Side Works, where developers recognized the value of working with the SSLDC.\textsuperscript{228} Further, if organized sufficiently in advance, community groups could begin to put in place community assets that are known to attract urban developers, such as new zoning districts, public transportation routes, education centers, and crime prevention programs.\textsuperscript{229} Had Homestead been aided by a readiness team in the late 1980s to help it develop a master plan for its post-steel years, different decisions may have been made at the Waterfront, or the community may have been more accepting of the project’s master plan.

Pennsylvania has recently established a program that further streamlines the brownfield redevelopment process in ways that may hold promise for environmental justice communities.\textsuperscript{230} The program is spearheaded by the Governor’s Action Team (GAT), a group of “seasoned economic development professionals” that matches growing companies with Pennsylvania brownfields.\textsuperscript{231} The Community Action Team (CAT) complements GAT by directing state resources to “communities that may be struggling with their revitalization efforts.”\textsuperscript{232} GAT and CAT are clearly driven by economic and environmental policies,\textsuperscript{233} and there is currently no direct interface between those teams and the

\textsuperscript{225} It is imperative that any readiness mechanism avoid being paternalistic in its relationship with the community. \textit{See Serrin, supra note 3, at 406–07} (describing such a failing in Homestead).

\textsuperscript{226} A community’s vision is likely to include more than economic improvement. Davies, \textit{supra} note 162, at 294–95, 322–23.

\textsuperscript{227} \textit{Id.} at 318–19.

\textsuperscript{228} Dellana Interview, \textit{supra} note 126.

\textsuperscript{229} \textit{See Robertson, supra note 111, at 1114–18}.


\textsuperscript{231} \textit{Id.} at 3.

\textsuperscript{232} \textit{Id.} at 4.

\textsuperscript{233} \textit{Id.} at 3 (noting that the state’s brownfield initiatives make it “a partner in economic and environmental development”).
state’s Office of Environmental Advocate. Nevertheless, CAT seems ideally suited to do more than provide resources to struggling communities. Its mission should include proactive involvement with those communities—some of which are certainly environmental justice communities—to help them develop the leadership and planning skills that will make them legitimate partners when development comes their way.

**Conclusion**

The lesson of these two case studies is not merely that an environmental justice community needs a strong community organization in order to maximize brownfield benefits. It is also crucial that a coherent community vision and leadership team are in place before development proposals are made. States will need to play a proactive role in identifying, educating, and funding these mechanisms to prepare environmental justice communities with limited social capital. And developers must understand that partnering with mobilized and legitimate community groups or non-profit players that represent environmental justice concerns will not be disruptive, but rather will steer them toward decisions that will benefit all concerned in an equitable manner. In this way, there will be more happy endings to tales like those told here.

---

THE UNIFORM ENVIRONMENTAL COVENANTS ACT: WHY, HOW, AND WHETHER

Kurt A. Strasser*

Abstract: With contaminated land, it sometimes makes sense to do a partial cleanup, rather than a complete one, and combine the cleanup with land use restrictions and continuing obligations to monitor the land. The Uniform Environmental Covenants Act creates a new state law property interest to make these restrictions and obligations permanent and enforceable. It addresses issues created by traditional common law doctrines that were hostile to permanent land restrictions, as well as more contemporary problems presented by tax liens, eminent domain, and adverse possession. This Article reviews the Act’s legal infrastructure for creating, enforcing, and modifying the terms of the land use restrictions and monitoring obligations. The Article argues that the Act’s legal infrastructure provides parties with the legal certainty needed to encourage future cleanups, while also protecting against environmental risks that the residual contamination could otherwise pose. These cleanups, often financed as part of the property’s redevelopment, are particularly useful because they are a way to return blighted properties to the stream of commerce. The Act has drawn some criticism, primarily for not going further with its protections, and these are reviewed at the end of the Article.

Introduction

What is an environmental covenant? Why use it? Answers to these questions form the core of this Article. An environmental covenant is a specialized bit of legal infrastructure that has been created to solve some specific legal problems presented by environmental cleanups of contaminated property. Part I of this Article will discuss these problems. Part II will detail the solution offered by the Uniform Environmental Covenant Act (UECA), and Part III will review criticisms of the UECA.

* Interim Dean and Phillip I. Blumberg Professor, University of Connecticut Law School; Reporter, Uniform Environmental Covenants Act Drafting Committee.
I. The Problem

With environmental cleanups of real property, it is sometimes desirable to stabilize some of the contamination and leave it in the ground. Yet that contamination could present some residual risk to human health or the environment if certain uses of the property are not restricted, or if the contamination is not monitored to be sure it is permanently stabilized. The Uniform Environmental Covenants Act\(^1\) provides a legal tool to create and enforce property use restrictions and monitoring, or other requirements. But why leave any contamination in the ground at all? Cleanups that do so are called risk-based cleanups; is there any good reason for not cleaning up completely to avoid this risk altogether? In many regulatory situations, both state and federal regulators have answered yes. Risk-based cleanups are one of the regularly used tools in the regulators’ kit.\(^2\)

In some situations, the contamination may simply be beyond the capacity of current cleanup technology to clean it completely. The contaminants may be too hard to remove, separating the contaminants from the background material may not be possible, dispersal may be too wide, or accurately locating all the contamination may not be possible. Further, there are some situations in which cleaning up the known contaminant completely will cause other environmental harm that is, on balance, even worse. In these kinds of cases, regulators may reasonably decide that complete cleanup will not be required if other controls can protect the public and the environment.

---


Risk-based cleanups are also used when the cleanup is technically possible but not sensible. Suppose a contaminated property’s most likely use is for a factory, and that a partial cleanup will protect against residual risk presented by that use if there are appropriate use controls and monitoring requirements. Here, a regulator might quite reasonably decide not to insist on the expense and delay of a complete cleanup when it is not required to protect the public and environment in the property’s contemplated use. Of course, such a regulatory decision is controversial because it is an overt acknowledgment that the complete cleanup, while possible, is not worth doing.\(^3\) This scenario is less than perfect environmental protection and some will simply disagree with the policy decision to do it. However, regulators might also consider two other practical factors in deciding to use a risk-based cleanup.

First, there are many contaminated properties.\(^4\) The U.S. Environmental Protection Agency (EPA) estimates there are 450,000 brownfields in the United States.\(^5\) Complete cleanups are slow as well as expensive, and given the high number of properties, it will be a long time before all have been remediated. At this point, a second practical factor comes into consideration. Not only are resources for cleanups finite, but so are the enforcement resources needed to get them done. Most cleanups are done by private parties, or at least paid for by them, under some prospect of legal enforcement action.\(^6\) Enforcement resources are also needed to determine what type of cleanup is appropriate, as well as to supervise that cleanup. Regulators have only limited resources, and getting around to all the contaminated properties will be a time-consuming process. In the meantime, these properties are likely to sit untouched, presenting some undetermined and unregulated level of environmental risks.

Further, to compound the problem, while the contaminated properties sit, they are not in productive use, providing jobs and economic support for their communities. The community impact of this loss of economic activity from the property can be severe, particularly so because many contaminated properties were formerly productive operations but their surrounding communities may now be blighted by the property’s combination of the loss of earning power and the presence

\(^3\) See Geisinger, supra note 2, at 370–71; infra Part III.
\(^5\) Id.
of contamination.\textsuperscript{7} Of course, the properties are also not providing income for their owners while sitting, but in many cases the owners may have simply decided that the property is no longer of real value to them and they may not be expecting a return, nor paying taxes on the property. Indeed, during our work in drafting the UECA, the Drafting Committee was told more than once that the cheapest thing for an owner of a contaminated property is to pave it, put a fence around it, and hire a guard service to check on it. This solution does not return it to the local economy or support the local community. A less responsible owner might simply abandon the property and leave, adding to the environmental risk and not addressing the level of blight.

Regulators today are using risk-based cleanups, typically negotiating them with property owners or other liable parties.\textsuperscript{8} When risk-based cleanups are used, two kinds of restrictions are typically required. First, it is often necessary to restrict the use of the property.\textsuperscript{9} For example, a factory might be permitted, but a day care center or a public park prohibited. Excavation below a depth of ten feet might be restricted, as might the use of well water. Second, a risk-based cleanup often requires that containment structures continue to be maintained and that the groundwater continue to be monitored.\textsuperscript{10} The difficulty is how to make both kinds of restrictions permanent, enforceable, and actually enforced in a property law system that is not generally hospitable to such long-term restrictions on real property. This is the problem that the UECA solves.

\section*{II. The Solution: The Four Central Tasks of the Uniform Environmental Covenants Act}

The Uniform Environmental Covenants Act (UECA) creates a state-law property interest that attaches use restrictions and monitoring

\textsuperscript{7} Professor Engel correctly points out that this issue may be a more complex question. \textit{See} Engel, \textit{supra} note 2, at 317–21. The current and previous industrial uses of brownfield properties may have exposed nearby residents to a higher degree of environmental risk, and those nearby residents are more likely to be members of minority and low-income groups. \textit{Id.} at 317–18. A full environmental justice evaluation must consider the environmental risks posed to the community by returning the property to the stream of commerce, as well as the economic gains to the community in doing so. \textit{See id.} at 317–21. A perfectly functioning regulatory system will always control the risks of the new operation, but the real world system has had trouble with exactly this issue in environmental justice situations. \textit{See id.}

\textsuperscript{8} \textit{See} Geisinger, \textit{supra} note 2, at 368–69.

\textsuperscript{9} \textit{Id.}

\textsuperscript{10} \textit{See id.} at 371–72.
and other requirements to the land.\textsuperscript{11} At first blush, this task appears simple; wouldn’t a common law servitude do the trick? The short answer is that it won’t do the job well enough. There are questions about the creation of this kind of servitude\textsuperscript{12} and its long term viability in the face of common law that is hostile to permanent land restrictions,\textsuperscript{13} as well as questions about how such a covenant can be modified,\textsuperscript{14} and about achieving a level of legal enforceability and real practical enforcement required to protect the public health and the environment.\textsuperscript{15} Further, with each of these areas, a great deal of certainty is needed so that commercial parties can make deals and redevelop properties, and lenders can supply financing, knowing their legal responsibilities and rights. Without this certainty, redevelopment and the cleanup it can realistically finance will be less likely to take place. Yet this certainty is difficult to achieve, and to predict, with the common law. The UECA aims to answer these questions, and to do so with enough clarity to provide the needed certainty.

\textbf{A. What Is Required to Create an Environmental Covenant?}

The core requirement for the creation of an environmental covenant is that it must state all the restrictions on the property, both the use restrictions and any monitoring and other obligations of the owner and others.\textsuperscript{16} These restrictions and requirements form the core of the covenant. Of course, this requirement would not mean much if the covenant were not discoverable by interested parties, and the UECA addresses this in two ways. First, it requires that the covenant be recorded in the land records of the state.\textsuperscript{17} This record gives legal notice of the covenant and makes it realistically available to all parties with the knowledge and skills to search the land records. In addition, an op-

\textsuperscript{13} See \textit{Unif. Envtl. Covenants Act} § 5 cmt. 3; Strasser & Breetz, supra note 12.
\textsuperscript{14} See \textit{Unif. Envtl. Covenants Act} § 5 cmt. 3; Strasser & Breetz, supra note 12.
\textsuperscript{15} See \textit{Unif. Envtl. Covenants Act} § 5 cmt. 3; Strasser & Breetz, supra note 12.
\textsuperscript{16} UECA section 4(a)(3) requires the covenant to state the “activity and use” limitations on the property. \textit{Unif. Envtl. Covenants Act} § 4(a)(3). These are defined in section 2(1) as the “restrictions or obligations created under this [Act] with respect to real property.” \textit{Id.} § 2(1).
\textsuperscript{17} \textit{Id.} § 8(a).
tional section provides for creation of a registry of environmental covenants, with a further option that the registry be electronically searchable. In the age of the Internet, such a registry is certainly feasible and desirable. It would in fact make environmental covenants more realistically accessible to parties that may not have the resources or expertise needed to deal with the land records, including environmental and citizens’ groups as well as interested individuals and local government officials. However, the registry was made optional in the UECA because some jurisdictions may not be willing to invest the resources needed to create and maintain it, and the other benefits of the UECA should still be available to them.

The second core requirement for creating a covenant is that it must be agreed to by the agency supervising the cleanup, and by the property owner. The agency’s agreement is required to ensure that the covenant will in fact protect the public health and environment. As drafted, the UECA allows either a state or a federal agency to approve a covenant if that agency is handling the underlying cleanup. However, Kentucky and Delaware have made non-uniform changes to provide that only a state agency may approve covenants, presumably making the policy decision to retain this degree of control at the state

18 Id. § 12.
19 Id. § 12(c)(7).
21 UNIF. ENVTL. COVENANTS ACT § 4(a)(5). The covenant is also required to identify the administrative record for the cleanup project (“environmental response project”) and its location. Id. § 4(a)(6). This requirement will allow parties to learn more about the underlying cleanup decision of which the covenant is a part. This section also allows the agency to waive a signature by the owner, although Delaware, Maine and South Dakota have removed or modified this provision. Id.; DEL. CODE ANN. tit. 7, § 7909(a)(5) (Supp. 2006); ME. REV. STAT. ANN. tit. 38, § 3004(1)(E) (Supp. 2006); S.D. CODIFIED LAWS § 34A-17-4 (Supp. 2006). Maine, for example, states that an environmental covenant must:

Be signed by the agency, every holder and unless waived by the agency, every owner of the fee simple of the real property subject to the covenant, except that the agency may not waive signature by an owner of the fee simple who is the current occupant of the real estate, if any.

ME. REV. STAT. ANN. tit. 38, § 3004(1)(E).
22 See UNIF. ENVTL. COVENANTS ACT § 4, cmt. 2, 3.
23 Id. § 2(2) (“Agency’ means the [. . . state regulatory agency for environmental protection] or any other state or federal agency that determines or approves the environmental response project pursuant to which the environmental covenant is created.”)
level.\textsuperscript{24} As a result, in those states, federally supervised cleanups that use environmental covenants will have to seek state level approval for the covenant.\textsuperscript{25} This restriction raises the question of whether it will serve to complicate risk-based cleanup implementation—only experience can give us an accurate answer. It is true that the restriction increases the state agency’s workload.

The third requirement for a covenant is that it identify a holder.\textsuperscript{26} The concept of a holder is borrowed from the Uniform Conservation Easements Act.\textsuperscript{27} While the idea of identifying a party to hold the covenant interest fits comfortably within traditional property law, its use here is more functional. A holder can be given supervisory responsibilities for the enforcement of the covenant, and can even be given operating responsibilities for monitoring and maintenance.\textsuperscript{28} The UECA specifies that any person agreed to by the parties may be a holder.\textsuperscript{29} As experience with brownfield cleanups grows, some analysts predict that commercial entities may emerge that wish to specialize both in performing cleanups and in the ongoing enforcement.\textsuperscript{30} In this situation, these groups would be holders under the UECA and their rights and responsibilities could be those specified in each particular covenant. However, the UECA preserves a great deal of flexibility by providing that the owner or the agency may serve as a holder—assuming other state law allows—and this provision should afford parties needed flexibility to meet the requirements of the UECA without mandating a third-party holder if they do not wish to use one.\textsuperscript{31} Of course, local citizens’ or environmental groups could serve as holders—if the parties agree to this—although these groups would want to consider carefully whether they were equipped to perform the responsibilities given them under a specific covenant.

The UECA also contains several formal requirements for a covenant, including a requirement that it state that it is an environmental

\textsuperscript{26} Unif. Envtl. Covenants Act § 4(a)(4).
\textsuperscript{28} Unif. Envtl. Covenants Act § 4 cmt. 7.
\textsuperscript{29} Id. § 3(a).
\textsuperscript{30} See Daniel A. Alper & Bruce-Sean Reshen, The GuardianTrust, in Implementing Institutional Controls, supra note 12, at 39, 42–47.
\textsuperscript{31} See Unif. Envtl. Covenants Act § 4 cmt. 5.
covenant under the UECA, and that it contain a legally sufficient description of the property. 32 Beyond these, the UECA suggests a number of specific provisions that could be included in a covenant. 33 This form of drafting was used to suggest elements that could well be important in specific instances but that, in the judgment of the drafting committee, would not necessarily be required in all covenants. 34 For example, the covenant might have specific notice provisions prior to transfer of the property or a change in its use; it might require periodic reporting on compliance; it might give a narrative description of the contamination and the cleanup remedy; or it could contain specific limits on amendment or termination beyond those specified in the UECA. In specific state variations, Iowa and Ohio have made the suggested statement of access rights mandatory, while Kentucky has dropped the suggestion. 35 

Taken together, these requirements for creating an environmental covenant are straightforward and should not present any particular problems. Their specificity should provide certainty that all parties will need. As will be discussed further in Part III, where these parts of the UECA have been criticized, it is not for what they require, but for not requiring more. After the covenant is created, the second task of the UECA is to make it valid and enforceable in the face of other existing law.

B. Making the Covenant Valid and Enforceable

An environmental covenant exists in the context of much other real property law, and related law, that could threaten its validity or permanence. Specifically, the covenant must contend with a group of traditional common law rules that were hostile to long term or permanent restrictions on real property, as well as with modern law on tax liens, eminent domain, and existing interests that predate the covenant. 36 The UECA seeks to remedy these problems so that environmental covenants can be valid and permanent enough to protect the public health and environment. 37

The common law has a number of doctrines that favor free alienability of property and disfavor long-term restrictions on land, and these

32 Id. § 4(a)(1), (2).
33 Id. § 4(b)(1)–(6), cmt. 9–12.
34 Id. § 4 cmt. 9–12.
36 Unif. Envtl. Covenants Act § 5 cmt. 3.
37 Id.
doctrines would undercut covenants. The UECA responds in two ways. First, it provides that a covenant runs with the land and is intended to be perpetual until terminated under the procedures and provisions of the UECA or by the covenant’s own terms. Second, the UECA specifies that a covenant is valid and enforceable even if it runs afoul of any of nine enumerated common law doctrines that might otherwise apply. For example, the covenant is not invalid even if: it is not appurtenant to an interest in real property; it is of a character not recognized traditionally at common law; it imposes a negative burden; or its benefit or burden does not touch and concern real property. Readers who do not find these common law rules of intrinsic interest may not recall them in precise detail, and indeed that is the point. Many of these are older doctrines and their contemporary application is often uncertain in specific jurisdictions. Further, whatever their contemporary policy merits in other circumstances, they should not invalidate environmental covenants. Overruling these doctrines in clear terms removes any potential uncertainty they could present. This is also true of adverse possession, which is otherwise of more contemporary relevance; the UECA provides that it may not invalidate a covenant.

In addition to the traditional common law doctrines that the UECA overrides, the UECA also provides that a covenant will not be limited or extinguished by a tax foreclosure sale. This reflects the policy decision that the environmental protection mission of the covenant must override the priority of a tax foreclosure and sale if the two come into conflict. This provision is needed because tax liens and foreclosures are often present with contaminated properties. Contaminated properties are often ones that are underperforming economically—indeed, they may be of little or no value as current income producers. Many properties in this situation will be delinquent in their taxes. For the covenant to provide real protection—as well as real assurance to commercial parties performing the cleanup and re-using the property—it must not be vulnerable to a tax sale. Without this protection, 

38 Id.
39 Id. §§ 5(a), 9(a).
40 Id. § 5(b).
41 Id. § 9(c).
42 Unif. Envtl. Covenants Act § 9(c).
43 Id. § 9 cmt. 4.
45 Of course, these properties may also command a poor price in a tax foreclosure sale.
the commercial realities of contaminated properties would make many covenants uncertain and unable to protect against environmental risk.

Beyond common law doctrines and tax liens, the UECA also deals with the question of existing mortgages and other prior interests in the real property.46 Its basic provision is that the covenant does not override these interests, so the holders of mortgages and other interests must agree to subordinate them if they are to be subject to the covenant.47 This strategy is consistent with the traditional property law rule that interests which are first in time are also first in right.48 While this factor makes the UECA’s provisions compatible with widely accepted property law policies and doctrines, it does raise a question of whether the covenant and its obligations will be enforceable as long as needed to protect against environmental risk. The UECA’s response to this question is to encourage subordination of the prior interests, including mortgages, to the covenant.49

Subordination of interests in real estate to rearrange the priorities is common in many property transactions. In the specific situation involving contaminated property, the realities of contamination’s effect on property values should often motivate a mortgage holder to agree to the subordination. Contaminated property that has no cleanup prospect enjoys greatly reduced market value, or even little or no value, and the mortgage on that property is practically devalued as well. If a risk-based cleanup and subsequent re-use of the property can be accomplished, the property value will likely increase, thereby increasing the real value of the mortgage as well. In this situation, one can well imagine that the mortgage holder would agree to subordinate the mortgage to the environmental covenant in order to get the cleanup done, the property re-used, and the value increased. Further, the UECA gives the agency power to disapprove any proposed covenant, and this disapproval could be based on a failure to secure subordination of existing mortgages or other prior interests.50 In this way the agency can insure that the covenant is not vulnerable to an existing mortgage.51 Yet one critical point must be emphasized here. The agency can only insist on

46 See Unif. Env'tl. Covenants Act § 3(d).
47 Id. The UECA does specify that an agreement to subordinate does not create any other obligation on the subordinating party. Id. §§ 3(d)(4). This requirement should provide reassurance to subordinating parties that they are not thereby otherwise committing themselves to perform the covenant.
49 See Unif. Env'tl. Covenants Act § 3(d).
50 Id. §§ 3 cmt., 4(a)(5).
51 See id.
subordination of interests that it knows about, and it will only know about interests if it bothers to ask. As a practical matter, the agency can require the owner to check for prior interests and secure subordinations. But it must remember to do so.

The UECA also has special provisions for two other legal risks to the covenant: eminent domain and judicial modification of the covenant because of changed circumstances. Under the UECA, an environmental covenant can be modified or terminated in an eminent domain proceeding only if two special requirements are met. First, the agency must be a party to the proceedings. Second, the court in the eminent domain proceeding must hold a hearing and determine that the termination or modification “will not adversely affect human health or the environment.” Agency approval is required before a court can terminate or modify a covenant under the doctrine of changed circumstances, effectively giving it the power to stop such a change in the covenant. The policy behind each of these provisions is to limit a court’s power to change a covenant without hearing from the agency because a generalist common law court may not properly appreciate the covenant’s importance in protecting public health and the environment without the agency’s guidance. Of course, the protections require a different level of agency involvement. Agency approval is required for application of the doctrine of changed circumstances, while only agency participation in the proceeding is required in eminent domain.

---

52 See id. § 3 cmt. The comment to section 3 states:

Thus, in preparing an environmental covenant, it might be advisable for the agency to identify all prior interests, determine which interests may interfere with the covenant protecting human health and the environment, and then take steps to avoid the possibility of such interference. The agency may do this by, for example, having the parties obtain appropriate subordination of prior interests, as a condition to the agency’s approval of the environmental covenant.

Id.

53 Id.

54 Id. § 9(a)(5).


56 Id.

57 Id. § 9(a)(5)(C). The UECA also requires that notice be given to all parties who would have to consent to a voluntary modification or termination, as well as all parties who have an interest in the property. Id. §§ 9(a)(5)(B), 10(a)–(b).

58 Id. § 9(b). In addition, the same parties are required to be given notice of the proceeding. Id.

59 Id. § 9 cmt. 2.
domain. This difference was based on the drafting committee’s conclusion that eminent domain is a process that includes the participation of other public actors, specifically the party seeking to take the property, each of which has its own public mission. There may be situations in which those actors and missions could present a compelling case for changing the covenant even if the agency was not satisfied that its environmental risk protection mission was accomplished. Some of the approving states have enacted modifications to these provisions.

C. Modifying or Terminating the Covenant

The specific use restrictions and monitoring obligations in any particular covenant are site and use specific; they are the restrictions determined to be necessary to protect the public and the environment from the risks posed by this contamination at this site. Over time, these risks can change, either because the use of the property changes, the nature of the contamination changes, or the science on which our understanding of the risk is based changes. For example, it may be that the covenant’s terms were sufficient to protect against the risks posed by the particular residual contaminant if the property is used for industrial manufacturing. If that use changes to residential condominiums, then the ways in which people using the property may be exposed to the contamination also change, and it will not be surprising if the risk posed by the contamination does, as well. In this situation, it is quite likely that the property will require more cleanup before the use change can be allowed, and the agency will insist on this cleanup as a condition of agreeing to the change in the covenant. For this reason, the UECA specifies requirements for amending or terminating a covenant.

