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Economics v. Equity: Do Market-Based Environmental Reforms Exacerbate Environmental Injustice?

Stephen M. Johnson*

I. The Shift from Command and Control Regulation to Market-Based Reforms

For almost three decades, the federal government and state governments have addressed environmental problems primarily through "command and control" regulation. Under this traditional approach, the federal government establishes uniform national pollution limits ("command") that the federal or state governments impose on individual polluters through a system of permits or other controls.¹ However, as the command and control approach has eliminated many of the most prolific sources of pollution, the incremental cost of cleaning up the remaining pollution has risen dramatically,² and command

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1. See Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1334-35 (1985) (describing command and control regulation); see also ROBERT V. PERCIVAL, ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 131-79 (2d ed. 1996) (describing command and control regulation and its alternatives); Robert C. Anderson & Andrew Q. Lohof, Environmental Law Institute, *The United States Experience with Economic Incentives in Environmental Pollution Control Policy* § 3.2 (Aug. 1997) (visited Aug. 4, 1998) <[http://206.29.48.66/epalib/incent.nsf/\\$about](http://206.29.48.66/epalib/incent.nsf/$about)> [hereinafter *ELI Report*] (same). While the uniform national limits may be set at a level to protect health or the environment, they are usually set at a level that can be achieved through the use of a particular technology. See PERCIVAL, *supra*, at 151-54. Although some commentators suggest that "command and control" regulation is limited to regulations that require the use of a specific technology, see David Driesen, *Is Emissions Trading an Economic Incentive Program?: Replacing the Command and Control/Economic Incentive Dichotomy*, 55 WASH. & LEE L. REV. 290, 297 (1998), this Article uses the term as it is understood by most legal commentators to include regulation that requires persons to meet specific performance standards and/or regulation that requires the use of a specific technology. See Robert W. Hahn & Robert N. Stavins, *Incentive-Based Environmental Regulation: A New Era from an Old Idea?*, 18 ECOLOGY L.Q. 1, 5-6 (1991).

2. The cost of pollution abatement and control rose from \$64 billion in 1973 to over

and control regulation has become politically less attractive. In addition, command and control regulation may be too rigid to address many of the remaining major environmental problems, such as nonpoint source water pollution.³

Academics have criticized command and control regulation on several grounds for over a decade.⁴ Critics argue that command and control regulation is not cost-effective because it normally requires all polluters to comply with the same pollution limits even though one polluter may be able to reduce its pollution more cheaply than another polluter⁵ and even though it may not be necessary for all polluters to reduce their pollution to the levels required by the uniform limits in order to achieve pollution reductions that protect human health or the environment.⁶ Critics also argue that command and control regulation (i) imposes unreasonable information-gathering burdens and exorbitant costs on government;⁷ (ii) often imposes disproportionate burdens on new pollution sources;⁸ and (iii) provides no incentives to polluters to develop new strategies to reduce their pollution beyond the levels required by law.⁹

\$121 billion in 1994. See U.S. GENERAL ACCOUNTING OFFICE, ENVIRONMENTAL PROTECTION: CHALLENGES FACING EPA'S EFFORTS TO REINVENT ENVIRONMENTAL REGULATION, ch. 1 (GAO/RCED-97-155) (July 2, 1997) [hereinafter GAO REINVENTION REPORT].

3. See Barton H. Thompson, Jr., *The Search for Regulatory Alternatives*, 15 STAN. ENVT. L.J. vii, viii-ix (1996). The Clean Water Act defines a "point source" to include "any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged." 33 U.S.C. § 1362(14) (1994). Water pollution, such as runoff from construction activities, that does not come from "point sources," is called "nonpoint source" pollution. See PERCIVAL, *supra* note 1, at 880.

4. See generally, e.g., Ackerman & Stewart, *supra* note 1, at 1333; Howard Latin, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reforms*, 37 STAN. L. REV. 1267, 1267-1332 (1985).