However, as a preliminary point, it should be noted that amending the covenant is not the only way to change the real regulatory require-

60 Id. § 9(a) (5)(A), (b).
62 See Del. Code Ann. tit. 7 § 7914(a), (c) (Supp. 2006); Iowa Code § 455I.9(2) (Supp. 2006). Delaware and Iowa give the agency, rather than the court, the power to make the initial decision on application of the doctrine of changed circumstances, although Iowa specifies a right to judicial review. Del. Code Ann. tit. 7 § 7914(a), (c); Iowa Code § 455I.9(2).
64 An amendment might also be needed if the actual contamination is more or less significant than originally thought, or if scientific advancements show that the risks posed by a predicted exposure level are greater or less than originally thought.
ments on the property and those liable for it. There is, of course, a quite substantial body of both state and federal law regulating cleanup of contaminated property, and that law has requirements that extend beyond the covenant. Specifically, when the covenant is part of a regulatory determination of the extent and scope of cleanup required, that regulatory law continues to apply to the property outside the covenant. That law typically provides that the regulatory agency approving the cleanup has the power to re-open the remedy determined if protection of the public health of the environment so requires. The UECA does not strip that power from state environmental regulatory agencies and, of course, could not do so with respect to federal agencies. While such regulatory re-openings of a concluded cleanup determination are in fact rare, they are possible where protection from environmental risk requires them.

Under the UECA, the covenant can be amended or terminated with the consent of specified parties and it will be helpful to review the motives and interests of those parties in the process or working out a change. First, agreement of the regulatory agency is required in order to insure that the changed covenant, or the termination, continues to provide protection from the environmental risk posed by the contaminants. In addition, the change must be agreed to by the current owner of the fee simple interest in the property. This is not surprising for, as discussed above, this party is bound by the terms of the covenant. Where a change of use is contemplated, this party is presumably either the one making the change, or selling to the party who wishes to

---

66 Id. § 10 cmt. 7.
68 See UNIF. ENVTL. COVENANTS ACT § 11(b).
69 Daniel P. Selmi and Kenneth A. Manaster discuss the various mechanisms states use to assure parties that re-openers will not be used often. 1 DANIEL P. SELMI & KENNETH A. MANASTER, STATE ENVIRONMENTAL LAW § 9:57 (2006); see MATTHEW BENDER, ENVIRONMENTAL LAW PRACTICE GUIDE: STATE AND FEDERAL LAW § 32.10[2] (2006).
70 See UNIF. ENVTL. COVENANTS ACT § 10(a).
71 See id. § 10(a) (1). Comment 7 of section 10 notes that the agency may wish to require notice to a much larger group of potentially interested parties, and also provides some specific matters the notice might be required to contain, as a condition of its approval of the settlement. Id. § 10 cmt. 7.
72 Id. § 10(a) (2).
73 See id. § 4. The UECA does give the agency the power to waive this agreement, which might be necessary if the property has been abandoned and the owner of the fee can no longer be located. See id. § 10(a) (2). Delaware and South Dakota have removed this waiver power. DEL. CODE ANN. tit. 7, § 7915(a)(2) (Supp. 2006); S.D. CODIFIED LAWS § 34A-17-10(a) (2) (Supp. 2006).
make the change. In addition, the UECA requires that the change be agreed to by the holder.\(^{74}\)

The third party, or parties, who must consent are all those who originally signed the covenant, unless they either waived this right in the original covenant, or a court determines they can no longer be located or identified in “the exercise of reasonable diligence.”\(^{75}\) Two kinds of parties are the most likely to be present in this group. First are local citizens’ groups, environmental groups, or local governments which were signatories to the original agreement because they had a strong interest in the cleanup and the agency insisted that they be party to the covenant.\(^{76}\) If their interest was so recognized in the covenant, then the interest is presumably still strong and they should be part of the decision to change the covenant.

The second group are non-owner parties who were part of the original covenant because they were liable for the cleanup under background federal or state law.\(^{77}\) The cleanup liability of these parties for the property typically continues under Superfund and analogous state law even after the cleanup has been determined and the covenant implemented.\(^{78}\) In addition, they are potentially at risk for common law liability if personal or property injury results from exposure to the contamination. While one may question whether this continuing liability exposure after a regulated cleanup is good policy, there appears to be limited political movement to change existing law. Because these parties have a continuing risk of liability, they will only agree to settlements, including those with covenants, in which they feel they have enough control over future use of the property to protect against their liability exposure. These parties will insist on having a say in amendments and terminations of the covenant, or they will not agree to the covenant—and the rest of the cleanup settlement—in the first place. By requiring their consent to the amendment or termination, the UECA

\(^{74}\) Unif. Envtl. Covenants Act § 10(a)(4).

\(^{75}\) Id. § 10(a)(3). Iowa has given the waiver power to the agency, rather than a court, and Utah gives the power to either the court or the agency. Iowa Code § 4551.10(1)(C) (Supp. 2006); Utah Code Ann. § 57-25-110(1)(c) (Supp. 2006).

\(^{76}\) Unif. Envtl. Covenants Act § 10(a)(4).

\(^{77}\) This group includes Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) parties.

\(^{78}\) Federal regulators and some state regulators have the power to limit the end of such liability, but the realities of the regulatory process are that this rarely happens. See generally Bender, supra note 69; Selmi & Manaster, supra note 69. These could be, for example, parties whose liability is based on use of the property during the period when some of the contamination occurred.
gives them a means to protect this interest and thus seeks to encourage them to agree to the cleanup and the covenant in the first place.

What of the owners of other interests in the property, such as a mortgage holder or tenant? The UECA does not require that these parties agree to the amendment, but it does specify that their interest is not affected by the amendment unless they agree to the change, or waive the right to agree in the original covenant. Why might a mortgage holder, for example, agree to this? The optimistic scenario is that the property is being changed to a more highly valued use, so the mortgage interest is more valuable or at least more secure. The factory is converted to residential condos, for example, because condos in this location are something that the relevant property users value more highly. In this happy situation, the mortgage is even more secure. But suppose we have a less optimistic scenario, in which the use restrictions are being tightened in response to a greater risk from the contamination than was originally thought. Here the mortgage holder has no obvious motivation to agree to the change because it is likely restricting the property, or requiring further cleanup, that is making the property less valuable in fact. However, this is not changing the nature of the mortgage holder’s interest and thus should not be seen as “affecting” it. Finally, many of these interests can be ones that are not much impacted by the covenant at all, such as utility rights of way, for example.

The UECA seeks to provide a reasonable and workable method for changing covenants, but one which also protects the important interests of all parties. Finding the best balance between these objectives is difficult. The UECA’s requirements do a good job of protecting those interests, and thus encouraging formation of the covenants in the first place. However, providing that protection comes at some cost, for the UECA’s requirements for changing or terminating a covenant are demanding and such changes will not be easily made.

D. Enforcing the Covenant

The UECA provides for enforcement of a covenant by a civil action for injunctive or other equitable relief and authorizes a number of parties to bring an enforcement action. It authorizes an enforcement ac-

79 Unif. Envtl. Covenants Act § 10(b).
80 See id.
81 Id. § 11(a).
tion by the agency that approved the covenant and also by the state regulatory agency if it was not the approving agency.  

The UECA gives all parties to the covenant the right to bring an enforcement action, partially overlapping with this provision. This right will include the owner of the property at the time the covenant was created, as well as the holder if this is a different party, but it will also reach others. For instance, a party who was responsible for the cleanup costs, even if it was not the owner, would likely have been a party to the covenant. This could be, for example, an industrial company that leased and operated the property at the time the contamination was disposed of or one which used the property solely for waste disposal. As discussed above, such a potentially responsible party (PRP) has a strong interest in ensuring that the covenant is enforced because the regulatory liability for the cleanup often continues after the cleanup, and it may have potential toxic tort liability as well. Enforcement power for this party will be crucial to getting it to enter the covenant in the first place. In addition, citizens’ groups or environmental groups may have been parties to the covenant, and if they were, they will have enforcement power to protect their interest in seeing that the covenant is obeyed and the community thus protected. These groups are well located to learn of violations and likely to be motivated to address them. The UECA provides that the covenant itself can grant enforcement authority to any specific party, and these groups might also be covered here even if they are not parties to the covenant. The UECA extends enforcement authority more broadly to include the local municipal government where the property is located. The local government’s interest in enforcing the covenant to protect its citizens is obvious, and it is also well positioned to learn of violations and be motivated to protect them.

Finally, the UECA reaches out to authorize covenant enforcement by people whose interest is in the property rather than in the covenant

82 Id. § 11(a) (2). The District of Columbia gives the Attorney General, not the agency, the power to bring a civil action. D.C. CODE ANN. § 8-671.10(a) (2) (2006).
83 UNIF. ENVTL. COVENANTS ACT § 11(a) (1).
84 See supra text accompanying notes 44–47.
85 See UNIF. ENVTL. COVENANTS ACT § 11(a) (1).
86 Id. § 11(a) (3). The UECA does specify that simply being given enforcement power in the covenant will not give rise to liability for the cleanup. Id. § 11(c). Cleanup liability under both state and federal law has proven to be so expansive that parties are understandably nervous to avoid any activity that might generate liability.
87 Id. § 11(a) (5).
as such.\textsuperscript{88} Thus, the covenant can be enforced by anyone whose interest in the property or whose collateral or liability “may be affected by the alleged violation of the covenant.”\textsuperscript{89} This is potentially a broad group, and also one that may not be easily defined short of litigation. Authorizing enforcement power will enable parties with these interests in the property or related legal involvement to be able to protect their interests through enforcing the covenant, and is comprehensible policy at this level. It does introduce some potential uncertainty into some enforcement actions. However, the uncertainty, while real, should prove manageable because it will only be at the margin in determining the group of parties who can sue.

The specific provisions of the UECA do not determine all enforcement actions. As discussed above, covenants are entered into as part of a larger resolution of an environmental cleanup that is, typically, done under broader regulatory mandates and authorizations.\textsuperscript{90} Those regulatory regimes include their own enforcement provisions and those provisions will also apply to the covenant. Thus, for example, in a covenant approved by EPA, the Agency would have the authority to enforce the covenant under federal regulatory law rather than under the UECA.\textsuperscript{91} This would also be true for state regulators acting under a state regulatory system.\textsuperscript{92} However, the UECA does not provide for citizen suits generally, and, as will be discussed below, has received substantial criticism for this.\textsuperscript{93}

III. CRITICISM OF THE UNIFORM ENVIRONMENTAL COVENANTS ACT

Several substantial criticisms have been made of specific portions of the Uniform Environmental Covenants Act (UECA).\textsuperscript{94} These criti-
cisms generally accept the basic proposition that legal infrastructure is needed for environmental covenants, and appear to agree with much of the infrastructure the UECA offers. The criticisms fall into three groups. First, the UECA is criticized for not requiring more in creating environmental covenants, specifically for not providing sufficient public participation in their creation and enforcement. The second criticism is that the UECA interferes with local zoning in inappropriate ways. Third is the claim that the UECA’s reliance on a state law property interest, rather than a state law police power, as the basis for the covenant’s restrictions leads to a number of bad policy choices.

A. Creating and Enforcing the Covenant

The first group of criticisms focuses on the creation of environmental covenants, and to a lesser extent on the lack of citizen suits for enforcement. The UECA does not give any criteria for when an environmental covenant should be used, nor does it have an explicit regulatory “trigger” requiring one in specified circumstances. The claim here is that without such standards or such a trigger, environmental covenants may be used when they shouldn’t, or not used when they should. A related criticism is that the UECA does not mandate a specific process of public involvement in the decision to use a covenant, or

---

95 See Kibel, supra note 94, at 6 (“When judged by the limited parameters and goals adopted as part of the UECA drafting process, the NCCUSL was by and large successful. The UECA includes many provisions that do in fact help reconcile the use of environmental covenants . . . .”).

96 See Kibel, supra note 94, at 7; Miller, supra note 94.

97 See Kibel, supra note 94, at 4–5; Miller, supra note 94.

98 See Kibel, supra note 94 at 6–8 (criticizing the UECA’s drafting process). The basic claim is that, because the U.S. Department of Defense supplied part of the funding for the UECA’s preparation, the UECA is skewed in its emphasis and results. Id. The claim is addressed by Professors Strasser and Breetz and will not be further considered here. See Kurt A. Strasser & William Breetz, Why the Uniform Environmental Covenants Act Makes Sense: A Reply to Paul Kibel, 57 PLANNING & ENVTL. L. 7, 9 (2006).

99 See Kibel, supra note 94, at 4; Miller, supra note 94.

100 See Kibel, supra note 94, at 4; Miller, supra note 94.
the decisions about specific provisions to include.\textsuperscript{101} Such public involvement should be part of the process of establishing an environmental covenant and, it is claimed, should be mandated in the UECA.

While this description of the UECA is accurate, the criticism misunderstands the UECA’s role in a larger legal/regulatory tableau. These criticisms are unfortunate because they ignore the regulatory context in which environmental covenants are used and risk-based remedies are determined. Environmental covenants are used to implement the land use restrictions and ongoing maintenance requirements of risk-based cleanups.\textsuperscript{102} As such, they are implemented only at the end of the decision-making process which determines all aspects of the remedy. Good decisions are essential in that process if the public is to be protected from environmental risks that the contamination offers. But the decision to use a risk-based cleanup together with an environmental covenant—rather than imposing a cleanup to background, residential or unrestricted use—is part of a larger determination of the remedy.\textsuperscript{103} It does not make sense to require standards or processes only for use of environmental covenants. Any effective standards or processes must apply throughout the entire remedy determining procedure. The remedy specification process already has both standards and processes.

There is a large body of federal and state law that articulates the standards for environmental cleanups, as well as the notice and consultation requirements in the process.\textsuperscript{104} Federal cleanup standards are extensive and detailed.\textsuperscript{105} Similarly, federal procedures require extensive notice and opportunity to comment in the remedy selection process.\textsuperscript{106} Many states have similar laws. For example, in California, there are extensive environmental statutes and regulations governing both the substantive cleanup decision, as well as the notice and comment process for making it.\textsuperscript{107} While California’s are perhaps more detailed

\begin{flushleft}
\textsuperscript{101} Kibel, \textit{supra} note 94, at 7; Ruiz-Esquide Reply, \textit{supra} note 94, at 2–3. The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) makes the related criticism that private cleanups not done under regulatory statutes will not have public involvement unless the agency approving them requires otherwise. \textit{See} ASTSWMO, \textit{supra} note 94. Of course, private cleanups that do not gain regulatory approval will not give rise to environmental covenants that enjoy the provisions of the UECA, as agency approval is a condition of the UECA’s coverage. \textit{See Unif. Env'tl. Covenants Act} § 4(a)(5) (2003).

\textsuperscript{102} \textit{See Unif. Env'tl. Covenants Act} § 2.

\textsuperscript{103} \textit{See id.} at Prefatory Note.

\textsuperscript{104} \textit{See id.}


\textsuperscript{106} \textit{See id.} § 9617.

\end{flushleft}
than many, such provisions are typical of state cleanup laws.\textsuperscript{108} The leading multi-state study concludes:

Forty-six (46) states provide public notice at state cleanup sites—29 based on statute or regulation, and 17 by policy or on an ad hoc basis . . . . Forty-five (45) states receive public comment at state cleanup sites—31 based on statute or regulation, and 14 by policy or on an ad hoc basis . . . . Forty-three (43) states hold hearings or meetings at state cleanup sites—26 based on statute or regulation, and 17 based on policy or on an ad hoc basis.\textsuperscript{109}

Specific standards for covenants and specific procedural requirements for their adoption would be seriously incomplete if they did not address other aspects of the remedy. There are standards for remedies, both procedural and substantive. If these standards are inadequate, then they should be revised and improved for the whole remedy process, not just for this piece of it. To this point, none of the critics have argued that the existing requirements are inadequate or even considered these requirements.

Commentators criticized the UECA for not providing greater public involvement in the form of citizen suits.\textsuperscript{110} An earlier draft of the UECA did provide such a remedy.\textsuperscript{111} The argument for them here is substantial. Local citizens’ groups, including environmental groups, are quite concerned that use restrictions and other requirements of an environmental covenant be enforced, and these groups are likely to be well positioned to observe activity on the property and respond with an enforcement action. This fact was much of the reason that the UECA Drafting Committee originally considered them. Citizen suits are a very common feature of federal environmental law.\textsuperscript{112} However, their use by states is much more mixed; fifteen states have some form of citizen


\textsuperscript{110} See Ruiz-Esquide Reply, supra note 94, at 4–6.

\textsuperscript{111} Id. at 4.

\textsuperscript{112} See 2 Daniel P. Selmi & Kenneth A. Manaster, State Environmental Law § 16:52 (2006); Ruiz-Esquide Reply, supra note 94, at 5.
suits, although the details are widely varied. In the end, the Drafting Committee was more persuaded by this lack of uniformity on the state level. With state practice here so non-uniform, this UECA did not appear to be the proper vehicle to address the question of citizen suits under state law. This is a difficult policy decision and there is room for reasonable people to disagree. Some states have authorized citizen suits for environmental law broadly—in these states there will also be citizen suits to enforce environmental covenants. The Drafting Committee ultimately determined that this matter should be resolved on a state-by-state basis with reference to broader state policy than that for environmental covenants.

B. Interference with Local Zoning

While the UECA is clear that it does not authorize a use of real property that is otherwise prohibited by zoning, an environmental covenant could impose restrictions that prohibit a use allowed by zoning. The question is whether this is an improper interference with local zoning. The use restrictions validated by the UECA are entirely consistent with other kinds of use restrictions often included in privately recorded covenants that have nothing to do with contamination, and these restrictions often have the identical effect of denying future owners the right to develop the property for uses permitted by zoning but inconsistent with the agreement of that buyer and seller.

The interrelationship of zoning ordinances and restrictive covenants is dealt with extensively in the legal literature and poses no special legal challenge. Consider, for example, this conclusion from Anderson’s American Law of Zoning:

The existence of restrictive covenants does not reduce the power of local legislative bodies to impose zoning regulations

---


114 See Selmi & Manaster, supra note 69, at § 9.32–.37.

115 See Draft UECA, supra note 113, § 10.


117 Kibel, supra note 94, at 4–5, 7 (arguing that the use of environmental covenants to impose restrictions that prohibit a use allowed by zoning is an improper interference with local zoning).

on lands subject to such covenants, nor does the adoption of such ordinance destroy the effectiveness of such covenants.\textsuperscript{119} The general law of zoning is that the more restrictive provision governing the parcel applies.

If regulators and the owners agree on a risk-based cleanup remedy, land use restrictions will presumably be needed to protect the public and the environment. The uses to be prohibited are presumably ones that must be restricted for the health of the community or protection of the environment, and the fact that local zoning might otherwise authorize a “higher and better” use that presents a greater health risk does not make it wise public policy.\textsuperscript{120} In addition, such a specific, covenanted restriction is not generally considered to be inconsistent with general zoning restrictions.\textsuperscript{121}

C. Property Law or Police Power?

The UECA implements a basic policy choice to use state property law to create durable and enforceable restrictions, and this choice leads to a number of specific provisions and related policy choices that have been critically noted.\textsuperscript{122} The alternative approach would base environmental covenant restrictions and requirements on state police power, rather than on property law. Under such an approach, its supporters claim, state regulators would have more control over the covenants and

\textsuperscript{119} I Patricia E. Stalkin, Anderson’s American Law of Zoning § 3:4, at 88 (4th ed. 1995). Another treatise concurs:

Property may be subject to private restrictions and zoning controls that differ in the uses they allow. For example, a prior covenant may restrict property to a residential use while a subsequent zoning ordinance allows a business use. In that event, courts universally hold that the ordinance does not abrogate the restrictive covenant. A would-be violator of a covenant cannot seek refuge behind the permission of zoning authorities.

\textsuperscript{120} See Strasser & Breetz, supra note 98, at 7–9 (providing further discussion of this issue).

\textsuperscript{121} Id. at 8–9.

\textsuperscript{122} See ASTSWMO, supra note 94, at 1–4; Miller, supra note 94. Mr. Miller is the Assistant Attorney General for Environmental Matters in Colorado and was a primary drafter of the Colorado statute which bases its environmental covenants on the police power. He served ably and effectively as an advisor to UECA. ASTSWMO is a primary national organization of state environmental regulatory officials.
this would lead to important differences in formation, modification, and enforcement of the covenants.123

Using a police power approach is consistent with requiring the approval of state regulators to create a covenant, regardless of whether the state regulator was in charge of the underlying cleanup operation.124 This use will certainly give state regulators more control over all covenants, as federal regulators will have to obtain state consent before creating a covenant on federally supervised projects. While the rationale is not fully explained, supporters of this approach note that federal regulators may resist state property law interests.125 To the extent that state and federal regulators disagree on the appropriate level of required cleanup and the necessary restrictions to protect against the risks posed by residual contamination, state views on these questions would prevail in the covenant. However, as the covenant is part of a larger remedy determination, this change alone will not insure that state views will be respected in the rest of a determination where a federal agency is supervising a cleanup under federal law.126 Presumably, this requirement will necessitate the use of state supervisory resources on federal cleanups, potentially slowing down approvals or redirecting those resources from other state efforts. Beyond this necessity, a final evaluation of the merits of this requirement depends on one’s view of the merits of the respective opinions of state and federal regulators when they differ.

When a covenant is adopted as an exercise of state police power, it is argued, modification with only the approval of the state agency is justified and appropriate.127 Such a modification is easier to accomplish than one under the UECA because the consent of other parties is not required.128 The difference comes in a situation in which the agency wishes to make a modification when some or all of the other parties do not. Under the UECA, the agency’s consent is required for a modification, so there is no question of approving modifications the agency opposes.129 Yet requiring the consent of the parties in order to modify a

---

123 See ASTSWMO, supra note 94, at 2–3; Miller, supra note 94.
124 This requirement has been added by two jurisdictions which have adopted the UECA. See supra notes 24–25 and accompanying text.
125 See ASTSWMO, supra note 94, at 2–3; Miller, supra note 94.
126 State views have some status in federal cleanups, but this extent varies with different regulatory regimes and situations.
127 See ASTSWMO, supra note 94, at 2–4; Miller, supra note 94.
129 See id. § 10(a)(1). However, under the UECA the approving agency might be a federal agency if it supervised the remedy, rather than the state agency. Id. § 2(2). This fact is
covenant, the argument runs, gives those parties an effective “veto” over modifications which they might exercise for reasons unrelated to the merits of the modification. This effect is described as creating in the parties a “property right in pollution,” although the nature and extent of the property right are not explored. 130 As discussed above, the covenant exists as part of a larger remedy determination and there are procedures for changing that determination outside the covenant. 131

This is a genuine disagreement with the policy of the UECA. The UECA determines to live with a protective and potentially complicated modification process to encourage parties to enter into covenants. 132 Parties will be hesitant to enter covenants if they do not feel certain that their interests will be taken into account in subsequent modifications. The UECA’s concern is that fewer covenants will be used, and thus their environmental and other benefits will not be achieved. The response of these critics is, presumably, that party consent will not be necessary to create covenants, so there will be no discouraging effect. One concern is with the real world effectiveness of police power-based covenants requiring land use and other restrictions when the owner of the property and other interested parties have not agreed to them. A state can mandate the existence of such restrictions, but without participation by the interested parties, there is a real prospect that it will not be effectively implemented.

Finally, proponents of basing covenants on state police power favor allowing administrative enforcement of covenants in addition to judicial enforcement. 133 The argument is that administrative enforcement is cheaper and more efficient, thus avoiding a drain on agency resources. 134 Of course, administrative enforcement could be authorized for a covenant created as a state law property interest although the UECA does not do so. However, it would presumably have to allow all parties—rather than just the agency—to initiate enforcement actions and participate in them. This broad allowance could lead to a full blow multi-party proceeding that would look much like conventional litigation and one which is not obviously cheaper or easier than conven-

---

130 See ASTSWMO, supra note 94, at 3.
131 See discussion supra Part II.C.
133 See ASTSWMO, supra note 94, at 2; Miller, supra note 94.
134 This concern about a drain on agency resources is not discussed in the provision to require state agency approval of all covenants.
tional litigation. The key question appears to be whether parties other than the agency can initiate enforcement or participate in it.\textsuperscript{135} If the answer is no, then a substantial justification for restricting other obviously interested parties is necessary. If the answer is yes, then the efficiencies are far from certain. On this point, the critics’ arguments require further development.

There are two further concerns with covenants based on police power. First, some provision must be made for recording them in the land records or otherwise integrating them into the property law notification system. Otherwise, they run a great risk of being forgotten over time and overlooked in future land use decisions, ultimately exposing the public and the environment to risk from the residual contamination. While this is conceptually possible, and such integration is accomplished with other kinds of land use restrictions, it is a question that must be addressed. The second concern is more fundamental. What treatment will such regulatory covenants give to existing interests in the real property, such as existing mortgages or easements? To simply override them would present a substantial takings claim. To ignore them would run a serious risk of making the covenant ineffective because those interests could override its restrictions. This problem must be dealt with, and with certainty, to have an effective covenant system.\textsuperscript{136}

\textbf{Conclusion}

The Uniform Environmental Covenants Act (UECA) offers the legal infrastructure needed to implement risk-based cleanups of property in which some contamination is left in the ground and the risks are managed through land use and other arrangements. On examination, one sees that a substantial amount of infrastructure is needed to take care of the problems of creating the covenant, making it durable, and providing for modification and enforcement. Most of the criticism of the UECA is for not doing more, rather than for what it does, with the exception of the fundamental objection of critics who prefer covenants based on state police power rather than state property law. On balance the UECA offers a thorough and plausible solution to the problems it addresses.


\textsuperscript{136} The covenant systems based on police power have not addressed this question. \textit{See}, \textit{e.g.}, \textit{Colo. Rev. Stat.} § 25-15-317.
The UECA is important because it provides a mechanism to protect the public and the environment from a continuing risk. What then are the continuing concerns with whether the UECA will in fact do its job? At least two are evident. First, will the UECA work out as planned, over the long term? Covenants impose restrictions that may be needed for a long time, and institutional memory and the existing enforcement mechanisms may not be adequate to insure implementation of the restrictions over the long term. The UECA has mechanisms, but they are only as good as the memories and energies of the humans who must implement them. Twenty-five, fifty, or one hundred years or longer is a long time for fallible humans and imperfect institutions to remember that this land use is restricted for an important reason. Recording of the covenant in the land records will help focus attention, but some concerns remain. Second, will we have the technical and scientific knowledge to accurately determine the level of risk posed by residual contamination, both when the covenant is formed and over time? As a society, we have been serious about the business of cleaning up contaminated property for about twenty-five years, and have learned a great deal about what is needed and how to do it. We think we know enough, but we will surely continue to learn more; therefore, we must remember to revise and incorporate new knowledge.
BROWNFIELD REDEVELOPMENT IN THE EUROPEAN UNION

BERNARD VANHEUSDEN*

Abstract: Brownfields not only occur in the United States, but in every industrialized country and region. The European Union is currently confronting the challenge of regulating these sites. This Article offers a comparative survey of different legal approaches within both the European Union and the United States toward dealing with brownfields. As a case study, it outlines important developments in the Flemish region of Belgium. It is clear that more and more Member States are searching for different measures to deal with soil remediation in general, and brownfields in particular. However, the shortage of knowledge and information regarding brownfield development creates myriad difficulties with the start-up and realization of potential brownfield projects. Additionally, and with regard to funding schemes, no consideration is made of the sustainability of the methods used to redevelop these sites.

INTRODUCTION

Brownfields—a term coined in the United States—has become a major soil-related problem the world over. The U.S. Environmental Protection Agency (EPA) started the Brownfields Economic Redevelopment Initiative (Brownfields Initiative) in 1993. Since its inception, EPA’s Brownfields Initiative has blossomed into a major national program, changing the way that contaminated property is perceived, addressed, and managed in the United States. The Small Business Liability Relief and Brownfields Revitalization Act, which includes numerous

* Research Assistant, Hasselt University (Belgium); Ph.D., Institute for Environmental and Energy Law, Catholic University of Leuven (Belgium). The author wishes to thank the editors of the Boston College Environmental Affairs Law Review—in particular Christina McDonough, Edward M. Thomas and Robert Frederickson—for making the November 2006 Smart Brownfield Redevelopment for the 21st Century Symposium and this Article possible. This Article includes limited research from Bernard Vanheusden, Towards a Legal Framework in the EU for Brownfield Redevelopment, EUR. ENVTL. L. REV. 178-1–86 (2003).

1 Small Business Liability Relief and Brownfields Revitalization Act of 2002, Pub. L. No. 107-118, 115 Stat. 2356 (codified as amended in scattered sections of 42 U.S.C.). This Act was signed by President Bush on January 11, 2002. See id. The full title is “An Act to provide certain relief for small businesses from liability under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, and to amend such Act to promote...
amendments to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), has transformed this policy into law. A brownfield site is defined as “real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.”

Brownfields not only occur in the United States, but in every industrialized country and region. The European Union (E.U.) is also dealing with the proper way to regulate these sites. At present, governments at both the E.U. and national levels are attempting to deal with the vast amount of brownfield sites created by a legacy of industrialization. Over the past few years, E.U. governments have viewed the evolution of brownfield policies in the United States as potential guides to their own actions.

This Article offers a comparative survey of different legal approaches within both the European Union and the United States toward dealing with brownfields. Part I discusses the current status of brownfields in the European Union, and points to relevant European legislation and other actions taken by the European Commission, the executive arm of the European Union. Part II describes the characteristics of brownfield policies in the E.U.’s individual Member States. It then outlines important developments in the Flemish region of Belgium—also known as Flanders—with regard to soil remediation and brownfield redevelopment. In Belgium, most of the environmental competencies—and certainly most of the laws relating to brownfield
redevelopment—are regional. The actual brownfield situation is similar in most European countries, making the Flemish experience a useful case study.

I. E.U.-WIDE BROWNFIELD REMEDIATION

A. The Current Status of Brownfields in the European Union

On January 1, 2007, Romania and Bulgaria joined the European Union. The Union now embraces twenty-seven countries and over 500 million people. The relevant question is how far-reaching the brownfield problem is in these twenty-seven Member States (E.U.-27). The answer, in turn, depends on the definition of “brownfield.” As Member States do not consistently use the term brownfield, no E.U.-wide inventory exists for the sites.

However, many Member States contain large areas of polluted soil. The European Union is faced with both very old and recent soil contamination. Some of the old soil contamination dates back to the accelerated industrial development in the beginning of the nineteenth century. With its more than two hundred years of industrialization, Europe faces a soil contamination problem resulting from the use and presence of dangerous substances in many production processes.

Furthermore, European pollution sites take many forms. The sites range from former industrial areas and current industrial sites, to dumps and wrecked cars heaps, and even to river basins. In addition, many houses—especially in the old city centers—are built in former industrial zones or in areas where polluted soil has been used for construction work. Smaller cases of soil pollution occur at petrol stations or have been caused by leaking domestic oil tanks or illegal dumping.

Although no E.U.-wide inventory of contaminated sites exists, the number of potentially contaminated sites in the E.U.-27 is estimated at

---

7 Id.
9 René Seerden & Madeleine van Rossum, Legal Aspects of Soil Pollution and Decontamination in the Netherlands, in LEGAL ASPECTS OF SOIL POLLUTION AND DECONTAMINATION IN THE EU MEMBER STATES AND THE UNITED STATES 289, 289 (René Seerden & Kurt Deketelaere eds., 2000).
approximately 3.5 million, with 500,000 sites having significant contamination and requiring remediation. The exact figures may vary due to the lack of a common definition of contaminated sites. As long as the Member States differ in their understanding of what “contaminated site” means—and in their speed and manner of building up inventories—an E.U.-wide inventory of contaminated sites has little relevance. Taking into account the industrial history of the European Union, it is likely a large percentage of the number of contaminated sites will fall under the U.S. definition of a brownfield. To compare, EPA estimates that there are more than 450,000 brownfields in the United States.

Clearly, there remains a distinct lack of data. The United Nations Economic Commission for Europe’s (UNECE) Protocol on Pollutant Release and Transfer Registers (PRTR Protocol) might alter this situation in the near future. The PRTR Protocol has recently been transposed in the European Union by a regulation. The regulation:

[E]stablishes an integrated pollutant release and transfer register at Community level . . . in the form of a publicly accessible electronic database and lays down rules for its functioning, in order to implement the [PRTR Protocol] and facilitate public participation in environmental decision-making, as well

---

10 Impact Assessment, supra note 8.
as contributing to the prevention and reduction of pollution of the environment.\textsuperscript{16}

The register includes data on releases to land.\textsuperscript{17} The European Commission will compile, with Member States, a complete picture of the extent of soil contamination throughout the European Union.\textsuperscript{18}

On top of the contamination problem, the European Union features dense population and heavily built-up regions. As a result of this situation, remaining greenfields are under constant pressure. For example, the Flemish region in Belgium counts over 800 inhabitants per square mile, an extraordinarily high population density ratio.\textsuperscript{19} At present, the Flemish region runs short of industrial land.

Brownfield redevelopment is becoming a major environmental and social concern in the European Union. The reasons to redevelop brownfields are numerous and similar to those in the United States: redevelopment fits within the framework of sustainable development because it re-uses formerly developed properties rather than developing green and open space; governments have to protect their citizens against environmental contamination and health risks; and the lack of clean industrial sites begs new solutions.\textsuperscript{20} In addition, brownfield redevelopment has several advantages when compared to the development of open space or greenfields: necessary infrastructure is often already available (such as a waterway, a railway, roads, electricity, and drainpipes); people return to the city; and degraded areas are revitalized.

**B. E.U. Brownfield Policy and Laws**

The European Union does not yet have a general brownfield policy, although it recently promulgated a soil policy.\textsuperscript{21} The European Commission is taking soil-related problems more and more seriously. One of the objectives of the Sixth Environment Action Programme

\begin{footnotesize}
\begin{itemize}
  \item \textsuperscript{16} Id. at 3.
  \item \textsuperscript{17} Id. at 5.
  \item \textsuperscript{18} Id.
  \item \textsuperscript{19} See MIRA, The Flemish Region of Belgium, http://www.milieurapport.be/?pageID=575&Culture=nl.
  \item \textsuperscript{20} This lack of available land might be less of a problem in the United States, which is less densely populated than the E.U.
\end{itemize}
\end{footnotesize}
(Sixth EAP), adopted in 2002, is soil protection. The Sixth EAP is a non-legally binding document that states the Commission’s objectives with regard to the environment through 2010. It states that to protect soils against erosion and pollution, there must be a thematic strategy on soil.

Only four years later, on September 22, 2006, the Commission published the Thematic Strategy for Soil Protection. This measure is a first step toward the development of an integrated E.U. policy to protect soils. According to the thematic strategy, action at the European level is a necessary addition to the action by Member States, given several factors: soil degradation affects other environmental areas (for example, groundwater); the functioning of the internal market may be distorted; degradation in one Member State or region can have transboundary consequences; food safety must be guaranteed; and soil degradation is receiving increasing attention in international agreements and charters.

The thematic strategy is built around four key pillars:

(1) framework legislation with protection and sustainable use of soil as its principal aim; (2) integration of soil protection in the formulation and implementation of national and Community policies; (3) closing the current recognised knowledge gap in certain areas of soil protection through research supported by [European] Community and national research programmes; (4) increasing public awareness of the need to protect soil.

To formalize the first key pillar, the thematic strategy includes a Proposal for a Directive establishing a framework for the protection of soil,

---

22 Id. at 8.
23 See id. at 7–8, 12–13.
24 Id. at 8–9.
26 Id. at 5.
27 Id. This can occur, for example, if the Member States use different pollution standards, which may influence companies in deciding where they will start their activities. Id.
28 Id. at 6.
29 Id.
30 Id.
and amending the previous Directive 2004/35/EC.\textsuperscript{32} Under the proposal, the Member States must prevent soil contamination.\textsuperscript{33} They must therefore limit the intentional or unintentional introduction of dangerous substances on or in the soil.\textsuperscript{34} Additionally, Member States must identify the contaminated sites in their national territory and establish an inventory of those contaminated sites.\textsuperscript{35} According to the proposal, a contaminated site is a site that poses significant risk to human health or the environment.\textsuperscript{36} The parties in a transaction receive a soil status report.\textsuperscript{37} Finally, the Member States must ensure that the contaminated sites listed in their inventories are remediated, and must also draw up a national remediation strategy.\textsuperscript{38}

Although these initiatives are well-intentioned, and although some European legislative acts may be indirectly relevant to the remediation of soil, no specific community legislation on soil contamination—or soil protection in general—exists. The main reason for this is the principle of subsidiarity, set forth in article 5, paragraph 2 of the Treaty establishing the European Community (E.C. Treaty):

\begin{quote}
In areas which do not fall within its exclusive competence, the Community shall take action, in accordance with the principle of subsidiarity, only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of the proposed action, be better achieved by the Community.\textsuperscript{39}
\end{quote}

Only if the Community can better achieve the objectives may it take action. Historically, soil issues have been seen as local problems, which could sufficiently be dealt with by national, regional or local authori-

\textsuperscript{33} Id. at 5.
\textsuperscript{34} Id. at 6.
\textsuperscript{35} Id.
\textsuperscript{36} Id. at 12.
\textsuperscript{37} Id. at 19.
\textsuperscript{38} Framework for the Protection of Soil, supra note 32, at 20.
\textsuperscript{39} Consolidated Version of the Treaty Establishing the European Community, Dec. 24, 2002, 2002 O.J. (C 325) 42 [hereinafter E.C. Treaty]. The difference between the European Community and the E.U. is that the Community has fewer competencies than the E.U. One could say that the E.U. is the Community, only with the addition of security and justice concerns. With respect to European environmental law and policy, both the acronyms E.U. and E.C. may be used.
ties. For example, although the Thematic Strategy for Soil Protection contends the opposite, the Community maintained that soil has no major trans-boundary impacts that could justify the need for an E.U.-wide soil policy.

The conclusion should be that the regulation or remediation of contaminated brownfields is left to the Member States, at least for the next few years. However, the ruling of the European Court of Justice in Ministere Public v. Paul Van de Walle could prove to be very important with regard to the European legal framework for brownfield redevelopment.\(^{40}\) In this case, the Court broadened the definition of waste and decided that soil contaminated by fuels leaking from underground tanks should be regarded as waste under the Waste Framework Directive (Directive).\(^{41}\) The Court held that the land is waste despite its not being excavated or disturbed, and the fact that the contamination was accidental.\(^{42}\) The case received a good deal of criticism.\(^{43}\) Most Member States have separate legislation for waste and for soil. The result of the ruling is that the Directive may apply to soil contamination, although the Directive was not meant to cover soil contamination.

In addition, it will be very difficult for brownfield developers to follow several provisions of the Directive. For example, most national soil legislation includes a system of soil pollution norms or a form of risk assessment for deciding whether a brownfield requires remediation or not. The Directive does not have such a system for the disposal or recovery of waste. Additionally, certain remediation techniques—such as the isolation of the contamination—might not be in line with the

\(^{40}\) See generally Case C-1/03, Ministere Public v. van de Walle and Others, ECJ CURIA (Sept. 7, 2004), available at http://curia.europa.eu/en/content/juris/index.htm (follow “Search Form” hyperlink, then search “C-1/03” in “Case Number”).

\(^{41}\) Id.

\(^{42}\) Id.


Besides the soil policy, another important issue related to brownfields is the European rules regarding state aid. According to article 88, paragraph 3 of the E.C. Treaty, the Commission must be notified of any state aid payments to determine whether they fall under the prohibition of article 87, paragraph 1 of the Treaty.\footnote{E.C. Treaty, supra note 39, art. 88.} Article 87, paragraph 1 states:

\begin{quote}
Save as otherwise provided in this Treaty, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favoring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the common market.\footnote{Id. art. 87.}
\end{quote}

Thus, for an environmental measure to fall within this scope, it must be demonstrated that the measure falls within the definition of state aid, distorts competition, and affects intra-Community trade.\footnote{See Damien Geradin, EC Competition Law and Environmental Protection: Conflict or Compatibility?, 2 Y.B. of Eur. Envtl. L. 117, 121–23, 153–54 (2002).} Article 87, paragraphs 2 and 3 mention certain aids that are considered to be compatible with the common market.\footnote{E.C. Treaty, supra note 39, art. 87.}
Regarding state aid in the environmental sector, the Commission published *Community Guidelines on State Aid for Environmental Protection*. These guidelines contain a specific subsection indicating the conditions for state aid for the rehabilitation of polluted industrial sites. First, the guidelines only relate to interventions made by firms. Thus, interventions made by public authorities fall outside of its scope. In practice, the distinction between firms and public authorities will not always be obvious. The Commission will have to decide on a case-by-case basis. Second, state aid may not be granted where the person responsible for the pollution is clearly identified. It is up to the Member States to determine who can be identified as a “person responsible for the pollution,” but they will still have to follow the Environmental Liability Directive. Lastly, the aid may amount to up to 100% of the eligible costs, plus 15% of the cost of the work, but under no circumstances may exceed the actual expenditure. The eligible costs are equal to the cost of the work less the increase in the value of the land. Nevertheless, these guidelines are merely guidelines and the Commission may adopt a different opinion.

II. E.U. Member States and Brownfield Remediation

A. Similarities and Differences Between National Approaches

Until recently, the historical contamination of land has not been the subject of effective, formalized legal attention. Member States—or regions within a Member State—have only begun to introduce legislation on the remediation of soil contamination within the last ten to twenty years, often inspired by the American approach. One such example is Belgium. See discussion infra Part II.B.

---

51 *Community Guidelines*, supra note 50, at 9.
52 *Id.*
53 *Id.*
55 *Community Guidelines*, supra note 50, at 7.
56 *Id.*
57 Experiences in the United States with the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) strongly influenced European legislation.
58 One such example is Belgium. *See discussion infra* Part II.B.
Member States, soil remediation is legislated on the federal level, although the regions have several competencies with regard to the environment. Counting contamination as a key element, the soil legislation is a major player in the complete legal framework for brownfield redevelopment. Nevertheless, if the U.S. experience with brownfields teaches anything, it is that brownfields need a more specific integrated approach than other contaminated sites. Brownfield redevelopment introduces the new approach of functional remediation, meaning that the remediation is related to the future destination. Very often this does not occur in current soil legislation. Thus, among other factors, the integration with the zoning and planning legislation is very important.

One of the problems faced by Member States is that it is unclear what they mean when they talk about brownfields. When the U.S. Environmental Protection Agency (EPA) began the Brownfields Economic Redevelopment Initiative, the agency developed a definition of brownfields. According to that definition, brownfields are “abandoned, idled, or under-used industrial and commercial facilities at which expansion or redevelopment is complicated by real or perceived environmental contamination.” Several European countries or regions—for example, the Flemish region of Belgium—adopted a similar definition with three recurring key elements, stating that a brownfield must be: (1) an abandoned, idled or underused site; (2) an industrial or commercial site; and (3) a contaminated or potentially contaminated site. Other Member States use a broader definition—for example, the United Kingdom—or they do not use the term at all—for example, the Netherlands. Therefore, there is a clear need for a uniform definition and common understand of brownfields.

Another characteristic of the brownfield policies in the E.U. Member States was revealed after a broad analysis of the sustainability of
Brownfield redevelopment often requires public incentives. Brownfield redevelopment often requires public incentives. Several incentives exist, including: E.U. structural funding, taxes on vacant or derelict buildings, and legal incentives. The question then becomes whether the incentives are sustainable. In other words, does the competent public authority, when enacting new incentives, consider the needs of the present and the future when using methods to redevelop brownfields? The basic norms of sustainable development about which there is a widespread agreement are the following: “brownfields programs should simultaneously consider social, economic and environmental issues; they should substantively ensure a sustainable urban future; and last but certainly not least, they should strive for and achieve ‘equity.’” Governmental and private sector pronouncements of a connection between brownfields and sustainability are not hard to find. But are all of the incentives to promote brownfield regeneration really sustainable? Which brownfield programs will really lead to sustainable cities? After all, as Joel B. Eisen already stated, “Any argument that all brownfields redevelopment is inherently sustainable is unjustified.” Redepdeveloping a brownfield does not automatically make one’s actions sustainable.

The analysis showed that poor consideration is made of the methods used to redevelop brownfields. Funding schemes do not stipulate sustainability criteria for evaluating funding proposals. Successful funding proposals are evaluated in terms of their potential to deliver more “hard outputs,” which are measured numerically and include the number of jobs created, or the amount of land reclaimed. No consideration is made of the methods used to create these outputs; therefore, sustainable proposals are not differentiated from unsustainable proposals. Often, successful proposals use unsustainable methods, such as failing to recycle waste, failing to utilize green building materials or renewable energy, or failing to preserve historic buildings. These failures are obviously untenable in an era when supposedly all policy is driven by sustainable development principles.

---

65 Id. at 350.
67 Id. at 191.
68 See id. at 201–02, 206–10.
69 See id. at 207–08.
The United States is clearly further ahead in implementing sustainability criteria in their incentives. Some incentives are conscious efforts to incorporate the substance of sustainable development, such as the Proposal Guidelines for Brownfields Assessment, Revolving Loan Fund, and Cleanup Grants. These guidelines contain a whole set of very interesting sustainability criteria, which could be directly implemented into E.U. policy. Another notable incentive is the Green Buildings on Brownfields Initiative. This initiative is an EPA “effort designed to promote the use of green building techniques at brownfields properties in conjunction with assessment and cleanup.” EPA’s brownfield policy is directed by principles of sustainability. EPA published a study in two parts emphasizing the incorporation of the principles of sustainability into the redevelopment process. EPA uses the results of this study to evaluate the various approaches being taken by communities in order to refine or develop new policies and technical tools that may be needed.

B. Case Study: The Flemish Region of Belgium

In the Flemish region, a consensus is growing that the redevelopment of brownfields can play an important role in the revitalization of certain neighborhoods and areas, and that it can give an answer to the existing need for new industrial sites. In 2000, the Flemish Minister of Environment initiated, with the support of the Flemish Minister of Economics and Urban Planning, a strategic project called “Brownfield Development.” A steering committee presided over by the Flemish

72 Id.
75 There is a shortage of industrial sites in the Flemish region. See Wim Vanhaverbeke, Peter Cabus & Erwin Lammens, Ruimte voor werk: bouwrijpe bedrijventerreinen, economische ontwikkeling en ruimtelijke planning in Vlaanderen, Tijdschrift voor Economie en Management 227–65 (2002) (developing a method to evaluate the availability of industrial sites).
Public Waste Agency (FPWA) was established—similar to the Inter-agency Working Group on Brownfields in the United States—in which different governmental administrations jointly investigated how government policy can contribute to the development of brownfields in the Flemish region.\textsuperscript{77} It also looked into which structural measures needed to be taken to stimulate such development.\textsuperscript{78} Furthermore, the FPWA prepared a list of criteria to select and evaluate pilot brownfield projects.\textsuperscript{79} On the basis of these criteria, the FPWA selected twelve projects.\textsuperscript{80} Each selection required the commitment of a steering group to guide and to follow up the project. In 2004, despite the positive results of the Brownfield Development, the newly elected Flemish government decided not to continue the project. As a result, unfortunately, there is no coordinated or structured consultation between the concerned ministers and their administrations.

With regard to the management and remediation of contaminated land, the Flemish policy is regulated by the Flemish Decree of February 22, 1995 concerning Soil Remediation (Soil Remediation Decree).\textsuperscript{81} The Soil Remediation Decree addresses several aspects of soil pollution, such as who bears responsibility, the obligation to clean up the land, and the procedure to be followed for the transfer of a site.\textsuperscript{82} The Soil Remediation Decree distinguishes between “current,” “historical,” and “mixed” soil pollution with regard to the remediation requirements and liability for the costs.\textsuperscript{83} “Current” pollution refers to that created after October 29, 1995.\textsuperscript{84} “Historical” pollution was created be-

\begin{itemize}
\item \textsuperscript{77} Id. The Flemish Public Waste Agency (FPWA) plays a very active role in brownfield redevelopment initiatives. Id.
\item \textsuperscript{78} Id.
\item \textsuperscript{79} Id.
\item \textsuperscript{80} See OVAM, Proefprojecten Brownfields, http://www.ovam.be/jahia/do/pid/741.
\item \textsuperscript{82} See Soil Surveys, supra note 81; see also Kurt Deketelaere & Michael G. Favre, Environmental Law in Belgium: The Environmental Law System, in Environmental Law in Europe 65, 78–80 (Niels S.J. Koemun ed., 1999).
\item \textsuperscript{83} Karen Aitchison et al., Environmental Risks on Acquiring a Company in Possession of Contaminated Land, 8 EUR. ENVTL. L. REV. 201, 202 (1999).
\item \textsuperscript{84} Id.
\end{itemize}
fore that date, while “mixed” pollution is soil with both current and historical soil pollution. Most brownfields will have historical contamination. For this kind of contamination, the legislator uses a fault-based liability regime, which means that if one searches for a liable party, he will have to be able to prove that the defendant was at fault. Often such proof will be difficult in the case of very old soil contamination.

In 2001, the Flemish government modified the Soil Remediation Decree to deal specifically with brownfields. Accordingly, the Flemish government, as well as the FPWA, can identify a brownfield site. Every identified site is published in the Belgian State Gazette and registered with the FPWA. A brownfield determination creates certain obligations for the parties concerned, including the obligation to carry out an exploratory soil investigation. The goal of the determination is to go beyond the parcel-based approach by working with a whole area rather than with small pieces of land. Consequently, all the parties concerned will have to work together to develop the whole site. Once a brownfield has been identified, according to article 48ter of the Soil Remediation Decree, the Flemish government can accept all settlements or agreements. Article 48ter therefore gives carte blanche to the government to develop a site as it sees fit.