5. See Ackerman & Stewart, *supra* note 1, at 1335, 1341; Latin, *supra* note 4, at 1267-68. "[T]he cost of controlling a given pollutant may vary by a factor of 100 or more, depending on the age and location of the plants involved and the control technologies available." Robert N. Stavins, *Harnessing the Marketplace: We Have to Do More with Less*, EPA J., May-June 1992, at 21-22. However, as Ackerman and Stewart note, under the command and control approach, "polluter A is obliged to cut back his own wastes even if it is cheaper for him to pay his neighbor B to undertake the extra cleanup instead." See Ackerman & Stewart, *supra* note 1, at 1341.

6. See Ackerman & Stewart, *supra* note 1, at 1335. Conversely, though, when uniform national limits are based on technology, all polluters in a particular region may comply with the uniform limits, yet discharge pollution at a level that harms human health or the environment.

7. See *id.* at 1336-37; see also E. Donald Elliott, *Environmental TQM: Anatomy of a Pollution Control Program that Works!*, 92 MICH. L. REV. 1840, 1846-47 (1994).

8. See Ackerman & Stewart, *supra* note 1, at 1335-36.

9. See *id.* at 1336, 1341; see also *ELI Report*, *supra* note 1, § 1.2; Stavins, *supra* note 5, at 22.

In light of those criticisms and limitations, the federal government and state governments are increasingly implementing market-based approaches to address environmental problems.¹⁰ The Clinton Administration has suggested that "[m]arket incentives should be used to achieve environmental goals, whenever appropriate,"¹¹ and a recent report by the Environmental Law Institute estimates that governments are using over one hundred different economic incentive mechanisms to address environmental problems in the United States.¹²

Instead of mandating uniform pollution reductions on a national basis, market-based approaches use economic incentives to encourage polluters to reduce their pollution in the most cost-effective manner.¹³ Theoretically, market-based approaches can achieve the same level of pollution reduction as command and control regulation at a lower cost.¹⁴ In addition, proponents claim that market-based approaches can eliminate the information-gathering burden of command and control regulation on the government.¹⁵

A. Types of "Market-Based Reforms"

The major types of market-based approaches that have been implemented over the past decade are pollutant trading programs, pollution taxes and subsidies, deposit-refund systems,¹⁶ and regulatory waiver or variance programs such as the Environmental Protection Agency's (EPA's) Project XL or

10. See *ELI Report*, *supra* note 1, §§ 2.1.1, 3.3; Stavins, *supra* note 5, at 21; see also National Partnership for Reinventing Government, *1993 Report: From Red Tape to Results: Creating a Government that Works Better and Costs Less* (Sept. 7, 1993) (visited Aug. 4, 1998) <<http://www.npr.gov/library/nprpt/annrpt/redtpe93/index.html>>. While traditional regulatory approaches, including command and control regulation, can create markets, see Driesen, *supra* note 1, at 293, this Article only refers to governmental programs and initiatives that attempt to take advantage of market forces to encourage environmental or public health protection as "market-based" programs.

11. See President William J. Clinton, *Reinventing Environmental Regulation* (revised Aug. 22, 1996) (visited Aug. 6, 1998) <<http://www.epa.gov/reinvent/notebook/clinton.htm>>.

12. See *ELI Report*, *supra* note 1, § 12. EPA reviewed many of the early market-based experiments in a 1992 report. See Alan Carlin, Environmental Protection Agency, *The United States Experience with Economic Incentives to Control Environmental Pollution* (July 1992) (visited Aug. 6, 1998) <[http://206.29.48.66/epa/ceemFile.nsf/vwA/EE-0216/\\$File/EE-0216-1.pdf](http://206.29.48.66/epa/ceemFile.nsf/vwA/EE-0216/$File/EE-0216-1.pdf)>.