With regard to the funding of brownfield redevelopment, in 2002 the Flemish government approved a Decree concerning the support of

85 Soil Remediation Decree, supra note 81, art. 2, para. 4–6; Aitchison, supra note 83.
86 See Aitchison, supra note 83.
87 For example, proving fault might be difficult because of the state of the land at the time of the contamination, the lack of internal information on what exactly happened, or the cost of necessary investigations.
89 Id.; see Soil Remediation Decree, supra note 81, art. 47ter. This chapter of the Soil Remediation Decree entitled “Sites” is available in English. See http://www.emis.vito.be/wet_ENG_navigator/bo7ter.htm (last visited Apr. 7, 2007).
90 Soil Remediation Decree, supra note 81, §§ 2, 3 art. 47quinquies.
91 Id. §§ 1, 3 art. 47quinquies.
92 Id. art. 48ter. This chapter entitled “Powers of the Flemish Government” is available in English. See http://www.emis.vito.be/wet_ENG_navigator/bo8.htm (last visited Apr. 7, 2007).
93 See Soil Remediation Decree, supra note 81, art. 48ter.
urban renewal projects,\textsuperscript{95} as well as a Decree establishing the Flemish Town Fund.\textsuperscript{96} Both decrees provide for subsidies for brownfield projects. Under the first decree, various cities in Flanders can obtain subsidies for urban renewal projects under certain conditions.\textsuperscript{97} The Flemish government anticipates investing approximately €25 million to support these projects.\textsuperscript{98} The objective is to stimulate the quality of the environment in a certain part of a town and to realize, on this basis, innovative projects.\textsuperscript{99} Under the second decree, cities can conclude a covenant with the Flemish government to outline a sustainable town policy.\textsuperscript{100} Along with these financial incentives, there are also very specific funds available for the remediation of the soil of brownfields.

\textbf{Conclusion}

It is clear that within the European Union, more and more Member States are searching for different measures to deal with soil remediation in general, and brownfields in particular. Soil remediation will demand tremendous investments. It remains unclear how these costs will be distributed among public authorities and the business community. The European Commission subsidizes—through the application of Structural Funding support—much site activities that take place on most brownfield redevelopment projects in Europe. However, no consideration is made of the methods used to redevelop the brownfield sites. The Commission should give urgent attention to introducing a set of sustainability criteria to guide structural funding towards sustainable brownfield projects.

Several governments, together with their administrations, have already taken different approaches to brownfield initiatives. Nevertheless, the shortage of knowledge and information regarding brownfield development creates myriad difficulties with the start up and realization of potential brownfield projects in the European Union. Therefore, the exchange of information based on experiences in the United States, as

\textsuperscript{95} Decree of 22 March 2002 Concerning the Support of Urban Renewal Projects 19,041–42 (Belgian State Gazette, May 7, 2002).

\textsuperscript{96} Decree of 13 December 2002 on the Determination of the Rules Concerning the Operation and the Division of the Flemish Town Fund 3657–59 (Belgian State Gazette, January 29, 2003).


\textsuperscript{98} See id.

\textsuperscript{99} See id.

\textsuperscript{100} See id.
well as in the European Union, can be very fruitful. The redevelop-
ment of brownfields definitely offers a major challenge for policy mak-
er in the near future.
Abstract: This essay portrays the urgency of global warming and discusses the role of environmental law in bringing about this crisis. It explains why our regulatory system ignored this problem for too long and offers a property-based perspective to frame government’s responsibility in confronting climate crisis.

Introduction


Those are the headlines over the past few years. Yet many Americans are still asleep to climate crisis. They are in for quite a shock when they wake up to realize the consequences of ignoring this threat. Climate is the invisible currency of our lives. It supports our food supplies, water sources, private property, businesses, and recreation. Yet, for most of us, it has been an overlooked source of our security and comfort.

That is about to change.

In this decade, we will decide whether to hand over to future generations an imperiled world or a world on its way towards restored natural abundance.\(^1\) At this pivotal moment in human history, our need to

---

\(^1\) See Stern Review, The Economics of Climate Change, Summary of Conclusions, at vi (Cambridge University Press 2007), available at http://www.hm-treasury.gov.uk (follow “Independent Review” hyperlink; then follow “Stern Review on the Economics of Climate Change” hyperlink; then follow “Full Report” hyperlink) [hereinafter Stern Review] (stating that if no action is taken to reduce emissions, the resulting temperature rise would
define government’s obligations towards future generations has perhaps never been greater. Yet we lack a legal beacon to guide us through this time of decision. I hope to offer a way of thinking that draws on timeless principles of property law to characterize government’s obligation to preserve the natural inheritance belonging to the future generations.

I.

First, let me briefly explain the dynamics of global warming. Complex as it is, global warming can be presented in terms that the average American understands. Through our emissions of greenhouse gases, we are literally creating a heat trap for ourselves and for all living things on Earth. The sun sends a massive amount of energy that warms our planet. The energy then radiates back into space as heat, but some heat is held captive by heat-trapping gases in the atmosphere. These gases—including carbon dioxide and methane—regulate the temperature of Earth. Before the Industrial Revolution, Nature had maintained a balance in the gases to keep the Earth’s average surface temperature at fifty-nine degrees Fahrenheit. It may be hard to appreciate the remarkability of a fifty-nine degree average until you consider that the ecosystems we know and depend on today evolved against this average temperature. Essentially, fifty-nine degrees is for Earth what 98.7 degrees is for our bodies.

Since the Industrial Revolution, Earth’s populations have burned massive quantities of fossil fuels. In doing so, we literally have changed the composition of the atmosphere such that less heat can escape into space. It is no great mystery why the great ice sheets of this planet are melting. Just as an ice cube will melt in a warm room, so is the Polar Ice Cap, Greenland, and every major glacier of the world melting on our warming Earth. Glacier National Park in Montana is losing its glaciers

cause “a radical change in the physical geography of the world . . . ”); see also infra notes 22–36.


3 Id.

4 Id.

5 See id.

6 Id.

so fast that it may have none left by 2030—just twenty-three years from now.\(^8\)

Carbon dioxide—the gas emitted from cars, coal fire plants, and gas heating\(^9\)—has climbed to levels unknown in the past 650,000 years,\(^10\) and we are still pumping it out at an annual increase of two percent per year.\(^11\) According to the United Nations Intergovernmental Panel on Climate Change (IPCC), the average surface temperature on Earth will rise between 2.5 degrees and 10.4 degrees Fahrenheit within the next 100 years if our greenhouse gas emissions do not turn downward soon enough.\(^12\)

\(^8\) U.S. Geological Survey, Melting Glaciers Signal Change in National Parks, http://www.nwrc.usgs.gov/world/content/land5.html (last modified Jan. 29, 2007); see Gore, supra note 7, at 48 (“Our own Glacier National Park will soon need to be renamed ‘the park formerly known as Glacier.’”). In the last 150 years, the glaciated area of the Waterton-Glacier International Peace Park—a World Heritage Site—has decreased by seventy-three percent. Int’l ENVTL LAW PROJECT OF LEWIS & CLARK LAW SCH., PETITION TO THE WORLD HERITAGE COMMITTEE REQUESTING INCLUSION OF WATERTON-GLACIER INTERNATIONAL PEACE PARK ON THE LIST OF WORLD HERITAGE IN DANGER AS A RESULT OF CLIMATE CHANGE AND FOR PROTECTIVE MEASURES AND ACTIONS, at vii (2006), available at http://law.lclark.edu/org/ielp/objects/Waterton-GlacierPetition2.15.06.pdf. Of the 150 glaciers that were present in 1850, only twenty-seven remain today. Id. at 1.

\(^9\) See U.N.-SIGMA XI REPORT, supra note 7, at ix. Deforestation contributes substantially to carbon dioxide concentrations as well. Id.


\(^11\) Hansen, supra note 7, at 14 (noting increase of global carbon dioxide emissions of two percent each year during past ten years).

\(^12\) Union of Concerned Scientists FAQ, supra note 2 (summarizing the Intergovernmental Panel on Climate Change’s (IPCC) Third Assessment Report); see also U.N.-SIGMA XI REPORT, supra note 7, at x–xi.
Our prior carbon pollution has already locked us into an irrevocable temperature rise of up to two degrees Fahrenheit.\textsuperscript{13} Two degrees does not sound like much at all until you realize that the Earth’s average temperature has not varied by more than 1.8 degrees Fahrenheit in the last 10,000 years.\textsuperscript{14} Just a few degrees of average temperature change makes the difference between an ice age and our current climate.\textsuperscript{15} Temperatures only five to nine degrees Fahrenheit cooler than those today marked the end of the last Ice Age, when the northeast United States was under 3000 feet of ice.\textsuperscript{16} In light of that fact, consider the effect of a ten degree difference on the hot side.\textsuperscript{17} Once we understand the climate premium that every single degree Fahrenheit carries, we would no more dismiss a ten degree temperature rise for Earth than we would dismiss a 108 degree fever in our bodies.

So, what does all of this mean for us? In effect, you and I—along with all of the other people and species on this Earth—find ourselves in a greenhouse with climbing temperatures.\textsuperscript{18} And this situation is bound to create hostility as Americans alone account for nearly thirty percent

If CO\textsubscript{2} emissions and concentrations grow according to mid-range projections . . . the global average surface temperature is expected to rise by 0.2°C to 0.4°C per decade [equivalent to 0.7° F. to 0.9° F.] throughout the 21st century and would continue to rise thereafter. The cumulative warming by 2100 would be approximately 3°C to 5°C [5.4° to 9° F.] over preindustrial conditions.

\textit{Id.}

\textsuperscript{13} See U.N.-Sigma XI Report, supra note 7, at x (“Even if human emissions could be instantaneously stopped, the world would not escape further climatic change. [A] further . . . rise in global-average surface temperature will take place as a result of the current atmospheric concentrations of greenhouse gases and particles.”); Hansen, supra note 7, at 13.

\textsuperscript{14} Union of Concerned Scientists FAQ, supra note 2.

\textsuperscript{15} See id.

\textsuperscript{16} Id.; see also Hansen, supra note 7, at 13 (noting that the coldest ice ages had an average temperature of about ten degrees Fahrenheit less than today).

\textsuperscript{17} See U.N.-Sigma XI Report, supra note 7, at x–xi. The report states:

Accumulating scientific evidence suggests that changes in the average temperature of this magnitude are likely to be associated with large and perhaps abrupt changes in climatic patterns that, far more than average temperature alone, will adversely impact agriculture, forestry, fisheries, the availability of fresh water, the geography of disease, the livability of human settlements, and more.

\textit{Id.}

\textsuperscript{18} Global temperatures have already increased about 1.4 degrees Fahrenheit over preindustrial levels. Robert Lee Hotz, \textit{A Call To Arms on Climate Shift}, L.A. TIMES, Feb. 28, 2007, at 8 (summarizing the U.N.-Sigma XI Report).
of the world’s greenhouse gas emissions.\textsuperscript{19} There is no magic Tylenol that will cure this temperature rise overnight, because carbon dioxide can persist in the atmosphere for up to a few centuries.\textsuperscript{20}

Hurricane Katrina—which devastated the U.S. Gulf Coast in 2005—signaled what we can expect from the global warming already underway as a result of the carbon emissions that we cannot call back.\textsuperscript{21} Scientists across multiple disciplines warn of crop losses,\textsuperscript{22} food shortages,\textsuperscript{23} flooding,\textsuperscript{24} coastal loss,\textsuperscript{25} wildfire,\textsuperscript{26} drought,\textsuperscript{27} pests,\textsuperscript{28} hurricanes,\textsuperscript{29} and other consequences of climate change.

\begin{itemize}
\item \textsuperscript{19} Gore, \textit{supra} note 7, at 250–51 (featuring a map depicting contributions across the globe); Hansen, \textit{supra} note 7, at 16.
\item \textsuperscript{20} See Union of Concerned Scientists FAQ, \textit{supra} note 2; see also James Hansen, \textit{foreword to AM. SOLAR ENERGY SOC’Y, TACKLING CLIMATE CHANGE IN THE U.S.: POTENTIAL CARBON EMISSIONS REDUCTIONS FROM ENERGY EFFICIENCY AND RENEWABLE ENERGY BY 2030} (Charles F. Kutscher ed., 2007), available at http://www.ases.org/climatechange/climate_change.pdf [hereinafter TACKLING CLIMATE CHANGE] (stating that a quarter of the carbon dioxide emissions from fossil fuel burning will persist in the atmosphere for more than 500 years).
\item \textsuperscript{21} Gore, \textit{supra} note 7, at 92–93 (citing an MIT study and concluding that “[m]ajor storms spinning in both the Atlantic and Pacific since the 1970s have increased in duration and intensity by about 50 percent”); see U.N.-SIGMA XI REPORT, \textit{supra} note 7, at x. The authors of the report pointed out:
\begin{quote}
The seemingly modest changes in average temperature experienced over the 20th century have been accompanied by significant increases in the incidence of floods, droughts, heat waves, and wildfires, particularly since 1970. It now appears that the intensity of tropical storms has been increasing as well. There have also been large reductions in the extent of summer sea ice in the Arctic, large increases in summer melting on the Greenland Ice Sheet, signs of instability in the West Antarctic Ice Sheet, and movement in the geographic and altitudinal ranges of large numbers of plant and animal species.
\end{quote}
U.N.-SIGMA XI REPORT, \textit{supra} note 7, at x.
\item \textsuperscript{22} NASA Goddard Space Flight Center, Computer Model Suggests Future Crop Loss Due to Potential Increase in Extreme Rain Events Over Next Century (Oct. 28, 2002), http://www.gsfc.nasa.gov/topstory/20021022cropdamage.html (projecting crop damage from water-logged soils leading to total losses of three billion dollars annually in the United States by 2030).
\item \textsuperscript{24} U.N.-SIGMA XI REPORT, \textit{supra} note 7, at x, 1, 11; see also id. at v (“As the climate changes, . . . low-lying coastal communities worldwide will be flooded as sea level rises.”); A.P., \textit{Report Outlines Global Warming’s Effects}, \textit{supra} note 23 (stating that U.N. scientists conclude that by 2080, rising seas could flood about 100 million people worldwide each year).
canes,\textsuperscript{29} tornadoes,\textsuperscript{30} heat waves,\textsuperscript{31} landslides,\textsuperscript{32} species extinctions,\textsuperscript{33} vanishing snow pack,\textsuperscript{34} increased disease vectors,\textsuperscript{35} and other harms.\textsuperscript{36}

\textsuperscript{25} U.N.-Sigma XI Report, \textit{supra} note 7, at 102. The U.N.-Sigma XI international team of climate scientists has called for a worldwide ban on coastal beachfront construction to minimize the hazards of climate-related disasters such as flooding and powerful storms. \textit{Id.} at xvi; see Hotz, \textit{supra} note 18 (summarizing the U.N.-Sigma XI Report).

\textsuperscript{26} Patrick O’Driscol, \textit{Study Says Global Warming Helps Extend Wildfire Season}, USA TODAY, July 7, 2006, at 3A (noting number of large wildfires in Idaho, Montana and Wyoming has increased sixty percent since 1987).

\textsuperscript{27} A.P., \textit{Report Outlines Global Warming’s Effects}, \textit{supra} note 23 (stating U.N. scientists’ conclusion that “within a couple of decades hundreds of millions of people won’t have enough water” and that by 2050, more than one billion people in Asia could face water shortages). By 2080, water shortages could threaten 1.1 to 3.2 billion people if global warming continues. \textit{Id.}

\textsuperscript{28} The percentage of Earth’s land area struck by serious drought more than doubled from the 1970s to the early 2000s, according to the National Center for Atmospheric Research (NCAR). \textit{See Press Release, National Center for Atmospheric Research, Drought’s Growing Reach: NCAR Study Points to Global Warming as Key Factor (Jan. 10, 2005), available at http://www.ucar.edu/news/releases/2005/drought_research.shtml.}

\textsuperscript{29} U.S. Environmental Protection Agency (EPA) has issued a guide called the Excessive Heat Events Guidebook, which says, “Excessive heat events . . . are and will continue to be a \textit{fact of life} in the United States.” U.S. ENVTL. PROT. AGENCY, \textit{EXCESSIVE HEAT EVENTS GUIDEBOOK}, EPA # 430-B-06–005, 5 (2006), \textit{available at http://www.epa.gov/hiri/about/pdf/EHEguide_final.pdf} (emphasis added).

\textsuperscript{30} An international team of scientists has projected that between fifteen and thirty-seven percent of species on Earth will become extinct by 2050 because of global warming. \textit{See} Alister Doyle, \textit{Landslides Could Worsen with Global Warming}, \textit{Reuters}, Jan. 18, 2006, \textit{available at http://www.reuters.com/today.html?id=9688} (reporting conclusions of U.N. experts that if climate change predictions are correct, more intense and extreme rainfall will lead to increased landslides).

\textsuperscript{31} An international team of scientists has projected that between fifteen and thirty-seven percent of species on Earth will become extinct by 2050 because of global warming. \textit{See} A.P., \textit{Report Outlines Global Warming’s Effects}, \textit{supra} note 23 (quoting co-author of U.N. IPCC Working Group II Report, Dr. Terry Root of Stanford University, who stated that “we truly are standing at the edge of mass extinction”); Carl Zimmer, \textit{A Radical Step to Preserve a Species: Assisted Migration}, \textit{N.Y. TIMES}, Jan. 23, 2007, at 4. Species are already migrating towards the poles in search of colder climates. \textit{Id.; see also} Hansen, \textit{supra} note 7, at
An international climate research team recently warned of a need to prepare for as many as fifty million environmental refugees by 2010.\textsuperscript{37}

If we do nothing to curb carbon emissions, we will commit ourselves to a future that most Americans cannot even imagine. Jim Hansen, the leading climate scientist for the National Aeronautics and Space Administration (NASA), presents the ten degree Fahrenheit scenario: it will send fifty percent or more species into extinction.\textsuperscript{38} That is equivalent to the mass extinction that occurred fifty-five million years ago.\textsuperscript{39} In his words, “Life will survive, but it will do so on a transformed...
planet.” A mere five-degree Fahrenheit temperature increase may cause an eighty foot rise in sea level. Hansen points out: “In that case, the United States would lose most East Coast cities: Boston, New York, Philadelphia, Washington, and Miami; indeed, practically the entire state of Florida would be under water. Fifty million people in the U.S. live below that sea level.”

I could go on detailing on how climate crisis will affect the lives of every human on Earth. What I have mentioned is just the tip of the iceberg—a phrase on its way out. British commentator Mark Lynas, author of *High Tide*, summarizes the Earth’s situation this way: “Let me put it simply: if we go on emitting greenhouse gases at anything like the current rate, most of the surface of the globe will be rendered uninhabitable within the lifetimes of most readers of this article.”

II.

As a group, Americans yearn to have peace of mind over the future for themselves and their children. Entire industries are premised on the inclination of Americans to sacrifice a little now in order to buy security in the future. We simply would not have insurance, estate planning, retirement accounts, or social security were it not for the strongly held preference on the part of Americans to pay for disaster avoidance.

As a society, we are now in the position of buying climate insurance. By most scientific accounts, we still have the ability to stabilize the Earth’s temperature increase at two degrees Fahrenheit—remember that two degrees, because it is the benchmark of your future. As Jim Hansen puts it, “further global warming exceeding two degrees Fahr-

---

40 Id.
41 Id. at 13.
42 Id.
44 Hansen, supra note 7, at 13. There appears to be substantial consensus among scientists worldwide that society can still thwart the most disastrous global warming by decreasing greenhouse gas emissions immediately. See, e.g., U.N.-SIGMA XI REPORT, supra note 7, at ix (“Significant harm from climate change is already occurring, and further damages are a certainty. The challenge now is to keep climate change from becoming a catastrophe. There is still a good chance of succeeding in this [effort] . . . .”); S T E R N R E V I E W, supra note 1, Summary of Conclusions, at vi (“There is still time to avoid the worst impacts of climate change, if we take strong action now.”).
enheit will be dangerous.” Here is the purchase price of that climate insurance: we have to curb drastically our greenhouse gas emissions, beginning immediately.

As a planet, we have been at a similar danger point before. When it was discovered in the 1970s that chlorofluorocarbons (CFCs) were putting a hole in the atmosphere’s ozone layer, we stopped using them, and the hole is now repairing itself. While, at the time, the CFC industry tried to convince us that western civilization would crumble without spray canisters, that scenario proved not to be the case. The ozone layer is crucial, as it shields us from the harmful ultraviolet light coming from the Sun. Looking back, are we not grateful that the decision-makers at the time decided not to trade out our Earth’s ozone layer for CFCs?

Transitioning to a carbon-free society is more complicated than our previous experience with CFCs because it involves nearly every sector of society. This process is not going to be easy. Carbon is emitted all over the place. But the basic choice is still the same as that presented to humankind by the ozone hole discovery: do we take bold action now in order to buy climate security in the future? Or do we continue on our business-as-usual course with the knowledge that it will ultimately lead to catastrophe for ourselves and our children—that it will drain our descendants of the natural abundance and security that we all took for granted? This choice cannot be characterized as just another environmental issue. As author Ross Gelbspan puts it, “[T]he climate crisis is far more than just an environmental issue. It is a civilizational issue.”

45 Hansen, supra note 7, at 14.
46 See infra notes 67–68 and accompanying text (explaining the reduction goals presented by the U.N. and scientists worldwide). The Stern Review on the Economics of Climate Change, a landmark economic report authored by Sir Nicholas Stern, former chief economist at the World Bank, concludes: “The costs of stabilizing the climate are significant but manageable; delay would be dangerous and much more costly.” Stern Review, supra note 1, Summary of Conclusions, at vii.
48 Sparling, supra note 47.
49 NASA, The Ozone Resource Page, supra note 47.
50 Ross Gelbspan, Boiling Point: How Politicians, Big Oil and Coal, Journalists, and Activists Are Fueling the Climate Crisis—and What We Can Do To Avert Disaster 1 (2004).
Unfortunately, we have no latitude for indecision. Hansen states: “[W]e have at most ten years—not ten years to decide upon action, but ten years to alter fundamentally the trajectory of global greenhouse emissions.”\(^51\) You might wonder why the atmosphere is giving us so little time. It is because we have already pumped so much carbon into it that we are likely nearing a “tipping point” that will trigger irreversible dynamics.\(^52\) After that tipping point, our subsequent carbon reductions, no matter how impressive, will not thwart long-term catastrophe.\(^53\)

Let me be clear. I do not mean to imply that all climate catastrophes will visit us on January 1 of Year Eleven from now. The tipping point concept means this: if we continue business as usual, then at some point within this coming decade, and probably sooner rather than later, we will effectively place a lock on the door of our heating greenhouse and throw out the key. Our children and future generations are trapped in that greenhouse with rising temperatures, and they will have no way to get out. This ten-year action window we are now looking through means that, if we pour resources into the wrong strategy, we will not have time to go back and chart another course before this tipping point has come and gone.

State legislatures, federal agencies, and governors across the country should be burning the midnight oil (or, rather, fluorescent lights) figuring out solutions to get us to a carbon-free society in the short time we have left. But, with few exceptions,\(^54\) our government is still sleeping through climate crisis. So scientists are trying new ways—any ways they can think of—to wake people up to this urgency. In January 2007, the Harvard Medical School’s Center for Health and Global Environment convened top climate scientists to hold a press conference in Washing-

\(^{51}\) Hansen, supra note 7, at 16.

\(^{52}\) See Stern Review, supra note 1, at 298 (“Recent scientific developments have placed more emphasis on the dangers of amplifying feedbacks of global temperature increases and the risks of crossing irreversible tipping points . . . .”); U.N.-Sigma XI Report, supra note 7, at xi (stating that “increases beyond 2° C to 2.5° C above the 1750 level will entail sharply rising risks of crossing a climate ‘tipping point’ that could lead to intolerable impacts on human well-being . . . .”); Hansen, supra note 7, at 14 (“[B]ecause of the global warming already bound to take place as a result of the continuing long-term effects of greenhouse gases and the energy systems now in use, . . . it will soon be impossible to avoid climate change with far-ranging undesirable consequences. We have reached a critical tipping point.”).

\(^{53}\) Stern Review, supra note 1, at 298; U.N.-Sigma XI Report, supra note 7, at xi; Hansen, supra note 7, at 14.

\(^{54}\) California, for example, is a national leader in reducing greenhouse gas emissions. See Paul Krugman, Global Warming Can Be Reduced Without Radical Change, REGISTER GUARD (Eugene, Or.), Feb. 26, 2007, at A9.
ton, D.C., with national evangelical Christian leaders. They jointly delivered an “Urgent Call to Action” to the President of the United States to “protect Creation.”\footnote{An Urgent Call To Action: Scientists and Evangelicals Unite to Protect Creation (Jan. 17, 2007), available at http://www.conservation.org/ (follow “Conservation Programs” hyperlink; then follow “Conservation and Faith” hyperlink; then follow “Scientists and Evangelicals Unite to Protect Creation” hyperlink); Letter from Eric Chivian, M.D., Director, Ctr. for Health and the Global Env’t, Harvard Med. Sch., and Rev. Richard Cizik, Vice President for Governmental Affairs, Nat’l Ass’n of Evangelicals, to President George W. Bush (Jan. 17, 2007) (on file with author) (enclosing An Urgent Call to Action: Scientists and Evangelicals Unite to Protect Creation); see also Rodrique Ngowi, Evangelicals, Scientists Join Forces to Combat Global Warming, Boston Globe, Jan. 14, 2007, available at http://www.boston.com (Search “Greater Boston” for “Evangelicals, Scientists Join Forces”; then follow “Evangelicals, Scientists Join Forces to Combat Global Warming” hyperlink).}

How many times have you seen scientists and Evangelicals holding a press conference together to protect Creation? They stated their “Shared Concern”: “[T]he Earth . . . is seriously imperiled . . . . [W]e are gradually destroying the sustaining community of life on which all living things on Earth depend . . . . We declare that every sector of our nation’s leadership . . . must act now . . . before it is too late . . . . Business as usual cannot continue yet one more day.”\footnote{An Urgent Call to Action, supra note 55.}

The international community is sounding the same alarm. Three months ago British Prime Minister Tony Blair said to the world: “This disaster is not set to happen in some science fiction future many years ahead, but in our lifetime. Unless we act now . . . these consequences, disastrous as they are, will be irreversible.”\footnote{Simon Hooper, Report Sets Climate Change Challenge, CNN.com, Oct. 30, 2006, http://edition.cnn.com/2006/WORLD/europe/10/30/climate.costs/; U.N.-Sigma XI Report, supra note 7, at xviii.}

In February 2007, an international climate team released a report setting forth immediate policy initiatives to combat climate crisis, stating: “Humanity must act collectively and urgently to change course through leadership at all levels of society. There is no more time for delay.”\footnote{See generally HELEN CRAIG, Chicken Little, in THE RANDOM HOUSE BOOK OF NURSERY STORIES 77 (1999) [hereinafter Chicken Little].}

These are not the voices of Chicken Little and Henny Penny.\footnote{See generally Patrick J. Michaels, Is the Sky Really Falling? A Review of Recent Global Warming Scare Stories, in POL’Y ANALYSIS No. 576 (CATO Institute 2006), available at http://www.cato.org/pubs/pas/pa576.pdf. Patrick J. Michaels is an outspoken global warming “contrarian” whose evaluation of climate science is informed by the following passage in the classic children’s story Chicken Little. “One morning, Chicken Little was in the woods when an acorn fell on his head. ‘Oh, my goodness! The sky is falling!’ cried Chicken Little. ‘I must go and tell the King.’” Chicken Little, supra note 59, at 77. The “con-}
any intelligent comparison between mounting atmospheric heat-trapping gases and an acorn falling on a little chicken’s head. The United Nations’ Intergovernmental Panel on Climate Change (IPCC) issued a report in February 2007, stating that climate change is “unequivocal.”61 A second report was issued in draft form in March 2007, discussing the catastrophic impacts of unchecked global warming.62 These United Nations (U.N.) reports compile the conclusions of more than 1200 authors and 2500 expert reviewers, reflecting scientific expertise from more than 130 countries.63 To be sure, there are those few global warming “contrarians” dismissing the threat, but before you place the future of your children in their hands, check out their affiliations with the fossil fuel industry.64 When the U.N. report came out in February ending any debate on whether global warming existed,65 the Exxon-funded American Enterprise Institute responded with an ad offering $10,000 to any scientist who could refute it.66 Let us think about a logical way to process these contrarian views. If several doctors diagnosed your child with life-threatening bacterial meningitis, you would likely not waste time going back to debate the germ theory of medicine with them. You would start the antibiotics and hope or pray for the best.

61 INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: THE PHYSICAL BASIS, SUMMARY FOR POLICY MAKERS 5 (Feb. 5, 2007), available at http://www.ipcc.ch/SPM2feb07.pdf (“Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”). This report, produced by IPCC Working Group I, is the first of three that comprise the full IPCC Fourth Assessment Report.


65 See Hotz, supra note 18 (summarizing the U.N. IPCC report, and concluding that “[r]esearchers are no longer debating whether human-induced global warming is genuine”).

66 Juliet Eilperin, Climate Report Critics Offered Cash, COLUMBIAN (Clark County, Wash.), Feb. 5, 2007, at A4; see also Kathleen Rest, US Must Stop Ignoring Warming, COLUMBIAN (Clark County, Wash.), Feb. 12, 2007 (discussing federal political interference with global warming science).
The urgent warnings coming from all branches of science are intended to focus society on reaching a decision, now.

III.

The global warming crisis, encompassing as it is, can be confronted by setting a firm national timeline for greenhouse gas reduction. You can think of this timeline as Nature’s Carbon Mandate. Scientists have defined it very clearly. First, we must reverse the climbing trajectory of greenhouse gas emissions within the next decade.67 Second, over the longer term, we must reduce emissions as much as eighty percent below 1990 levels by 2050.68

These goals are quantitative, not progressive. Making progress towards meeting Nature’s Mandate is not enough. This is carbon math, and falling short means risking a temperature rise of up to ten degrees. If Americans are to secure the future for themselves and their children, they must understand this carbon math as readily as they understand that four quarters equals a dollar.

We simply cannot meet Nature’s Mandate without governmental leadership. The carbon problem transcends all societal sectors—in-

67 See Hansen, supra note 7, at 16; see also supra note 51 and accompanying text.
68 See TACKLING CLIMATE CHANGE, supra note 20, at 3; STERN REVIEW, supra note 1, Summary of Conclusions, at vii; Press Release, United Nations Framework Convention on Climate Change, UNFCCC Executive Secretary Calls for Speedy and Decisive International Action on Climate Change (Feb. 2, 2007) (summarizing the U.N. IPCC Report), available at http://unfccc.int (follow “Press” hyperlink; then follow “Press Releases” hyperlink; then follow hyperlink under 2 Feb 2007); see also Alan Zarembo, Game Over on Global Warming?, L.A. TIMES, Feb. 5, 2007.

cluding transport, energy, housing, and industry. Government is the huge engine that propels our society. We have thousands of agencies—indeed more than any other nation in the world. They exist at the federal, state, and local levels. Collectively, these agencies hold immense expertise, authority, and staffing to solve environmental problems. If every one of these agencies made global warming a top priority, we might stand a chance of meeting Nature’s Mandate head on. But to implement programs necessary to reverse our carbon emissions within ten years, government has to start now. With respect to this need to act, Prime Minister Blair stated, “There is nothing more serious, more urgent, more demanding of leadership . . . in the global community.”

European countries are well on the way to reducing carbon emissions. But, what is the U.S. government doing? It is driving the United States towards runaway greenhouse gas emissions. County commissioners are approving trophy home subdivisions as if global warming does not exist. State environmental agencies are approving air permits as if global warming does not exist. The U.S. Forest Service is delivering timber sales, as if global warming does not exist. Magnify this trend by the hundreds of government actions taken on a daily basis across the country. And consider this: The electric power industry is racing to build more than 150 new coal-fired power plants across the United

---

71 Such decisions are made on a local basis. Information can generally be obtained by accessing minutes from proceedings of the county commissioners. Valley County, Idaho, provides an example of access to such information. Valley County Planning & Zoning, Meeting Minutes, http://www.co.valley.id.us/PZ_minutes.htm (last visited Apr. 27, 2007); see also Anne Wallace Allen, EPA Comes to the Rescue of Town Overrun by Growth, OREGONIAN, Dec. 25, 2005, at 1 (detailing EPA’s involvement in local growth management issues in McCall, Idaho).
73 See Matthew Daly, New Forest Service Chief Gets Rough Treatment in Congress, ASSOCIATED PRESS, Feb. 14, 2007 (detailing Forest Service plan to harvest up to 800 million board feet in Washington, Oregon, and Northern California in fiscal year 2008).
The industry investment in these plants reflects an assumption that our U.S. Environmental Protection Agency (EPA) will grant permits under environmental statutes allowing them to spew forth “hundreds of millions of tons of carbon dioxide into the atmosphere each year for decades to come” as if global warming does not exist. You see, nearly every agency in the United States is acting as if global warming does not exist.

Political will grows overnight when citizens demand action. But those Americans who are awake to this crisis are focusing their energy on reducing their own carbon footprint rather than holding their leaders accountable. Our voluntary efforts are vitally important, but they also conceal a state of national chaos. We will not come into compliance with Nature’s Mandate in the very short time we have left through voluntary efforts alone. The fact that Americans are trying to solve global warming on their own tells us that we have lost our sense of governmental accountability in environmental issues. In the next section, I will suggest why our system of law, as currently framed by government, will not respond to the climate crisis. Then I will propose how the American public can reframe our environmental law to demand the regulation necessary to meet Nature’s Mandate.

IV.

As we all know, to analyze a problem, we often need to go back to its roots. For the past three decades, we have looked to environmental law to address environmental problems. Environmental law consists of hundreds of statutes and regulations passed since the 1970s to protect our natural resources. Statutes give tremendous authority to officials at all levels of government to control just about any environmental harm.

But, before we turn to existing environmental laws to address global warming, we need to face one fact. Had environmental law worked, we would not have an ecological crisis on our hands. Environ-


mental law delivered global warming and resource scarcity to our doorstep. Environmental law is crippled by enormous dysfunction, and if we fail to acknowledge this dysfunction, we will be looking for a solution in the same system that brought us this crisis.

The heart of the problem is this: While the purpose of every local, state, and federal environmental law is to protect natural resources, nearly every law also provides authority to the agencies to permit, in their discretion, the very pollution or land damage that the statutes were designed to prevent. Of course, the permit systems were never intended to subvert the goals of environmental statutes. But most agencies today spend nearly all of their resources to permit, rather than prohibit, environmental destruction. Essentially, our agencies have taken the discretion in the law and used it to destroy Nature, including its atmosphere.

Why would public servants who draw their salaries from the taxpayers do such a thing? It is because the call of private property rights is sounded in the halls of nearly every agency, nearly every day. Asphalt plant operators and chemical manufacturers, land developers and timber companies, automobile makers and coal-fired plant investors, and industrialists and individuals of all sorts call out to these agencies not to draw that regulatory line on their activity—because doing so would hurt their economic goals. This private property rights rhetoric has cowered officials at every level of government. Most officials are good, dedicated individuals, but as a group, they dread saying no to permits. So it is really no surprise that nearly every agency in America is still acting as if global warming did not exist.

Moreover, agencies have created so much complexity in their regulations, with meaningless acronyms and techno-jargon, that citizens are not speaking in the clear and forceful terms they need to in order to pose a counterweight to private property rights in this vast realm of agency discretion.

U.S. environmental law has created a thick veil of complexity behind which agencies serve private interests at the expense of the public. Our third branch of government—the judiciary—has been indifferent towards the politicization of agencies. Courts often defer to agency decisions on the false premise that agencies are neutral. A compromised judicial check skews the Constitutional balance of power over the envi-

Without that third branch of government fulfilling its function, our democracy becomes an administrative tyranny over Nature, with dangerous results for our future.

V.

You may be wondering how this subversion of environmental law could happen. The explanation lies in how government and industry have framed those laws. You can think of our environmental law, with all of its complicated statutes and regulations, as one big picture. The private property rights movement and agencies themselves have constructed a frame for that picture. The four sides of that frame are: discretion, discretion, discretion, and discretion—to allow damage to our natural resources. Though our statutes have aspirational goals of protecting our environment, when they are carried out through the discretion frame, these laws are used as tools to legalize damage to our resources. This usage is the source of species extinctions, air pollution, rivers running dry, dead zones in our oceans, toxic fish advisories, and global warming. Too much agency discretion can be a very dangerous thing.

Consider how our federal government is using this discretion frame to justify inaction in the face of climate crisis. EPA is the only federal agency charged by Congress to control air pollution. Even though the Clean Air Act (CAA) provides EPA with the authority to regulate carbon dioxide, EPA has steadfastly refused to do so. Viewed through the frame that EPA has presented to the American public, the air is simply an object of regulation, a nebulous commons, and EPA can use its discretion to permit pollution by the oil, gas, coal, and automobile industries, despite the fact that this legalized pollution will degrade the at-


78 For example, the CAA states the following in section 202(a)(1): “The [EPA] shall . . . prescribe . . . standards [for] any air pollutant from . . . new motor vehicles . . . which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.” 42 U.S.C. § 7521(a)(1). In Massachusetts v. EPA, the Supreme Court found that this provision was “unambiguous” in giving EPA authority to regulate greenhouse gas emissions from new cars. No. 05-1120, 2007 U.S. LEXIS 2785, at *55.

79 See generally Massachusetts v. EPA, 415 F.3d at 50 (reviewing EPA’s denial of petition to regulate greenhouse gases from new automobiles). The Supreme Court recently held, however, that EPA does not have “roving license to ignore the statutory text” of the CAA and must regulate greenhouse gas emissions if it finds that they endanger public health or welfare. Massachusetts v. EPA, No. 05-1120, 2007 U.S. LEXIS 3785, at *61 (citing 42 U.S.C. § 7521(a)(1)). The Court, however, simply remanded the process back to EPA. Id. at *65.
mosphere so much that it will no longer support human civilization as we know it.

Because the discretion frame never characterizes natural resources as quantified property assets, it allows government to damage the resources until they are all gone.

VI.

How do we turn these agencies around and convince agency officials to use all of their authority to meet Nature’s Mandate? Or, put another way, how do we convince officials to do what they currently consider to be political suicide? The public has to find a new frame for our existing statutes. Reframing environmental law does not mean throwing out existing environmental statutes. Again, those statutes give us a tremendous bureaucracy that we can steer back on course. Reframing means taking control of the language we use to hold government accountable under those statutes. As author George Lakoff says, “Reframing is changing the way the public sees the world. It is changing what counts as common sense.”

Social frames can be destructive and oppressive, or they can embolden and inspire.

When Dr. Martin Luther King, Jr. urged Americans to take down another destructive frame in our history, he called out for all citizens to recognize the “fierce urgency of now.” Unbelievable as it may seem, the future of humanity rests on our generation being able to reframe government’s obligation towards Nature.

VII.

We can reframe environmental law by looking to timeless principles that reach far back on this and other continents. Indeed, such principles have grounded Supreme Court jurisprudence since the beginning of this country, but our agencies have lost sight of them in the last thirty years. In just that short period, these principles have been

---

80 George Lakoff, Don’t Think of an Elephant! Know Your Values and Frame the Debate, at xiv (2004).

81 Dr. Martin Luther King, Jr., “I Have a Dream” Address at the March on Washington for Jobs and Freedom (Aug. 28, 1963), in A CALL TO CONSCIENCE: THE LANDMARK SPEECHES OF DR. MARTIN LUTHER KING, JR. 82 (Clayborne Carson & Kris Shephard eds., 2001) (“We have . . . come to this hallowed spot to remind America of the fierce urgency of now. This is no time . . . to engage in the luxury of cooling off or to take the tranquilizing drug of gradualism.”).
suppressed by thousands of pages of complex statutes and regulations that have proliferated across the legal landscape like an invasive species.

These foundational principles are as crucial today in the face of global warming as they were two hundred years ago, because they clearly define government’s responsibility towards Nature and towards future generations. They do so by drawing upon ancient trust concepts originating in property law, not statutory law.

A trust is a fundamental type of ownership whereby one manages property for the benefit of another.\footnote{82} Long ago, the Supreme Court said that government, as the only enduring institution with control over human actions, is a trustee of Nature’s resources.\footnote{83} What does this mean? You can imagine all of the resources essential to our human welfare and survival—including waters, wildlife, and air—as being packaged together in a legal endowment which I call Nature’s Trust.\footnote{84} Our imperiled atmosphere is one of the assets in that trust. Government holds this great natural trust for all generations of citizens—past, present, and future.\footnote{85} We are all beneficiaries of this trust. Our great-grandparents were beneficiaries, and our great-grandchildren are beneficiaries, even though they are not yet born. We all hold a common property interest in Nature’s Trust. You could think of this as Nature’s treasure to be passed down through all generations of humankind.

With every trust there is a core duty of protection.\footnote{86} The trustee must defend the trust against injury.\footnote{87} Where it has been damaged, the

\footnote{82} 90 C.J.S. Trusts § 6, at 129 (2002).
\footnote{83} Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 455 (1892) (“[T]he decisions are numerous which declare that such property is held by the State, by virtue of its sovereignty, in trust for the public.”); Geer v. Connecticut, 161 U.S. 519, 525–29 (1896) (detailing ancient and English common law principles of sovereign trust ownership of air, water, sea, shores, and wildlife and stating that “the power or control lodged in the State, resulting from this common ownership, is to be exercised, like all other powers of government, as a trust for the benefit of the people”). For sources and materials on the public trust doctrine, see Jan G. Laitos, Sandra B. Zellmer, Mary C. Wood, & Daniel H. Cole, Natural Resources Law ch. 8.II, at 622–54 (2006).
\footnote{85} See Geer, 161 U.S. at 534 (“[T]he ownership of the sovereign authority is in trust for all the people of the State, and hence by implication it is the duty of the legislature to enact such laws as will best preserve the subject of the trust and secure its beneficial use in the future to the people of the State.”) (quoting Magner v. Illinois, 1881 WL 10415 (Ill. Feb. 3, 1881)).
\footnote{86} 76 Am. Jur. 2d Trusts § 404, at 455 (2005) (“One of the fundamental common-law duties of a trustee is to preserve and maintain trust assets. A trustee has the right and duty to safeguard, preserve, or protect the trust assets and the safety of the principal.”).
\footnote{87} States, for example, have protected their air trust by bringing nuisance lawsuits against polluters. See, e.g., Georgia v. Tenn. Copper Co., 206 U.S. 230, 237–38 (1907) (“This
trustee must restore the property in the trust. Protecting our natural trust is more consequential than anything else government does. More consequential than jobs, health care, social security, education, or even defense, for this duty carries the weight not only of the present generation of citizens, but of all citizens to come.

It is not surprising that Nature’s Trust principles were penned by judges long ago as the first environmental law of this nation. This fundamental doctrine of governance reaches back literally, to Justinian times and Roman law. On this continent it reaches back even further, as much as 10,000 years. The native nations managed natural resources to ensure their availability in the same abundance for beneficiaries in distant generations.

This ancient strand of law threads together all of our modern environmental statutes. In the National Environmental Policy Act (NEPA), Congress declared a national duty to “fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.” When we invoke the trust to call upon government to protect our natural resources, we are not creating anything new.

Indeed, this sovereign trust over natural resources is so basic to governance that it is found in many other countries today. For example, in 1993, the Supreme Court of the Philippines invoked the trust to halt rainforest logging. The Philippine government contended that it had complete discretion—remember discretion?—to allow private companies to cut the last 2.8% of remaining forest. Every government

is a [nuisance] suit by a state for an injury to it in its capacity of quasi-sovereign . . . . It is a fair and reasonable demand on the part of a sovereign that the air over its territory should not be polluted on a great scale . . . by the act of persons beyond its control . . . .”). California brought a nuisance suit against major automobile manufacturers for their contribution to global warming. See generally California v. Gen. Motors Corp., No. 3:06-CV-05755 (N.D. Cal. filed Sept. 20, 2006).


93 Oposa v. Factoran, G.R. No. 101083 (July 30, 1993) (Phil.). This opinion is excerpted in Laitos, Zellmer, Wood & Cole, supra note 83, at 441–44.
that is captured by special interests invokes the discretion frame because it conveniently and invisibly delivers the natural wealth of the nation to those interests. The Philippine Supreme Court enforced the peoples’ trust and halted logging, stating:

\[\text{Every generation has a responsibility to the next to preserve that . . . harmony [of Nature] . . . .} \]

\[\ldots \text{[The] right [to a balanced ecology] concerns nothing less than self-preservation and self-perpetuation[,] . . . the advancement of which may even be said to predate all governments and constitutions.} \]

\[\ldots \text{[These principles] are assumed to exist from the inception of humankind.}^{94}\]

In other words, the trust frame forces government to hand down the endowment to future generations and not give it away to private interests that happen to be knocking loudly at government’s door this generation.

These trust principles are engrained in government itself. Back in 1892, the U.S. Supreme Court said: “The State can no more abdicate its trust over property in which the whole people are interested . . . than it can abdicate its police powers in the administration of government . . . .”^{95} The national chaos over global warming today is a direct result of our government abdicating its trust over our atmosphere.

VIII.

Let us take a look at how the two frames I have described differ and their implications for humanity. In contrast to the discretion frame,

\[^{94} \text{Oposa, G.R. No. 101083, in Laitos, Zellmer, Wood & Cole, supra note 83, at 443–44.}\]

\[^{95} \text{Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 453 (1892). The Court also held: “Every legislature must, at the time of its existence, exercise the power of the State in the execution of the trust devolved upon it.” Id. at 460. In addition, the Court discussed public water assets:} \]

\[\text{[T]he abdication of the general control of the State over [waterways] . . . is not consistent with the exercise of that trust which requires the government of the State to preserve such waters for the use of the public.}\]

\[\ldots \text{The ownership [of waterways] . . . is a subject of public concern to the whole people of the State. The trust with which they are held, therefore, is governmental and cannot be alienated . . . .}\]

\textit{Id.} at 452–55.
the four sides of the trust frame are: obligation, obligation, obligation, obligation. We can take the very same set of environmental laws, and without changing a word of them, reframe our government’s role with respect to Nature on a policy, legal, and moral level. By reframing, we can turn the government’s discretion to destroy Nature into an obligation to protect Nature. But this principle works in reverse as well. We can pass any new law we want, and no matter what it says, if it is pressed through the discretion frame, the government will continue to impoverish natural resources until our society can no longer sustain itself.

So how do citizens reframe their government’s role towards Nature at this pivotal time? They must expand their political imprint and use new words. They must speak in clear terms to their public officials at all levels of government.

An example of this type of discourse took place in McCall, Idaho, early 2007. Citizens there took down the discretion frame and put up the trust frame to protect their airshed. The Idaho Department of Environmental Quality (DEQ) proposed to issue an air permit for an asphalt plant that spews so much pollution into neighborhoods that mothers pull their kids inside day after day. This permit, delivered by the hand of environmental law, would legalize the emission of fifty-four toxins right into the mountain air including lead, mercury, chromium six, dioxin, arsenic, and formaldehyde. If you read the DEQ analysis of this proposed permit, you would be hard-pressed to find any sort of statement that this pollution would damage the airshed or the people living there, much less contribute greenhouse gas emissions. Instead, the analysis is filled with charts and incomprehensible technical statements. The reader is hit in the face with AACs, AACCs, TAP analysis, T-RACT, HAPs, NESHAPs, SIP, MACT and more. Does the average citizen know what any of these terms mean? Amidst this gibberish, there is no core value driving governmental action.

---


There was a hearing in January 2007, to discuss this asphalt plant permit. Normally, such hearings are filled with empty seats, and no wonder. But someone in McCall handed out flyers that said, quite simply, “Air for Sale,” and the hearing room was packed with angry citizens. These were people drawn together by a common airshed—doctors, school kids, cancer victims, retirees, ski team coaches, Forest Service employees, real estate brokers, teachers, mothers and fathers. When you translate the techno-jargon into “Air for Sale,” you replace the discretion frame with the trust frame. Citizens suddenly feel that their property is being trampled by their own government. They start thinking, “Hey, that’s my air, even if I share it with others.” Pollution of that air becomes an infringement on American property. The frame makes a difference. It expresses our core expectations of government towards Nature.

IX.

In this section, I would like to suggest how this trust frame helps in getting the American mind around the issue of global warming and, thus, how it becomes a coalescing force to confront climate crisis.

A.

The first point has to do with Americans’ feeling of entitlement towards Nature. The discretion frame, with all of its techno-jargon, gives no hint of environmental loss. The ARARs, TMDLs and TSDs, SIPs and HRSs, RPAs and PRPs, and the hundreds of other acronyms that our agencies use to hospice a dying planet really do not sound out any alarms to the public. These are neutral terms because they are incomprehensible. The public, then, is simply led to accept our degraded environment as a nebulous state of affairs. We never imagine that resources could be all spent down, all used up, or no longer there for us at some point in time. We seem unbothered even when our government leads us into global environmental catastrophe.

Yet, when we portray Nature as a trust rather than an ill-defined commons, we vest citizens with expectations of enduring property rights to a defined, bounded asset. Any loss of the trust becomes manifest. This frame resonates with and motivates the public because it taps

---

into concepts that are familiar and important to Americans. Most people have heard of a trust. Kids know about college accounts. Adults know about retirement accounts. Americans are ferociously protective of their property rights. Once they understand they have a property right in something, they are inclined to protect it.

The trust frame has particular empowerment for youths, because it recognizes a property right of natural inheritance for the children of the world. It gives children an entitlement, as beneficiaries with no lesser standing than our own, to natural wealth, even though they are not yet old enough to exercise any voting power over their government. Children get angry when they think of our generation spending down a trust that they are entitled to take in the same abundance we have enjoyed.

B.

Second, when we invoke the trust frame to explain global warming, we may be better able to overcome denial. The cruel irony is that the most disastrous manifestations of global warming may not occur until after our window of opportunity to avert the crisis has closed. A daunting obstacle we must confront is that most citizens do not perceive global warming as an immediate threat. For many Americans, the predictions are so extreme—like an ice age\textsuperscript{99}—that they must seem like a science-fiction movie. Indeed, the more dire the environmental issue, the less likely it seems to be taken seriously in the United States. Many simply mock the messenger for spreading gloom. Global warming science is passed off as another doomsday scenario, and for some Americans that is all they need to hear in order not to take it seriously.