13. See Ackerman & Stewart, *supra* note 1, at 1335; Stavins, *supra* note 5, at 21-22; see also *ELI Report*, *supra* note 1, § 3.3. Market-based approaches "can save anywhere from 10%-90% of the cost of controlling pollution under traditional command and control approaches." *ELI Report*, *supra* note 1, § 1.2.

14. See *ELI Report*, *supra* note 1, § 3.5; Stavins, *supra* note 5, at 22.

15. See Ackerman & Stewart, *supra* note 1, at 1336-37; cf. Driesen, *supra* note 1, at 327-32 (noting that market-based approaches may create complexity, uncertainty, and delay).

16. See *ELI Report*, *supra* note 1, § 3.3.4; Stavins, *supra* note 5, at 22.

Brownfields Action Agenda.¹⁷ In a pollutant trading program, a government gives polluters the "right" to discharge a specific amount of pollution and allows polluters to buy and sell their pollution rights.¹⁸ Under a typical trading program, if a polluter is discharging ten tons of pollution, but only has the "right" to discharge five tons of pollution, the polluter must either reduce its pollution discharge by five tons or buy the right to discharge an additional five tons from another polluter. If it costs less for the polluter to buy the "right" to discharge an additional five tons of pollution than it costs to reduce its discharge by five tons, the polluter will buy the additional pollution rights. Thus, a pollutant trading system allows polluters to choose the most cost-effective means of controlling pollution. In addition, because they can sell their pollution "rights" to other polluters, the system provides incentives to polluters to reduce their pollution discharges beyond the levels allowed by law.¹⁹ In some trading programs, the government auctions or sells some of the pollution rights to polluters.²⁰ Accordingly, trading programs can raise revenue for the government²¹ while limiting the overall discharge of pollution.²²

Pollution taxes provide benefits that are similar to the benefits of pollutant trading programs. Under the pollution tax approach, the government imposes a tax on the discharge of a particular type of pollution.²³ If it costs

17. See *infra* notes 157-80 and accompanying text (discussing Project XL and brown-fields projects).

18. See Ackerman & Stewart, *supra* note 1, at 1341. Part II of this Article describes specific trading programs in greater detail.

19. See *id.* at 1341-42.

20. See *id.* at 1343.

21. See *id.* at 1344, 1346.

22. See *id.* at 1349. The government can reduce aggregate pollution levels by limiting the overall amount of pollution "rights" that are available to polluters, and by reducing that amount over time. See *id.*

23. While traditional taxes on income, capital formation, payrolls, sales, and property generally discourage socially productive activities, pollution taxes discourage environmentally damaging activities. See Amy C. Christian, *Designing a Carbon Tax: The Introduction of the Carbon-Burned Tax (CBT)*, 10 UCLA J. ENVTL. L. & POL'Y 221, 226 (1992); Richard L. Ottinger & William B. Moore, *The Case for State Pollution Taxes*, 12 PACE ENVTL. L. REV. 103, 105 (1994). Consequently, many legal theorists are advocating a reduction in taxes, like the income tax, that discourage socially desirable activities, coupled with an increase in taxes, like pollution taxes, that discourage socially undesirable activities. See Christian, *supra*, at 226-27; Ottinger & Moore, *supra*, at 104. In order to protect human health and the environment, pollution taxes should be set at a level that is equal to the harm that the pollution discharges cause to health and the environment. See Frank S. Arnold, Environmental Law Institute, *Why Policy Makers Don't Use Environmental Taxes* 1 (Jan. 6, 1994) (visited Aug. 6, 1998) <[http://206.29.48.66/epa/eermfile.nsf/vwAN/EE-0312-1.pdf/\\$File/EE-0312-1.pdf](http://206.29.48.66/epa/eermfile.nsf/vwAN/EE-0312-1.pdf/$File/EE-0312-1.pdf)> [hereinafter *ELI Tax Report*].