Without a sense of immediate loss, the public will not feel the urgency to demand government to take leadership in the short time frame we have left. Harvard professor Daniel Gilbert suggests that humans are hard-wired by evolution to ignore threats like global warming.\textsuperscript{100} Humans evolved to respond to immediate threats, like enemies coming over the hillside.\textsuperscript{101}

The discretion frame put forth by our government capitalizes on this mental weakness and lures people into complacency. People oper-


\textsuperscript{101} See id.
ating within this frame think of air as “out there somewhere,” way beyond that hillside. But people’s perceptions change remarkably when they think of their trust being mismanaged. That is an immediate concern, even if the full effects will not be felt for years to come. Beneficiaries do not often sit idle when their trustee drains their trust. They hold their trustee accountable for the losses. And they worry about collapse scenarios. They understand stocks crashing. They understand a freewheeling grandfather spending down all of their rightful inheritance.

Recall the Philippines case mentioned earlier. The Philippine Supreme Court brought forth the reality of a depleted natural trust by speaking in familiar terms of inheritance. It said simply, “[T]he day would not be too far when all else would be lost [for] generations which stand to inherit nothing but parched earth incapable of sustaining life.” There is no doomsday language there. This is about intergenerational theft. We all know what theft is.

C.

Third, by defining Nature in familiar property terms, the trust frame reconciles private property rights with environmental protection, which the discretion frame does not do. The discretion frame portrays environmental resources as nebulous features of the world in which we live. Private property rights carry the day in our agencies simply because they draw upon a language of property that is so deeply embedded in our national culture. To confront any environmental crisis today, including global warming, we have to be clear on how public resources and private property rights fit together in the scheme of things.

The trust frame is itself a property concept, so rather than pitting environment against property rights, you are fitting Nature into the system of property rights. The Nature’s Trust frame is not anti-property rights. To the contrary, it affirms our collective property rights in assets that support humanity.

Every U.S. Supreme Court case invoking the trust makes clear that the government cannot allow private property rights to damage crucial public resources. In 1907, the Supreme Court said, “[T]he state has an interest independent of and behind the titles of its citizens, in all the

102 See supra Part VII.
earth and air within its domain. It has the last word as to whether its mountains shall be stripped of their forests and its inhabitants shall breathe pure air.”  

And in 1892 when private enterprise threatened the shoreline of Lake Michigan, the Supreme Court said, “It would not be listened to that the control and management of [Lake Michigan]—a subject of concern to the whole people of the state—should . . . be placed elsewhere than in the state itself.” You can practically hear those same Justices saying today that “[i]t would not be listened to” that government would let our atmosphere be dangerously warmed in the name of individual, private property rights.

Let us not for a moment think that just because private interests will have to be regulated and certain industries phased out entirely, the trust frame is anti-private property. In securing our public property, the trust also anchors our entire system of private property rights. All private property depends on Nature’s infrastructure. When that infrastructure collapses, it causes natural disasters that make property boundaries irrelevant. Remember, private property deeds did not account for anything in the aftermath of Hurricane Katrina, and they will not account for anything along coastlines submerged by rising sea levels.

D.

Finally, the trust frame has global reach. This is important because global warming is, after all, a global problem. When we portray it to the American public, we must be able to explain the role of foreign nations. Many people have heard about the Kyoto Protocol. They know that China is bringing massive numbers of coal-fired plants on line. When Americans are asked to make changes in their own lives, they often reply that it will not make a difference because global warming is an international issue.

The trust framework positions all nations of the world in a logical relationship towards Nature. Transboundary assets like the atmosphere are shared as property among sovereign nations of the world. These nations are co-tenant trustees of the asset. In other words, they are all trustees, but they share the resource as co-tenants, bound by the same

---

107 The economic arguments militate against inaction. See Stern Review, supra note 1, Summary of Conclusions, at vii–viii (“The costs of stabiliz[ing]ing the climate are significant but manageable; delay would be dangerous and much more costly.”); id. at viii (“Climate change is the greatest market failure the world has ever seen . . . .”).
108 See Hotz, supra note 18.
fundamental duties that organize, for example, the relationship of family members who share ownership of a mountain cabin as co-tenants. Property law offers timeless principles to deal with common ownership. It has always imposed a responsibility on co-tenants not to degrade, or waste, the common asset. This one concept lends definition to international responsibilities, whether we are talking about a shared fishery, an ocean, or the Earth’s atmosphere.

Moreover, by embracing principles that are native to many other countries, the trust frame can be invoked by those citizens who are calling their own government to action. At a time when the world is so politically fractured, the trust frame offers hope that citizens across the entire planet can view Earth’s resources in the same light and defend those resources in their many different languages, but with one voice.

Conclusion

If citizens seek a secure climate future for themselves and their children, they must call upon government to take immediate action. They must speak in clear terms through a powerful frame.

In An Inconvenient Truth, Al Gore presents climate crisis as a “moral and spiritual challenge” for our generation. The trust frame is the obligation that springs from the heart of all humanity, pressed into the institution of government. The same trust principles that flow through a judge’s pen can be preached from a pulpit or spoken as the last words from a grandmother to her grandchildren anywhere in the world, because the trust encompasses a moral obligation that transcends all governments, cultures, and peoples on Earth. And that obligation is not just an attribute of this frame—it has been its enduring power through all of time, and it will be its enduring hope for all time to come.


110 The term waste means “neglect or misconduct resulting in material damage to or loss of property.” Joseph Singer, Property Law: Rules, Policies, and Practices 555 (4th ed. 2006). Waste is a spoil or destruction of “corporeal hereditaments.” Lytle v. Payette-Or. Slope Irrigation Dist., 152 P.2d 934, 939 (Or. 1944). The court held, “ill husbandry, carried to such extent as materially injures the rights of the . . . reversioner, constitutes waste.” Id. (citation omitted).

111 See generally Gore, supra note 7, Introduction.
PLAYING CHICKEN AT THE WTO: DEFENDING AN ANIMAL WELFARE-BASED TRADE RESTRICTION UNDER GATT’S MORAL EXCEPTION

Edward M. Thomas*

Abstract: The European Parliament recently adopted a proposal mandating higher welfare standards for chicken used in meat production, including a provision that would regulate or prohibit the importation of chicken not produced with the same high standards. Final passage of such a law would likely raise a World Trade Organization (WTO) complaint by a chicken-exporting nation. This Note argues that under WTO precedent, a carefully crafted import ban could survive such a challenge by invoking the moral exception to the General Agreement on Tariffs and Trade (GATT). In order to defend its regulation, however, the European Union must first attempt to negotiate a resolution with its trading partners, allow a flexible timeframe for nations to comply, provide exceptions for producers who abide by high standards, and mandate the same standards for both domestic and foreign producers. This Note argues that the European Union should follow these steps, and not back down from passing a much-needed law to improve animal welfare.

Introduction

On February 14, 2006, the European Parliament officially adopted a proposal mandating higher welfare standards for broiler chicken, the type used in meat production. The proposal, if approved by the Council of Ministers, would establish more humane standards on sanitation, stocking densities, ventilation, and surgical procedures such as debeaking and castration. This mandate would be the first E.U. regula-

* Editor in Chief, Boston College Environmental Affairs Law Review, 2006–07. The author thanks Brenda Withers for her thoughtful advocacy of the issues underlying this Note.


2 EP Calls for Stricter Criteria for Broiler Hens, supra note 1, at 1.
tion aimed explicitly at improving the welfare of broiler chicken, five million of which are slaughtered in the European Union each year.  

The passage of this proposed regulation followed a recent poll showing that a majority of Europeans—fifty-five percent—now agree that not enough importance is given to animal welfare in agricultural policy. In Greece, three quarters of respondents agreed with this view. Even in Finland, which had the least concern for this issue, forty percent of respondents said animal welfare should be accorded more attention. Furthermore, forty-two percent of E.U. respondents stated that any new animal welfare law should give priority to broiler chicken, while forty-four percent favored protecting egg-producing battery hens.

The inhumane living conditions of broiler chicken are well-documented. In most factory farms, chicken are kept in tightly packed sheds, unable even to spread their wings. Rapid weight gain, caused by overfeeding during the chickens’ six-week lifespan, leads to high occurrences of shattered bones and heart failure. Forced to live atop piles of their own excrement, up to eighty percent of chicken in the United Kingdom have open lesions and hock burns caused by the build-up of ammonia. Constant lighting, used to encourage perpetual feeding, denies regular rest. Awareness of these conditions in the European Union may explain the call for higher welfare standards. In Holland and Denmark, which have the most intensive farms in the European Union for the production of laying hens, a large percentage of citi-

---

3 Id.  
5 Id. at 65.  
7 Id.  
9 See Vegetarian Society, supra note 8.  
10 Id.  
12 Id.  
13 See Animal Welfare: Shoppers, supra note 6, at 1.
zens—seventy-seven percent in both countries—are critical of current welfare standards.\textsuperscript{14}

Given this public support, the European Parliament included in their proposal an amendment regarding the importation of broiler chicken from non-E.U. countries.\textsuperscript{15} Realizing that the benefits of this regulation would be undercut if non-E.U. producers continued to supply the European Union with chicken produced according to lower welfare standards, the amendment states: “Imports of chicken from third countries, which come from holdings that do not observe rules on the welfare of chickens for meat production equivalent to those effective in the E.U., should also be regulated and, where appropriate, prohibited.”\textsuperscript{16}

If made law, this amendment could present a landmark case on the rarely invoked “moral exception” to free trade measures, codified under article XX(a) of the General Agreement on Tariffs and Trade (GATT).\textsuperscript{17} As a member of the World Trade Organization (WTO) and a major economic power, the European Union’s passage of such an import ban would likely raise the ire of exporting nations that do not have similar welfare standards in place.\textsuperscript{18} As the European Union is on the forefront of animal welfare laws, this would include most nations that exports chicken to the European Union.\textsuperscript{19} Furthermore, nations that pay scant attention to animal welfare would be more likely to challenge this particular moral exception than other morally based, and politically sensitive, import restrictions (such as banning products made by child labor). How the WTO would rule on such a complaint by an exporting nation would define the current scope of free trade exceptions not only for animal welfare laws, but other morally based trade bans, as well.\textsuperscript{20}

The likelihood of such an import restriction surviving challenge at the WTO depends on how the restriction is specifically drafted if and

\textsuperscript{14} Id.
\textsuperscript{15} EP Resolution on Broiler Chicken, supra note 1, amend. 8.
\textsuperscript{16} Id. (emphasis added).
\textsuperscript{18} See, e.g., Andre Nollkaemper, Introduction to Trapped by Furs? The Legality of the European Community’s Fur Import Ban in EC and International Law 1–2 (Andre Nollkaemper ed., 1997) (discussing Canada, the United States, and Russia’s opposition to a proposed 1991 E.U. import ban on pelts of animals caught with leghold traps); Charnovitz, supra note 17, at 736.
\textsuperscript{19} See Nollkaemper, supra note 18, at 1–2.
\textsuperscript{20} See Charnovitz, supra note 17, at 744.
when it becomes law, and how a WTO arbitral panel, or the Appellate Body, interprets several key cases on trade discrimination. Given recent holdings adopted by the WTO, however, it is possible that a carefully drafted E.U. import restriction on broiler hens—predicated on the moral exception codified under GATT’s article XX(a)—could survive challenge, and open the door to more national import restrictions aimed at improving animal welfare.

Part I of this Note provides an introduction to the issues of free trade and animal welfare, highlighting the relevance of “process and production method” (PPM) distinctions. Part II provides an overview of the GATT articles relevant to this proposed import ban, and outlines the three-prong analysis for a morally based trade ban. Part III applies the current analysis to the European Union’s proposed broiler chicken import ban, and illustrates how the European Union can craft the regulation to increase the likelihood it will prevail in a trade dispute. Part IV provides several criticisms of the current analysis, and discusses appropriate changes necessary to safeguard morally based import restrictions.

I. ANIMAL WELFARE-BASED IMPORT RESTRICTIONS: AN OVERVIEW

Validly enacted import restrictions that promote the humane treatment of animals have long been undermined by international free trade agreements. While regulations such as banning cosmetics tested on animals, or prohibiting the use of cruel leg-hold traps in the fur trade, can take effect within domestic jurisdictions, they are difficult to enforce on imported products from foreign nations. This difficulty is the result of a global free trade regime that, in general, treats all products equally, regardless of their process and production methods (PPMs). When PPMs are not taken into consideration, nations cannot give preferential treatment to a product produced according to higher welfare standards. Consequently, domestic policy-

21 See id. at 736–40.
22 Id.
24 See Stevenson, supra note 17, at 108–09.
26 Kysar, supra note 25, at 542–43; Stevenson, supra note 17, at 125–26.
makers—both in the European Union and elsewhere—are discouraged from passing even baseline animal welfare laws, knowing that foreign producers will maintain access to their markets without conforming to such regulations.\textsuperscript{27} If an animal welfare law is passed, foreign products will likely be more competitive than their domestic counterparts, as domestic producers must abide by higher, and often more costly, production standards.\textsuperscript{28}

For these reasons, proposed animal welfare laws are unlikely to survive domestic industry opposition.\textsuperscript{29} This is the case despite the fact that a plurality of lawmakers, with the backing of their constituents, may agree that a practice such as testing cosmetics on animals is unacceptable.\textsuperscript{30} Even if a nation manages to pass an animal welfare measure—as is possible with the E.U. regulation on broiler chicken—trade laws that treat products equally can step in to prevent the tax, regulation, or import ban of the foreign goods.\textsuperscript{31} In this case, consumers are supplied with the very products they charged their government with regulating.

Animal welfare advocates view global free trade agreements as a major reason for the lack of progress on welfare issues to date.\textsuperscript{32} The most important trade pact affecting animal welfare is GATT and its progeny, the WTO.\textsuperscript{33} Advocates argue that the WTO’s apparent unwillingness to distinguish between products on the basis of PPMs means that standards on animal welfare are ignored in favor of commercial interests, and that nations with the lowest standards end up setting the bar for others.\textsuperscript{34} Similar arguments are made in regards to the treatment of environmental, human rights, and labor standards under the WTO.\textsuperscript{35}

Many free trade advocates, however, seek to prevent one nation from imposing its own animal welfare, environmental, or any other standard on other nations.\textsuperscript{36} Such advocates, including many develop-

\textsuperscript{27} Stevenson, \textit{supra} note 17, at 109; see Scully, \textit{supra} note 23, at 184.

\textsuperscript{28} Stevenson, \textit{supra} note 17, at 109.

\textsuperscript{29} See Scully, \textit{supra} note 23, at 184.

\textsuperscript{30} See, \textit{e.g.}, Nollkaemper, \textit{supra} note 18, at 3–4 (discussing the successful passage of the E.U. fur import ban, which exporting nations later challenged on free trade grounds).

\textsuperscript{31} Id.

\textsuperscript{32} Scully, \textit{supra} note 23, at 184.

\textsuperscript{33} Id.; see Stevenson, \textit{supra} note 17, at 109–10.

\textsuperscript{34} See Scully, \textit{supra} note 23, at 184.

\textsuperscript{35} Id.

ing world representatives, view the WTO as a bulwark against regulations that curb trade and/or advance protectionist policies. Their most compelling argument is that free trade should expand the prosperity of the developed world to poorer nations. For such advocates, the argument that PPMs should be taken into account amounts to a defense of expensive and resource-consuming regulations that disfavor developing world producers.

Attempting to reconcile these two valid objectives has proven highly problematic. Past GATT panel decisions, handed down before the advent of the WTO, strongly sided with the free trade argument. The panels’ interpretations of key GATT provisions generally disallowed consideration of PPM-based trade bans. Therefore, such rulings have had a chilling effect on nations’ attempts to enact animal welfare laws. However, more recent rulings of the WTO’s dispute panels and Appellate Body suggest that PPMs are not entirely disfavored under international trade law. In certain circumstances, the WTO has held that PPM-based trade restrictions can be validly considered. These cases did not explicitly deal with animal welfare regulations, but have the potential to beneficially affect future animal welfare trade restrictions.

Furthermore, past WTO rulings have rarely dealt with a specific GATT exception that permits consideration of morally based regulations. This moral exception to the general rule against discriminatory

---

37 Id.
38 Id.
39 See id.
40 See id. at 59.
42 See Stevenson, supra note 17, at 111.
43 See id. at 108–09.
45 Asbestos, supra note 44, at 3286–87; Shrimp-Turtle I, supra note 44, at 2792.
46 See generally Asbestos, supra note 44; Shrimp-Turtle I, supra note 44.
47 See Charnovitz, supra note 17, at 731.
trade, like other trade exceptions, is assumed to be tightly construed, and difficult for nations to successfully invoke. However, recent WTO decisions dealing with various other trade exceptions indicate that the moral exception may be more readily applied today. This fact is especially true when the law claiming the exception discriminates as minimally as possible, and follows attempts by governments to resolve the issue bilaterally or multilaterally. A regulation that adheres to these guidelines stands the best chance of validly invoking the moral exception.

Understanding how PPM-based import bans are increasingly accepted by the WTO is of primary importance to understanding how animal welfare laws can survive a WTO challenge. Additionally, understanding how the moral exception can be invoked to protect such PPM-based regulations becomes central to this analysis. Taken together, such changes mean that the European Union need not back down from its trade ban in the face of a foreign challenge, but should move forward to open the door to more animal welfare-based trade regulations.

In this Note, PPMs refer to non-product-related PPMs, which are the PPMs most relevant to the animal welfare and trade debate. Such PPMs do not affect the physical characteristics of the final product. Instead, they define the characteristics of the production process. For example, nail polish tested on animals and nail polish not tested on animals reach the consumer with the same physical characteristics. However, the method of production can differ with regard to its testing on animals, which can subsequently affect the preference of regulators and consumers for one product over the other. An example that does not involve animal welfare, and that is a commonly banned practice, is

49 See generally Charnovitz, supra note 17.
50 See Shrimp-Turtle II, supra note 44, at 6514–17 (explaining the requirement that a nation first seek to resolve a trade dispute through bilateral or multilateral negotiation).
51 Id.
52 See Shrimp-Turtle I, supra note 44, at 2792; Charnovitz, supra note 17, at 736–40.
53 Charnovitz, supra note 17, at 736.
54 See generally Shrimp-Turtle I, supra note 44; Charnovitz, supra note 17, at 736–40.
55 See Stevenson, supra note 17, at 111; Charnovitz, supra note 36, at 65–68.
56 Stevenson, supra note 17, at 111.
57 Id.
58 See id.
59 See id.
trading products made by indentured children.\textsuperscript{60} Certainly, the physical characteristics of the thing produced are no different than a product made from paid adult labor.\textsuperscript{61} However, to most policymakers and consumers, the difference in PPMs is highly relevant and factors into their choices regarding the regulation and consumption of such products.\textsuperscript{62}

II. GATT’s Relevant Articles and the Legal Test

In 1995, the WTO was established by re-enacting GATT, which had served as the primary international trade agreement since World War II.\textsuperscript{63} The WTO applied GATT’s articles to all of its Member States, which today include nearly 150 nations.\textsuperscript{64} Approximately thirty more nations are currently engaged in negotiations to join the WTO, meaning that there are few international trade issues that GATT’s articles do not affect.\textsuperscript{65} Disputes over the application of GATT’s articles are appealed to the WTO.\textsuperscript{66} When disputes arise, arbitral panels of three individuals—appointed by the WTO’s Dispute Settlement Body (DSB)—are formed to hear complaints from the aggrieved Member States.\textsuperscript{67} The losing nation can appeal the panel’s decision to the WTO’s Appellate Body.\textsuperscript{68} The Appellate Body then makes a final ruling, which will be adopted by the DSB unless a full consensus of the DSB chooses not to adopt it.\textsuperscript{69} Both panel decisions and Appellate Body decisions are bind-

\textsuperscript{60} See Charnovitz, supra note 17, at 740–42.
\textsuperscript{61} See id.
\textsuperscript{62} See id. Product-related PPMs also exist and are the subject of their own controversies in trade law. See Charnovitz, supra note 36, at 65–66. These include production characteristics that affect the physical characteristics of the final product. Id. Examples include the manufacture of goods with recycled material, or the manufacture of goods that may result in dangerous side effects—the inclusion of a cancer-causing ingredient, for example. Id. The distinction between non-product-related and product-related PPMs is not always clear, and subject to some debate. Id. However, welfare standards in the broiler chicken industry, in the context of this Note, are analyzed as non-product related PPMs. See id.
\textsuperscript{64} World Trade Org., supra note 63, at 7.
\textsuperscript{65} Id.
\textsuperscript{67} Bhala, supra note 66, at 216; see Yavitz, supra note 25, at 211.
\textsuperscript{68} Bhala, supra note 66, at 217.
\textsuperscript{69} Id. at 215. This system guarantees that a ruling will be adopted even if only one nation votes in favor of adoption. Id.
The WTO contains strong enforcement mechanisms in its dispute settlement procedures. Once a final panel or Appellate Body report is made, nations found in violation of GATT articles must either change their trade practices, pay fees to keep the existing trade measure in place, or face trade retaliation, sanctioned by the WTO, from other WTO Member States. Therefore, violations of GATT articles carry real consequences, and nations must often modify their domestic and import-based regulations so as not to face fines or trade sanctions on their own exports.

A. The Three GATT Articles on Anti-Discrimination

Three of GATT’s articles have direct bearing on the European Union’s proposed animal welfare law, but article XI is the most relevant, and problematic, to the analysis. Article I provides that a nation must treat the “like” products of another nation as favorably as it treats the products of any WTO Member State. This is the “General Most-Favored Nation” provision and ensures that no nation grant preference or discrimination to any “like product” of another nation, beyond what is granted to all nations party to the trade agreement.

Article III also uses the term “like product,” and ensures that nations do not grant their own domestic producers favorable treatment over foreign producers. Article III:4 states:

The products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favorable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale . . . .

---

70 Id.
71 Id. at 214; Yavitz, supra note 25, at 211–12.
72 Bhala, supra note 66, at 214.
73 Id. at 215.
74 Id. at 217–18; see Yavitz, supra note 25, at 212.
75 GATT, supra note 63, arts. I, III, XI; see Stevenson, supra note 17, at 109.
76 GATT, supra note 63, art. I.
77 Id.
78 Id. art. III.
79 Id. art. III, para. 4 (emphasis added).
A finding of “like product” under article III means that a WTO member cannot regulate, tax, or otherwise impede the internal sale of a foreign product, beyond how its domestic counterpart is treated.\(^{80}\) For instance, if cosmetics tested on animals and cosmetics not tested on animals satisfy the definition of “like products,” then nations may not pass regulations regarding the importation of the former under article III.\(^{81}\) Alternatively, if the two products are not “like,” then nations may treat the importation of cosmetics tested on animals differently from domestic cosmetics not tested on animals.\(^{82}\) In this case, the importing nation may tax, label or otherwise regulate the product, as long as domestic cosmetics tested on animals are similarly taxed or regulated.\(^{83}\)

Article XI adds one relevant, and very powerful, provision to articles I and III by eliminating quantitative restrictions on imports.\(^{84}\) While articles I and III bar nations from employing discriminatory regulations, such as labeling or taxes, article XI bars nations from setting quotas, including complete embargoes, on foreign products.\(^{85}\) Unlike articles I and III, article XI can be contravened even if no domestic “like product” is produced.\(^{86}\) An outright ban on certain goods can violate article XI, even if those goods are not produced domestically or imported from any country besides the one in question.\(^{87}\) While the question of whether products are “like” is necessary to the analysis of whether articles I or III is contravened, the same is not true for article XI.\(^{88}\) Instead, under article XI analysis, the issue becomes only whether a certain GATT exemption can protect the embargo.\(^{89}\)

The importance of PPM distinctions to the interplay between articles I and III, on the one hand, and article XI on the other, is critical.\(^{90}\) Animal welfare advocates prefer to have regulations analyzed under articles I or III, because under these articles nations can argue

\(^{80}\) Id.; see Schoenbaum, supra note 48, at 272; Yavitz, supra note 25, at 209.

\(^{81}\) See Yavitz, supra note 25, at 209.

\(^{82}\) See, e.g., Asbestos, supra note 44, at 3286–89 (finding that imported cement products containing cancer-causing chrysotile fibres are not “like” domestic cement products that do not contain such fibres, and that regulating the import of the chrysotile-based products does not violate GATT article III.4).

\(^{83}\) See id.

\(^{84}\) GATT, supra note 63, art. XI.

\(^{85}\) See GATT, supra note 63, arts. I, III, XI.

\(^{86}\) Stevenson, supra note 17, at 112–13; see GATT, supra note 63, arts. I, III, XI.

\(^{87}\) Stevenson, supra note 17, at 112–13; see GATT, supra note 63, art. XI.

\(^{88}\) See GATT, supra note 63, arts. I, III, XI; Stevenson, supra note 17, at 112–13.

\(^{89}\) See GATT, supra note 63, art. XI; Charnovitz, supra note 17, at 737.

\(^{90}\) See GATT, supra note 63, arts. I, III, XI; Stevenson, supra note 17, at 112–13.
that the imported products are not “like” the domestic products, and can therefore be regulated or restricted differently. However, according to a note to GATT annex I, regulations that apply to a product itself are analyzed as a potential article III violation, whereas PPM regulations are treated as potential article XI violations. Thus, a nation’s attempt to prevent the importation of a good based on a PPM standard will be analyzed as a potential violation of the rule against setting embargoes or quotas.

In effect, this interpretation of the annex I note means that a nation attempting to condition access to its markets by requiring other nations to subscribe to a similar production standard bans the import of that product, rather than regulating different products differently. Therefore, any regulation that seeks to restrict imports of products that do not meet the same animal welfare standards as the domestic product are treated as quantitative restrictions, and it is not necessary to differentiate that product from any “like” domestic product. Again, the only way to defend a regulation that violates article XI’s rule against quantitative restrictions is to invoke one of the GATT exceptions.

---

91 See GATT, supra note 63, arts. I, III, XI; Stevenson, supra note 17, at 112–13. However, making a successful argument that products with different PPMs are not “like” products under article I or III analyses is also difficult under current Appellate Body jurisprudence. See generally Charnovitz, supra note 36; Kysar, supra note 25. While this Note focuses on whether an animal welfare-based import ban can survive challenge at the WTO, the question of whether, and to what extent, it is permitted to tax, label, or otherwise regulate products resulting from low welfare standards remains open. See generally Charnovitz, supra note 36. This area of the law is changing quickly, and considerations such as consumer preferences are increasingly taken into account by the WTO in deciding whether two products are “like” each other. See Asbestos, supra note 44, at 3275–89. These changes have profound effects on how animal products produced with low welfare standards can be taxed or labeled differently, but are not relevant to the discussion of an import ban on such a product. See id.; Kysar, supra note 25, at 541.

92 GATT, supra note 63, annex I, ad art. III, para. 2. While not the topic of this Note, a strong argument could be made that PPM regulations should be analyzed under GATT articles I and III instead of article XI because consumer preferences substantively differentiate products, and therefore justify nations in taxing, labeling and regulating products made with lower welfare standards. See Stevenson, supra note 17, at 134–35.

93 GATT, supra note 63, annex I, ad art. III.

94 See Stevenson, supra note 17, at 112–13.

95 Id.

96 See Charnovitz, supra note 17, at 737. This Note assumes that the European Parliament’s resolution, if and when it becomes law, will mandate a quantitative restriction on the importation of broiler chicken, rather than a tax, labeling or other non-quantitative requirement. This assumption is based on the text of the resolution as it now reads. See EP Resolution on Broiler Chicken, supra note 1, amend. 8.
B. The Exceptions to GATT’s Anti-Discrimination Articles

If a nation breaches any of the above articles, it may defend itself under one or more GATT exceptions, codified in article XX.97 Article XX, including the subsections relevant to the animal welfare debate, states:

Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures: (a) necessary to protect public morals; (b) necessary to protect human, animal or plant life or health; . . . [or] (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption . . . .98

As Peter Stevenson and other animal welfare advocates have pointed out, these exceptions are not as favorable to environmental or animal welfare laws as they might seem to indicate.99 XX(a), XX(b), and XX(g) are significantly restricted in several ways, including limitations set out in the chapeau of article XX, deference to articles I, II, and XI, and uncertainty about the applicability of articles XX(b) and article XX(g).100

1. The Chapeau’s Limiting Scope

The first restriction is that the three exceptions must be read in conjunction with the introductory language of article XX, termed the “chapeau,” which states that a regulation predicated on an exception must not constitute “arbitrary or unjustifiable discrimination,” or a “disguised restriction on international trade.”101 While GATT panels and the Appellate Body previously avoided applying the chapeau in article XX disputes, today the reviewing body looks to factors such as

97 GATT, supra note 63, art. XX.
98 Id. art. XX(a)–(b), (g) (emphasis added).
99 Stevenson, supra note 17, at 122; Yavitz, supra note 25, at 213.
100 See Stevenson, supra note 17, at 122; Yavitz, supra note 25, at 213. Two of these exceptions are not relevant to this Note’s narrow focus on laws explicitly aimed at animal welfare, discussed infra Part II.B.3.
101 GATT, supra note 63, art. XX.
whether claiming the article XX exception is merely a pretext for a trade restriction that contravenes GATT’s other articles.\textsuperscript{102} Specifically, a reviewing body will want to be assured that foreign and domestic producers are being held to precisely the same standard, and that claiming the exemption is the result of identifiable policies.\textsuperscript{103}

In \textit{United States—Standards for Reformulated and Conventional Gasoline (U.S. Gasoline)}, the WTO Appellate Body found that the terms “arbitrary discrimination,” “unjustifiable discrimination,” and “disguised restriction” give meaning to each other.\textsuperscript{104} In that case, the Appellate Body found that a law that regulated foreign gasoline more closely than domestic gasoline—with regard to gasoline content under the Clean Air Act requirements—was a disguised restriction, because it assessed flexible baseline standards for domestic producers, while giving foreigners a strict statutory baseline.\textsuperscript{105} The Appellate Body held that less discriminatory options to achieve the same standard were more justifiable, such as providing the same flexible baseline standards to all producers—a suggestion the United States countered as too costly and cumbersome to implement.\textsuperscript{106} Therefore, nations claiming an article XX exception must conform to the chapeau by justifying their regulation as the least discriminatory option possible, and by treating all producers equally.\textsuperscript{107}

2. Article XX’s Deference to Articles I, III, and XI

The next restriction on article XX exceptions comes from GATT and WTO rulings that articles I, III, and XI constitute “substantive” rights under GATT, while article XX rights are accorded less deference.\textsuperscript{108} In the landmark case of \textit{United States—Import Prohibitions of Certain Shrimp and Shrimp Products (Shrimp-Turtle I)}, the United States had attempted to block imports from foreign shrimp producers who refused to certify the use of a device to protect sea turtles.\textsuperscript{109} In its analysis, the Appellate Body stated that the right of nations to be free from

\begin{footnotes}
\textsuperscript{102} See Schoenbaum, supra note 48, at 274–76.
\textsuperscript{103} See id.
\textsuperscript{105} \textit{U.S. Gasoline}, supra note 104, at 27–28.
\textsuperscript{106} Id. at 25–28.
\textsuperscript{107} See id.; Schoenbaum, supra note 48, at 275.
\textsuperscript{108} Charnovitz, supra note 36, at 82; see, e.g., \textit{Shrimp-Turtle I}, supra note 44, at 2757.
\textsuperscript{109} \textit{Shrimp-Turtle I}, supra note 44, at 2757.
\end{footnotes}
trade discrimination was a “substantive right,” and that invoking one of the article XX exceptions—in this case, article XX(g)—could “erode or render naught” that substantive right. The ruling referred to the ability of a nation to invoke an article XX exception merely as a right, but not a substantive right. Two years earlier, in Japan—Taxes on Alcoholic Beverages, a similar distinction was made. In striking down a Japanese law attempting to tax various types of alcohol at different levels, the Appellate Body described article III as providing a “sheltering scope” against any of the article XX exceptions invoked by Japan. In effect, WTO arbitral panels and the Appellate Body’s interpretations of GATT elevate the substantive rights of articles I, III, and XI, protecting them at the expense of the article XX exceptions.

3. The Inapplicability of Articles XX(b) and XX(g)

The final limitation is that articles XX(b) and XX(g) cannot necessarily be invoked to protect solely welfare-based regulations. Article XX(b) allows for exceptions to free trade law to protect animal life and health, but it remains unclear whether this exception can be interpreted to apply to welfare-based regulations, as well. This uncertainty is due to the fact that measures necessary to protect animal life or health are typically confined to preventing the spread of diseases or to ensure the safety of food products for humans. Therefore, the article XX(a) moral exception should be used to determine whether welfare-based laws can withstand scrutiny under international trade law on their own merits, without connection to their effect on public health.

---

110 Id. at 2805. In this case, the United States attempted to apply the article XX(g) exception because its regulation was aimed at protecting endangered turtles, an exhaustible natural resources. Id. at 2757.

111 Id. at 2805.


113 See id. at 109–10.

114 See id. at 109–10.

115 See Charnovitz, supra note 17, at 737.

116 See Stevenson, supra note 17, at 135–36.


118 See Charnovitz, supra note 17, at 737; Stevenson, supra note 17, at 135–36.
The article XX(g) exception on exhaustible natural resources is also inapplicable to the animal welfare analysis. While laws that fall under this exception often relate favorably to the protection of animals—limiting the incidental taking of turtles during shrimp trawling, for instance—this exception is not relevant to solely welfare-based regulations. This is a separate analysis from assessing whether regulations with the singular purpose to lessen animal suffering can survive scrutiny at the WTO.

Consequently, the exception most relevant to this discussion is XX(a), which provides for exceptions “necessary to protect public morals.” Laws that would likely fall under XX(a), but neither XX(b) nor XX(g), include the banning of leg-hold traps in the fur trade and outlawing cosmetics tested on animals. These laws are not proposed in order to protect food safety or prevent the extinction of a certain species, and therefore, neither XX(b) nor XX(g) would apply. To date, the WTO has not ruled on the application of the moral exception to animal welfare, though it has ruled on articles XX(b) and XX(g).

Notably, many laws that have potentially beneficial effects on animal well-being are indeed analyzed under XX(b) and XX(g) exceptions, such as regulations on hormone levels in dairy cows or laws to protect endangered species. In fact, animal welfare advocates are arguing for the inclusion of the term “animal welfare” in article XX(b) in order to make it more feasible to enact laws that lessen animal suffering using this exception. In addition, some advocates argue for a more expansive definition of “animal health” under XX(b), which would define an animal’s health by how much pain it suffers. This definition follows from the premise that protecting the health of an animal should include all aspects of its well-being, including its level of suffering. Although these are important and evolving areas of the law affecting animals, the underlying assumption in this analysis is that ar-

\footnotesize

119 See GATT, supra note 63, art. XX(g).
120 See generally Shrimp-Turtle I, supra note 44.
121 GATT, supra note 63, art. XX(a).
122 See Stevenson, supra note 17, at 108–09.
123 See id.
124 See Charnovitz, supra note 17, at 690.
125 See generally Hormones, supra note 117; Shrimp-Turtle I, supra note 44.
126 Stevenson, supra note 17, at 135–36.
128 Id.
129 See id.
articles XX(b) and XX(g) are generally inapplicable to solely welfare-based import bans, and an animal welfare law would instead be analyzed under article XX(a).

C. The Legal Test

A law that conditions market access on the adoption of certain PPM standards by the exporting nation is a violation of article XI’s rule against quantitative restrictions. If a law restricts or bans the number of imports of any good, the WTO is not concerned with whether there is a “like” domestic or foreign product to compare it with, as it would with an import tax or labeling requirement under articles I and III. Instead, such a trade restriction must qualify as an article XX exception in order to survive WTO scrutiny.

In order for a PPM-based import ban to survive as an article XX(a) moral exception, it must pass a three-prong test. No such case has yet been reviewed by the WTO, but as Steve Charnovitz argued in his influential article on the moral exception, given the textual similarities between the various article XX exceptions, the test will almost certainly be derived from past GATT and WTO decisions dealing with other exceptions, including XX(b) and XX(g). The test, which first appeared in U.S. Gasoline, determines whether the regulation: (1) advances a policy goal that fits within the scope of a “public moral”; (2) is “necessary” to protect that moral; and (3) is not a violation of the chapeau’s ban on trade discrimination or protectionism. Regulations can be found as

---

130 See Charnovitz, supra note 17, at 737 (discussing how a law banning leg-hold traps in the fur trade could not be exempted on XX(b) grounds).

131 GATT, supra note 63, art. XI; see supra Part II.A.

132 Stevenson, supra note 17, at 112–13.

133 Id. at 121–22.

134 See Charnovitz, supra note 17, at 729–30.

135 Id. at 689, 729.

136 U.S. Gasoline, supra note 104, at 12–20 (laying out the order of analysis under an article XX(g) review); Charnovitz, supra note 17, at 729 (presuming the test for the panel’s XX(b) analysis in U.S. Gasoline would be applied to an article XX(a) analysis); see also Panel Report, United States—Standards for Reformulated and Conventional Gasoline, WT/DS2/R (Jan. 17, 1996), reprinted in 1 Dispute Settlement Reports 1996, at 29, 48–49 (1996) (describing the order of analysis under article XX(b)). This Note also assumes that the same order of analysis for an XX(b) or XX(g) review will be used in an article XX(a) review.
illegal restraints on trade during any one prong of the analysis. If an animal welfare law is to survive, it must satisfy each prong of the test.

1. The First Prong: Does the Regulation Protect a Public Moral?

The exception at issue in an animal welfare-based import ban is article XX(a), the moral exception. Therefore, the first prong is whether the policy rationale for an import ban fits within the scope of protecting “public morals.” This prong is the easiest to satisfy, and simply asks whether the regulated conduct is one typically regulated by governments on a moral basis. Examples of conduct regulated on a moral basis likely include the trade in alcohol and drugs, obscene materials, gambling, and the trade in animals. Such actions are ones traditionally regulated by government under the rubric of protecting morals, and their regulation is generally accepted as within the scope of sovereign power. Precisely which moral a regulation seeks to defend is determinative in this prong.

2. The Second Prong: Is the Regulation Necessary?

The second prong asks whether the regulation in question is “necessary” to protect public morals. A trade regulation will be deemed necessary only if (1) it is not outwardly directed, and (2) less trade restrictive alternatives are exhausted. Regulations that are explicitly directed at foreign producers are considered outwardly directed, and thus unnecessary. In addition, if alternative trade measures are available that are more consistent, or less inconsistent, with GATT rules, the

---

137 Yavitz, supra note 25, at 210; see Schoenbaum, supra note 48, at 276.
138 U.S. Gasoline, supra note 104, at 20–27 (holding that the U.S. import restriction on foreign gasoline failed the third prong of the analysis, and therefore did not qualify under the exception).
139 See Charnovitz, supra note 17, at 737.
140 Id.
141 Id.
142 Id. at 706, 729–30.
143 See, e.g., Farm Animal Stewardship Purchasing Act, H.R. 5557, 109th Cong. (2d Sess. 2006) (proposing a law to ensure “humane” factory conditions in the United States). For an overview of how nations have traditionally regulated these concerns, and provided for their exception in trade law, see Charnovitz, supra note 17, at 694–728.
144 See Charnovitz, supra note 17, at 737.
145 Asbestos, supra note 44, at 3242; Shrimp-Turtle I, supra note 44, at 2792.
146 See Asbestos, supra note 44, at 3242; Shrimp-Turtle I, supra note 44, at 2792.
147 Tuna-Dolphin II, supra note 41, ¶¶ 5.34–.39.
regulation will also be found unnecessary. While this is the current interpretation of the “necessary to” prong, criticism that this reading fundamentally misinterprets the plain language of article XX(a) is persuasive, and is laid out infra Part IV.B.

a. The Outwardly Directed Nature of the Regulation

The first factor to be assessed under the “necessary” prong is the outwardly directed nature of the regulation. Laws that seek to protect human or animal health, or morals, will often compel producers in other nations to adjust their PPMs in order to comply. Therefore, outwardly directed regulations, also known as extraterritorial regulations, will receive close scrutiny under this requirement, and be deemed unnecessary if they impermissibly regulate conduct beyond their borders. In the context of animal welfare, this situation is problematic because a ban on a certain PPM inherently affects foreign producers who utilize that PPM and then want to export to the nation in question. Those foreign producers are then compelled to change their production methods in order to comply with another nation’s standards. This ban is precisely the type of regulation that might be problematic under the second prong, because it unnecessarily mandates changes in foreign nations. However, PPM-based trade bans with outward effects have recently survived WTO scrutiny, and may open the door to animal welfare trade bans being found valid under the “necessary” requirement, as well.

b. Less Trade-Restrictive Alternatives

A second factor to assess under this prong is whether trade regulations besides an outright trade ban would be more consistent, or less inconsistent, with GATT rules. This is a highly fact-intensive prong,

---

149 Tuna-Dolphin II, supra note 41, ¶ 5.38.
150 See id. ¶¶ 2.1–.3, 5.38–.39 (discussing the outward effects of a U.S. ban on foreign tuna caught without certification of low dolphin kill ratios, and why such effects make the ban unnecessary).
151 See id.
152 Id. ¶ 5.34–.39.
153 Id.
154 Id.
155 See generally Asbestos, supra note 44; Shrimp-Turtle I, supra note 44.
156 Thai-Cigarettes, supra note 148, ¶¶ 72–77.
and nations utilizing an import ban must put forth evidence to an arbitral panel or the Appellate Body explaining why such a measure is as minimally trade-restrictive as possible in order to be “necessary.”\textsuperscript{157} One way for a nation to show that no measure exists that is more consistent with GATT is to put forth evidence that it attempted to negotiate, on a bilateral or multilateral basis, with its trading partners on the desired change.\textsuperscript{158} In fact, the WTO will likely find that an import ban or restriction is not “necessary” unless the regulating nation has first made an effort to resolve the issue through diplomacy and trade agreement.\textsuperscript{159} However, these efforts alone are not enough to satisfy the “necessary” prong.\textsuperscript{160}

3. The Third Prong: Does the Regulation Violate the Chapeau?

The third prong of the analysis is whether the regulation “constitute[s] a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade.”\textsuperscript{161} This language comes directly from the chapeau of article XX.\textsuperscript{162} One anomaly of this analysis is that because of the interpretation of “necessary” under the second prong, both the second and third prongs pertain to anti-discrimination and least trade-restrictive characteristics.\textsuperscript{163}

Under the third prong, if the purpose of the regulation in question is to confer a competitive advantage on the domestic industry, or to generally restrict trade, rather than to legitimately protect the morals of society, then the WTO will find the regulation does not merit exception.\textsuperscript{164} While it is true that a regulation can at once protect morals while also conferring a competitive advantage, the question under this prong is whether the regulation is a “disguised” attempt to confer the advantage.\textsuperscript{165} Therefore, a regulation explicitly aimed at domestic producers, not just at foreigner producers, is more likely to satisfy this prong.\textsuperscript{166}

\begin{footnotes}
\item[157] Id.; Charnovitz, supra note 17, at 733.
\item[158] See Stevenson, supra note 17, at 122–23.
\item[159] Id.
\item[160] Id.
\item[161] GATT, supra note 63, art. XX; see Charnovitz, supra note 17, at 739–40.
\item[162] GATT, supra note 63, art. XX.
\item[163] Schoenbaum, supra note 48, at 276–77.
\item[164] Charnovitz, supra note 17, at 739–40.
\item[165] See id.
\item[166] See id.
\end{footnotes}
III. Analysis of the European Union’s Broiler Chicken Import Ban Under GATT

To apply the above analysis to the European Union’s proposed trade restriction on broiler chicken, it is first important to note that this regulation would only be reviewed by the WTO should another Member State file a complaint. Absent such a complaint, the European Union is free to pass any type of import restriction it wants. However, as the European Union is a major economic market and this law represents a significant barrier to chicken exporters, the regulation is likely to prompt a complaint. Therefore, this analysis is predicated on the European Union approving a quantitative import ban on broiler chicken that do not meet certain PPM welfare standards, and a complaint being filed at the WTO by an exporting nation.

Secondly, the European Union may very well be persuaded not to pass such an import restriction, as was the case in the 1990s with a proposed law on leg-hold traps in the fur industry. In that case, before the European Union approved the import regulation, the U.S. and Canadian governments threatened to bring suit in the WTO should such a law go into effect. The European Union backed down, never passed the regulation, and instead opted to negotiate several weaker treaties on fur imports with its trading partners. However, given the broiler chicken import ban’s prospects for satisfying the modern, three-pronged analysis, the European Union should not back down in the face of such threats.

A. The First Prong: Does the E.U. Broiler Chicken Regulation Protect a Public Moral?

The first prong of the analysis is whether raising welfare standards for broiler chicken is within the scope of the “public morals” exception. The rationale behind the law is to prevent the cruel treatment

---

168 See id.
169 Cf. Nollkaemper, supra note 18, at 1–2 (discussing how a previous attempt by the European Union to ban imports on the basis of animal welfare—i.e., fur pelts obtained from leg-hold traps—met with threats of a trade complaint).
171 Id. at 58.
172 Id.
173 U.S. Gasoline, supra note 104, at 10; see Charnovitz, supra note 17, at 737.
of chicken in meat production. This regulation would likely satisfy the “public moral” requirement. Nations often define and regulate morals with regard to animal welfare. For instance, on June 8, 2006, U.S. Representatives Christopher Shays and Peter DeFazio introduced the Farm Animal Stewardship Purchasing Act to Congress. While the bill has yet to become law, its stated purpose is “to promote the humane treatment of animals” and “minimize[] [the] needless suffering” of pigs, cattle, chicken, and other animals reared for consumption. The bill requires that all suppliers of meat to U.S. government entities comply with minimum standards of animal welfare. The primary purpose of the bill is to improve animal welfare, not to safeguard human health or prevent the extinction of certain species. Such laws illustrate that animal welfare is often regulated as a moral concern, and protecting such a moral falls within the scope of authority and discretion of sovereign nations.

The language of the proposed E.U. regulation also focuses on improving animal welfare for the animals’ sake. For instance, the Committee on Agriculture and Rural Development stated the following in its Explanatory Note to this resolution:

The new legislative proposal is a response to increasing public concern about animal welfare. The place occupied by animals in our societies has changed. Despite the industrialisation of farming, animals are now seen as sentient beings which have a right to respect. This is a long-overdue victory for Aristotle, who believed that Man (sometimes) differed from animals in his ability to reason, but shared with them a capacity for movement and, above all, feeling.

Therefore, it is evident that the essential impetus for the law is the moral consideration of animal suffering. The WTO will likely de-

174 See id.
175 See generally EP Resolution on Broiler Chicken, supra note 1.
176 Charnovitz, supra note 17, at 694–728.
178 Id.
179 Id. § 3.
180 Id.
181 See id.
183 Id.
184 See id.
termine that a law aimed at improving welfare standards for broiler chickens falls into the category of a moral exception.\textsuperscript{185}

B. The Second Prong: Is the E.U. Broiler Chicken Regulation “Necessary”?\textsuperscript{186}

The second prong of the analysis is whether the proposed broiler chicken regulation is “necessary” to achieve the E.U. goal of promoting higher animal welfare standards.\textsuperscript{187} This prong asks whether the regulation is the least trade-restrictive option possible, and whether all other options have been exhausted.\textsuperscript{188}

1. The Outwardly Directed Nature of the Import Ban

The first factor to consider is the outwardly directed nature of the regulation.\textsuperscript{189} The import ban will take effect by conditioning access to the E.U. market on exporting countries’ adoption of welfare standards similar to the proposed E.U. law.\textsuperscript{190} The European Union will likely argue that its broiler chicken law is only attempting to regulate the products that are bought and sold within its jurisdiction, and therefore is necessary to safeguard public morals.\textsuperscript{191} The argument is that nations should possess the sovereign power to set such standards for the goods consumed internally, regardless of whether such standards also have outward effects.\textsuperscript{192}

Recent WTO Appellate Body ruling supports this argument.\textsuperscript{193} Import bans based on PPM standards, which have outward effects, are no longer per se invalid under WTO precedent.\textsuperscript{194} While a GATT panel in United States—Restrictions on Imports of Tuna (Tuna-Dolphin II) prohibited a PPM import ban on the grounds of its extrajurisdictional effects, the 1998 and 2001 rulings in United States—Import Prohibitions of Certain Shrimp and Shrimp Products (Shrimp-Turtle I and Shrimp-Turtle II, respectively) altered this holding.\textsuperscript{195} In the Shrimp-Turtle cases, the United States

\textsuperscript{185} See Charnovitz, supra note 17, at 705–10, 737.
\textsuperscript{186} See U.S. Gasoline, supra note 104, at 13 (analyzing the parallel “related to” prong of the article XX(g) analysis).
\textsuperscript{187} See Thai-Cigarettes, supra note 148, ¶¶ 72–77.
\textsuperscript{188} See Shrimp-Turtle I, supra note 44, at 2792.
\textsuperscript{189} EP Resolution on Broiler Chicken, supra note 1, amend. 8.
\textsuperscript{190} See id.
\textsuperscript{191} Stevenson, supra note 17, at 126.
\textsuperscript{192} See generally Shrimp-Turtle I, supra note 44.
\textsuperscript{193} Id. at 2792; Tuna-Dolphin II, supra note 41, ¶¶ 5.34–.39.
\textsuperscript{194} Shrimp-Turtle II, supra note 44, at 6526–27; Shrimp-Turtle I, supra note 44, at 2757–58; Tuna-Dolphin II, supra note 41, ¶ 6.1.
States prohibited the importation of shrimp caught by foreign trawlers that did not certify the use of a turtle-excluder device (TED) to spare the killing of endangered sea turtles.\textsuperscript{195} Several countries raised a complaint at the WTO on grounds that this ban violated article XI.\textsuperscript{196} The United States sought to defend itself under articles XX(b) and XX(g).\textsuperscript{197}

In \textit{Shrimp-Turtle I}, the Appellate Body held that the regulation was unfairly discriminatory against foreign nations, but on very narrow grounds.\textsuperscript{198} Most importantly, the Appellate Body did not attack the outward effects of the regulation, even though the United States imposed a PPM standard on how shrimp were caught outside of its territorial waters.\textsuperscript{199} Instead, the Appellate Body found that the regulation was not crafted as narrowly as possible—it did not allow shrimp exporters enough time to alter their fishing methods, nor did it include alternative methods, besides the TED, to protect turtles.\textsuperscript{200} Therefore, the Appellate Body found the regulation violated the “unjustifiable” and “arbitrary” requirement of the chapeau, but not the outward-effects test of the necessary prong.\textsuperscript{201} Three years after the first ruling, the Appellate Body in \textit{Shrimp-Turtle II} found that upon subsequent revision of the regulation by the United States—permitting nations more time to comply, and accepting certification of measures that are “comparable in effectiveness” to the TED—the regulation satisfied the “arbitrary discrimination” prong, and thus did not violate GATT.\textsuperscript{202}

In these landmark rulings, the Appellate Body recognized that article XX exceptions will sometimes permit laws that condition exporters’ access to domestic markets on compliance with certain PPM standards.\textsuperscript{203} The Appellate Body in Shrimp-Turtle II explicitly adopted the following from the Panel’s report:

\begin{quote}
It is not necessary to assume that requiring from exporting countries compliance with, or adoption of, certain policies . . . renders a measure a priori incapable of justification under article XX. Such an interpretation renders most, if not all, of the specific exceptions of article XX inutile, a result abhor-
\end{quote}

\textsuperscript{195} \textit{Shrimp-Turtle I}, supra note 44, at 2759.
\textsuperscript{196} \textit{Id.} at 2756–57, 2766.
\textsuperscript{197} \textit{Id.} at 2760.
\textsuperscript{198} \textit{Id.} at 2816–19.
\textsuperscript{199} \textit{Id.} at 2792.
\textsuperscript{200} \textit{Id.} at 2813–18.
\textsuperscript{201} \textit{Shrimp-Turtle I}, supra note 44, at 2819.
\textsuperscript{202} \textit{Shrimp-Turtle II}, supra note 44, at 6525–27.
\textsuperscript{203} \textit{Id.} at 6525–27; \textit{Shrimp-Turtle I}, supra note 44, at 2792.
rent to the principles of interpretation we are bound to apply.\textsuperscript{204}

Unlike \textit{Tuna-Dolphin II}, the Appellate Body in \textit{Shrimp-Turtle I} was unwilling to assert that the mere presence of outward effects failed this prong of the analysis.\textsuperscript{205}

Therefore, the broiler chicken regulation will not necessarily fail the second prong, simply because it has outward effects.\textsuperscript{206} Under \textit{Shrimp-Turtle I} reasoning, an import ban may be required to protect human health, endangered species, or morals, even if the ban affects how products will be caught or produced outside of a nation’s jurisdiction.\textsuperscript{207} The Appellate Body recognized that otherwise, citizens would eventually be supplied with the products it charged its government with prohibiting.\textsuperscript{208} This belated realization by the Appellate Body in this case is a step forward for animal welfare laws, at least with regard to passing the second prong of the article XX test.\textsuperscript{209}

Although \textit{Shrimp-Turtle I} did not strike down a PPM-based import restriction because of its outward effects, two factors weigh against its direct application to the European Union’s broiler chicken law.\textsuperscript{210} First, the Appellate Body in that case analyzed the article XX(g) claim, which states that a regulation must be “relat[ed] to” protecting natural resources, rather than the “necessary to” standard of articles XX(a) and XX(b).\textsuperscript{211} Therefore, it is not clear whether an import regulation based on morals, when analyzed under an article XX(a) “necessary to” standard, would face higher, or different, scrutiny with regard to the outward effects of the regulation.\textsuperscript{212} What is clear is that the necessary prong requires a more exacting requirement that no other less inconsistent trade measures exist.\textsuperscript{213} This requirement does not exist under the “related to” analysis.\textsuperscript{214} Therefore, the \textit{Shrimp-Turtle I} case suggests

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{204} \textit{Shrimp-Turtle II}, supra note 44, at 6521 (quoting Panel Report, \textit{United States—Import Prohibition of Certain Shrimp and Shrimp Products}, ¶ 121, WT/DS58/RW (June 15, 2001)).
\item \textsuperscript{205} \textit{Shrimp-Turtle I}, supra note 44, at 2792; \textit{Tuna-Dolphin II}, supra note 41, ¶¶ 5.38–6.2.
\item \textsuperscript{206} See \textit{Shrimp-Turtle I}, supra note 44, at 2792.
\item \textsuperscript{207} Id.
\item \textsuperscript{208} See id.
\item \textsuperscript{209} See id.
\item \textsuperscript{210} See \textit{id}.
\item \textsuperscript{211} GATT, supra note 63, art. XX(b), (g); \textit{Shrimp-Turtle I}, supra note 44, at 2801.
\item \textsuperscript{212} See \textit{Shrimp-Turtle I}, supra note 44, at 2801; Stevenson, supra note 17, at 135 (recommending the use of “relating to” under articles XX(a) and XX(b) in order to clarify the analysis, and broaden the types of regulations that can pass this prong).
\item \textsuperscript{213} Stevenson, supra note 17, at 135.
\item \textsuperscript{214} Id.
\end{itemize}
\end{footnotesize}
that PPM-based import restrictions are not per se unnecessary, simply because they have outward effects. But the analysis from *Shrimp-Turtle I* still requires a showing under a “necessary to” analysis that no less inconsistent trade measures exist.

Second, the Appellate Body in *Shrimp-Turtle I* went on to find that a “nexus” existed between the foreign turtles and the United States. This finding permitted the Appellate Body to hold that the ban could be justified under article XX(g). However, it is not clear whether such a nexus would exist between the European Union and broiler chickens in other countries. In *Shrimp-Turtle I*, the Appellate Body conceded that although the United States does not have jurisdiction to protect foreign turtles, the U.S. regulation protects foreign turtles. It reconciled this discrepancy by pointing to the fact that sea turtles are migratory, and presumed to enter and exit U.S. waters during their lifetimes. The Appellate Body used that contention to establish the requisite nexus between the United States and the turtles. This contention, which is contestable, allowed the Appellate Body to find that such a link gives the United States the ability to protect foreign turtles through an import ban on shrimp caught without TEDs.

In order to satisfy this prong, the European Union therefore must argue that its import ban is not regulating the conduct of all foreign chicken producers, but only those that choose to export into the European Union. If import bans based on PPM standards are not per se unenforceable after *Shrimp-Turtle I*, then a law protecting the welfare of animals, as applied to products flowing across E.U. borders, should be enforceable. As for the nexus requirement in *Shrimp-Turtle I*, the European Union should argue that in order for it to mandate higher welfare standards for its own chicken, it must apply that regulation evenly to all chicken imports. Otherwise, the law itself might be sub-

---

215 *Shrimp-Turtle I*, supra note 44, at 2792.
216 See, e.g., *Asbestos*, supra note 44, at 3292 (requiring a showing of no other less inconsistent trade measures for the E.U. import ban to survive scrutiny under the necessary prong).
217 *Shrimp-Turtle I*, supra note 44, at 2798.
218 Id.
219 See id.
220 Id. at 2796–98.
221 Id.
222 See id. at 2798.
223 See *Shrimp-Turtle I*, supra note 44, at 2798.
224 See id.
225 See id.
226 See id.
ject to domestic industry opposition or evasion, and the chances of the European Union’s long-term success in raising its own chicken welfare standards could be imperiled.\textsuperscript{227} Furthermore, the European Union should emphasize that in \textit{Shrimp-Turtle I}, a very weak nexus was established between the foreign turtles and the ability of the United States to protect them.\textsuperscript{228} That nexus was based only on the possibility that turtles caught by other nations \textit{might} migrate inside U.S. waters during their lifetime.\textsuperscript{229} However, the Appellate Body did not require proof of this contention, and held that the possibility alone was enough.\textsuperscript{230}

2. Less Trade-Restrictive Alternatives

Under the second prong, a nation challenging the ban will likely raise the issue that alternative measures to protect the welfare of chicken are less trade-restrictive than an import ban.\textsuperscript{231} The Appellate Body will then use a fact-based analysis to determine whether such alternatives are feasible.\textsuperscript{232} If the reviewing body concludes that less trade-restrictive alternatives are feasible, the article XX(a) exception will be inapplicable.\textsuperscript{233} However, import bans that are as least discriminatory and as flexible as possible will be viewed more favorably by the Appellate Body when compared to alternatives.\textsuperscript{234}

In \textit{European Communities—Measures Affecting Asbestos and Asbestos-Containing Products (Asbestos)}, France attempted to ban imports of products made with chrysotile asbestos fibers, a known carcinogen.\textsuperscript{235} Canada, which exported cement-based products containing asbestos to France, challenged the import ban as a violation of several trade provisions, including article XI.\textsuperscript{236} France defended its action by invoking article XX(b), claiming the measure was necessary to protect human health.\textsuperscript{237} In its analysis of the “necessary to” requirement, the Appellate Body considered Canada’s argument that a “reasonably available alternative” existed to the import ban, in the form of a “controlled use”

\textsuperscript{227} See supra Part I.
\textsuperscript{228} See \textit{Shrimp-Turtle I}, supra note 44, at 2756–60, 2798.
\textsuperscript{229} See id. at 2797–98.
\textsuperscript{230} See id.
\textsuperscript{231} See Asbestos, supra note 44, at 3242; \textit{Thai-Cigarettes,} supra note 148, §§ 75–81.
\textsuperscript{232} Asbestos, supra note 44, at 3242; \textit{Thai-Cigarettes,} supra note 148, §§ 75–81.
\textsuperscript{233} Asbestos, supra note 44, at 3242; \textit{Thai-Cigarettes,} supra note 148, §§ 75–81.
\textsuperscript{234} See Asbestos, supra note 44, at 3242; \textit{Thai-Cigarettes,} supra note 148, §§ 75–81.
\textsuperscript{235} Asbestos, supra note 44, at 3240–43.
\textsuperscript{236} Id. at 3242.
\textsuperscript{237} See id. at 3289.
provision.\textsuperscript{238} Such an alternative law would state that imports of asbestos could continue, but that France could control the use of the asbestos through internationally recognized safety precautions, use restrictions, and other methods.\textsuperscript{239} The Appellate Body rejected that argument, stating that, “[i]n our view, France could not reasonably be expected to employ any alternative measure if that measure would involve a continuation of the very risk that the [import ban] seeks to ‘halt.’”\textsuperscript{240} As such, the Appellate Body found that France was within its discretion to set a complete import ban on asbestos, and that the controlled use alternative was not “reasonably available.”\textsuperscript{241}

This case suggests a degree of latitude for nations to craft the types of regulations they deem necessary to protect certain policy goals.\textsuperscript{242} The fact that Canada could allege a less trade-restrictive alternative was not enough to supersede France’s discretion to ban asbestos altogether.\textsuperscript{243} The Appellate Body conceded that the alternative was possible, but remained convinced that France’s ban on asbestos was necessary to protect human health.\textsuperscript{244} The E.U. import ban on broiler chicken may be accorded the same deference, in light of alternatives such as a labeling or taxing scheme.\textsuperscript{245} The result in \textit{Asbestos} is an encouraging holding for the E.U. law, because less trade-restrictive alternatives to the import ban will always exist, but the feasibility of such alternative will not, per se, invalidate the ban.\textsuperscript{246}

The \textit{Asbestos} case is not entirely favorable to a potential analysis of the necessity of the E.U. broiler chicken regulation, however.\textsuperscript{247} In its ruling, the Appellate Body relied on language from \textit{Korea—Measures Affecting Imports of Fresh, Chilled and Frozen Beef}, which held that public policies viewed as “more vital or important” are easier to find necessary to protect.\textsuperscript{248} Here, the short shrift historically given to animal welfare issues by most nations, and presumably by Appellate Body members, will likely become relevant.\textsuperscript{249} The importance of protecting French

\begin{itemize}
\item \textsuperscript{238} \textit{Id.} at 3292–93.
\item \textsuperscript{239} \textit{Id.} at 3294–95.
\item \textsuperscript{240} \textit{Id.} at 3295.
\item \textsuperscript{241} \textit{Asbestos}, \textit{supra} note 44, at 3295.
\item \textsuperscript{242} See \textit{id.}
\item \textsuperscript{243} \textit{Id.}
\item \textsuperscript{244} \textit{Id.}
\item \textsuperscript{245} See \textit{id.}
\item \textsuperscript{246} See \textit{id.}
\item \textsuperscript{247} See \textit{Asbestos}, \textit{supra} note 44, at 3292.
\item \textsuperscript{248} \textit{Id.} (quoting Appellate Body Report, \textit{Korea—Measures Affecting Imports of Fresh, Chilled and Frozen Beef}, WT/DS161/AB/R (Jan. 10, 2001)).
\item \textsuperscript{249} See \textit{id.}
\end{itemize}
citizens from cancer was central to the analysis of finding the import ban “necessary.”\textsuperscript{250} The Appellate Body found such protection “vital and important in the highest degree.”\textsuperscript{251} Whether a law protecting the welfare of animals will receive the same deference is not at all clear, and unsettled by Appellate Body precedent.\textsuperscript{252} However, a fair assumption would be that animal welfare laws would not be deemed as vital and important as laws that seek to prevent cancer in humans.\textsuperscript{253}

While it makes sense to accord greater deference to laws seeking to protect human health than to animal welfare, the focus of an article XX(a) analysis should remain on balancing a valid moral with restrictions on free trade.\textsuperscript{254} Under such an analysis, animal welfare laws fall squarely within the purview of moral consideration,\textsuperscript{255} and an import ban that is as minimally discriminatory and flexible as possible lessens the adverse impact of the trade restriction.\textsuperscript{256} As such, the European Union should attempt to negotiate bilateral or multilateral agreements with nations that export chicken to the European Union. Under current WTO precedent, this process is an important step toward showing that the import ban is “necessary” due to the exhaustion of other alternatives, and that the ban is not a protectionist measure.\textsuperscript{257}

Another way for the European Union to demonstrate that other less restrictive alternatives do not exist would be to include an exception to the ban for chicken exporters who comply with the same high welfare standards, even if located in nations that do not require those same standards. In Thailand—Restrictions on Importation of and Internal Taxes on Cigarettes (Thai-Cigarettes), an import ban on all foreign cigarettes did not satisfy the “necessary” prong because it banned all foreign producers outright, without permitting any producers to qualify for an exemption.\textsuperscript{258} The Thai government defended its import ban under article XX(b), in order to protect its citizens from the dangers

\textsuperscript{250} Id.
\textsuperscript{251} Id.
\textsuperscript{252} See id.
\textsuperscript{253} See Asbestos, supra note 44, at 3292.
\textsuperscript{254} See generally Shrimp-Turtle I, supra note 44 (balancing the protection of endangered sea turtles with the important aim of free trade).
\textsuperscript{255} See supra Part III.A.
\textsuperscript{256} See generally Shrimp-Turtle I, supra note 44.
\textsuperscript{257} Shrimp-Turtle II, supra note 44, at 6514–17 (discussing the requirement that the U.S. attempt to negotiate a multilateral agreement on the issue of turtle protection before it can justify its measure); U.S. Gasoline, supra note 104, at 25–26 (discussing U.S. failure to negotiate with Venezuela and Brazil before imposing trade restrictions).
\textsuperscript{258} Thai-Cigarettes, supra note 148, ¶¶ 72–81.
of smoking.\textsuperscript{259} A GATT panel found that alternatives such as a ban on cigarette advertising could achieve the same goal without being trade restrictive, and deemed the regulation a trade violation.\textsuperscript{260} Had the Thai government allowed some foreign producers to import into Thailand, such as those that agreed not to advertise, it is more likely the GATT panel would have upheld the regulation.\textsuperscript{261} Therefore, the European Union should allow chicken producers to apply for certification based on their use of the same welfare standards.\textsuperscript{262}

The European Union should also implement reasonable and flexible guidelines for foreign producers to reach the desired welfare standards.\textsuperscript{263} In \textit{Shrimp-Turtle I}, the U.S. regulation was found invalid because it did not provide a reasonable amount of time for foreign producers to comply with the regulation, and the United States did not allow other conservation techniques, besides TEDs, to be used.\textsuperscript{264} As such, foreign chicken exporters should be given a certain reasonable amount of time to come into compliance with the regulation.\textsuperscript{265} In addition, various humane methods for housing, feeding, caring for, and slaughtering chickens should be permitted, in order to make the requirement on foreign producers less burdensome.\textsuperscript{266} This standard is similar to the provision in \textit{Shrimp-Turtle II}, which required the United States to institute a more flexible certification process, rather than mandating only one method of turtle protection.\textsuperscript{267}

All of these factors, taken together, assure that a proposed import ban on broiler chicken is as “necessary” and as least trade-restrictive as possible, thus making it more likely to survive challenge.

\textbf{C. The Third Prong: Does the E.U. Broiler Chicken Regulation Violate the Chapeau?}

If the E.U. import regulation passes the second prong, it is unlikely to fail the third prong, because much of the analysis of anti-discrimination and least trade-restrictive alternatives now takes place

\textsuperscript{259} \textit{Id.} \textsuperscript{¶} 21.
\textsuperscript{260} \textit{Id.} \textsuperscript{¶¶} 72–81.
\textsuperscript{261} \textit{See id.} \textsuperscript{¶¶} 76–81.
\textsuperscript{262} \textit{See generally id.}
\textsuperscript{263} \textit{See Shrimp-Turtle I, supra} note 44, at 2813–16.
\textsuperscript{264} \textit{Id.}
\textsuperscript{265} \textit{See id.} at 2815.
\textsuperscript{266} \textit{See id.} at 2813–15.
\textsuperscript{267} \textit{Shrimp-Turtle II, supra} note 44, at 6523–6525.
under the “necessary” requirement.\textsuperscript{268} Even the \textit{Thai-Cigarettes} case, which banned all foreign cigarette imports while permitting domestic cigarette production, did not reach the third prong analysis, because it failed the second prong.\textsuperscript{269} This regulation clearly violated the third prong’s chapeau requirement, as the cigarette import ban is a quintessential example of a protectionist measure.\textsuperscript{270}

Therefore, the limited analysis of this prong would focus on whether foreign and domestic producers are being held to the same standard for broiler chicken welfare.\textsuperscript{271} The proposed European Parliament resolution mandates compliance across the European Union, with specific provisions for chicken welfare, such as stocking densities, lighting, and surgical procedures.\textsuperscript{272} E.U. producers will certainly be the first and primary targets of this regulation, and their compliance is a main goal for the law’s drafters.\textsuperscript{273} There seems to be little question about whether the European Union’s own chicken industry will be held to these standards.\textsuperscript{274} Thus, as long as the welfare standards are equally applied, and not arbitrarily imposed on foreign producers, the third prong will likely be satisfied.\textsuperscript{275}

\section*{IV. Criticisms of the Current Article XX Analysis}

Serious criticism of the current article XX analysis exists, and should be taken into account by the Appellate Body or arbitral panel if it is confronted with a trade dispute on the E.U. broiler chicken law, or any other import regulation premised on the moral exception.\textsuperscript{276} Remediying the current analysis will make it more likely that the European Union’s import ban will pass scrutiny, and will more effectively balance free trade and protection of public morals.\textsuperscript{277}

\begin{flushleft}
\textsuperscript{268} Schoenbaum, \textit{supra} note 48, at 277.
\textsuperscript{269} See generally \textit{Thai-Cigarettes}, \textit{supra} note 148.
\textsuperscript{270} See id. ¶ 63.
\textsuperscript{271} See Charnovitz, \textit{supra} note 17, at 737.
\textsuperscript{272} EP Resolution on Broiler Chicken, \textit{supra} note 1.
\textsuperscript{273} See id.
\textsuperscript{274} See id. Only two sections of the resolution, amendments 8 and 9, deal with foreign chicken producers. \textit{Id.} amends. 8–9.
\textsuperscript{275} See Schoenbaum, \textit{supra} note 48, at 277.
\textsuperscript{276} Charnovitz, \textit{supra} note 36, at 45; Schoenbaum, \textit{supra} note 48, at 45; Stevenson, \textit{supra} note 17, at 39.
\textsuperscript{277} Charnovitz, \textit{supra} note 36, at 45; Schoenbaum, \textit{supra} note 48, at 45; Stevenson, \textit{supra} note 17, at 39.
\end{flushleft}
A. Deference to Articles I, III, and XI Is Incorrect

The WTO’s interpretation of the article XX exceptions has been criticized by some animal welfare advocates and trade scholars. First of all, the deference given to articles I, III, and XI is not necessarily consistent with article XX’s introductory heading. This heading explicitly states that when certain factors are met, “nothing” shall prevent the passage of regulations seeking to invoke the exception. Furthermore, the plain language of article XX reads more like “substantive rights” than articles I, III, and XI, which merely establish general principles against trade discrimination and quotas. The exceptions exist precisely to give nations the essential “right” to protect their own morals, human and animal life, and threatened natural resources. Nevertheless, current Appellate Body rulings have interpreted the relationship of the GATT articles by giving greater deference to the principle of non-discriminatory trade, rather than the right of nations to protect certain moral. Doing away with this deference would make it more likely that morally based import regulations, including the European Union’s proposed import ban, would satisfy the three-pronged test by lessening the presumption that the exception cannot be invoked.

B. Misinterpretation of “Necessary to”

The current Appellate Body analysis of the “necessary to” prong is also erroneous. There is no reason to interpret the phrase “necessary to” as stating that a regulation must be as least trade-restrictive as any alternative, or that all alternatives need be exhausted. This interpretation is a fundamental misreading of the text. The plain meaning of the language states that the regulation must be necessary in order protect the specific policy goal in question. Therefore, in

278 Charnovitz, supra note 36, at 45; Schoenbaum, supra note 48, at 45; Stevenson, supra note 17, at 39.
279 Charnovitz, supra note 36, at 82.
280 Id.
281 Id.
282 See id.
283 Id. at 82.
284 See id.
286 Id.
287 Id.; see GATT, supra note 63, art. XX.
288 Schoenbaum, supra note 48, at 276–77; see GATT, supra note 63, art. XX.
the second prong of an article XX(a) analysis, the question should be whether the regulation is reasonably capable of protecting the moral in question, or whether the moral would be protected without the regulation. The analysis should not focus on whether it is less trade-restrictive than other measures.

This alternate interpretation is supported by the fact that the current interpretation makes the third prong of the analysis redundant. The third prong’s chapeau analysis already takes into account whether a restriction is too trade-restrictive, because it focuses on whether a measure is “unjustified” in light of other alternatives. Such an assessment inherently involves consideration of whether alternative measures are more feasible. Therefore, the current interpretation of the second prong analysis forces an unnecessary analysis of alternative trade measures and consistency with other GATT standards.

In addition, if the drafters had meant “necessary to” to be interpreted as a “least trade-restrictive” requirement, they would have made such a requirement more explicit. The chapeau is explicit on evaluating a regulation based on protectionist and discriminatory concerns, but the “necessary to” prong is not. Therefore, the plain meaning of the text should control, and the plain meaning is that the regulation must only be “necessary to protect public morals.” Under this revised analysis, a minimally discriminatory, flexible E.U. import ban on broiler chicken would be more likely to satisfy the “necessary to” requirement.

**Conclusion**

The European Union should not back down from its attempt to improve the welfare of broiler chicken. Regulating imports from nations that do not meet the same welfare standards is the an effective method to ensure the humane treatment of chicken. Furthermore, such an import ban does not mandate that other nations accept the

291 Id.
292 Id.
293 See Stevenson, *supra* note 17, at 130.
294 Id.
295 See id.
296 See id.
297 See id.
298 See *supra* Part III.B.
European Union’s standards on animal welfare. It only mandates that if foreign nations want to bring their goods into the European Union, they must comply with the same standards as E.U. producers.

While it is uncertain whether such an import ban would survive a challenge at the WTO, several factors make it more likely that it will. First, the European Union should pursue a good faith effort to negotiate international agreements on this issue with its chief chicken exporters. Second, the European Union should allow nations a flexible timeframe to comply with the new standards. Third, the European Union should provide an exception for chicken producers who abide by the European Union’s high standards, even if located in nations that do not mandate those standards. Finally, the European Union should ensure that this regulation applies identically to all E.U. and foreign producers.

In addition, the Appellate Body should re-evaluate its interpretation of several key components of GATT. First, there is no reason to presume article XX’s broad deference to articles I, III, and XI. Article XX rights are “substantive” as well. Second, “necessary to” should be interpreted to relate only to the regulation’s efficacy in protecting the moral in question, not to whether other alternatives are less trade-restrictive. Such changes in interpretation, coupled with an E.U. law as non-protectionist, non-discriminatory and flexible as possible, make it likely that the E.U. broiler chicken regulation, or similar animal welfare-based import restrictions, will be upheld at the WTO.