less for a polluter to reduce its discharge of pollution than it costs to pay the tax for the discharge, the polluter will reduce the pollution discharge. If not, the polluter will pay the tax.²⁴ Accordingly, pollution taxes allow polluters to control their pollution in the most cost-effective manner.²⁵ Pollution taxes also provide incentives to polluters to reduce their pollution discharges beyond levels allowed by law because the polluters can reduce their tax burden by reducing their discharges.²⁶ Finally, pollution taxes provide revenue for the government in the same way that auctioning pollution "rights" can provide revenue for the government.²⁷ Unlike trading programs, however, pollution taxes cannot guarantee that pollution will be reduced to a specific level.²⁸

Subsidies are the mirror image of pollution taxes.²⁹ Instead of taxing pollution discharges, the government offers subsidies to polluters that reduce their pollution discharges.³⁰ If the polluter can reduce its pollution discharge at a cost that is less than the amount of the subsidy, the polluter will probably reduce its discharge.

Deposit-refund systems use a combination of a tax and subsidy to encourage pollution reduction.³¹ Consumers of potentially polluting products pay a surcharge when they purchase the product and receive a refund of the surcharge when they return the product for recycling or proper disposal.³² This system traditionally has been used to encourage recycling and proper disposal of beverage containers,³³ but states have also used deposit-refund systems for tires, lead-acid batteries, used motor vehicle oil, and pesticide containers.³⁴ Finally, in regulatory waiver or variance programs, the government allows polluters to avoid some command and control requirements if the polluter uses

24. See *ELI Tax Report*, *supra* note 23, at 1.

25. See *id.*; Roger C. Dower & Robert Repetto, *Green Fees and the Need for Fiscal Restructuring: Opportunities and Challenges*, 12 PACE ENVTL. L. REV. 161, 161 (1994); Ottinger & Moore, *supra* note 23, at 105; Stavins, *supra* note 5, at 22.

26. See Ottinger & Moore, *supra* note 23, at 105.

27. See *ELI Tax Report*, *supra* note 23, at 1; Stavins, *supra* note 5, at 22.

28. The level of environmental protection that a tax will provide will vary depending upon the rate of the tax. If the tax is set too low, polluters will not reduce their pollution discharges, or may actually increase their discharges, and will pay the tax as a cost of doing business. See *ELI Tax Report*, *supra* note 23, at 7-8.

29. *ELI Report*, *supra* note 1, § 3.3.2.

30. See *id.*

31. See *id.* § 3.3.4.

32. See *id.*

33. See *id.* Nine states, Canadian provinces, and a number of European nations have enacted "bottle bills" to reduce improper disposal of beverage containers. See Stavins, *supra* note 5, at 24.

34. See *ELI Report*, *supra* note 1, § 5.1.

other means to achieve the same level of pollution reduction in a more cost-effective manner.³⁵

B. Economic, Environmental, and Distributional Considerations

Supporters of these market-based approaches cite dozens of studies which suggest that market-based approaches can reduce pollution control costs³⁶ and which provide equivalent or better environmental protection than command and control regulation.³⁷ Despite the rosy predictions, market-based reforms have not been implemented in the manner advocated by economists, participation in market-based reforms has been marginal, and the reforms are not generating the substantial cost savings that economists predicted.³⁸ Nevertheless, even if market-based approaches delivered all of the benefits that economists predict, governments should proceed down the economic path with caution because market-based approaches could exacerbate existing problems of environmental injustice.³⁹

35. See *infra* notes 157-80 and accompanying text (discussing Project XL and brown-fields projects).

36. See *ELI Report*, *supra* note 1, § 12. A recent report by the Environmental Law Institute identified 19 studies that compared air pollution control costs under traditional command and control regulation to various market-based reforms. *Id.* § 3.4, tbl. 3-1. All of the studies concluded that market-based approaches were less costly than command and control regulation. *Id.* In one study, command and control regulation was found to be 22 times more costly than a market-based alternative. *Id.*

The *ELI Report* also identified nine studies that compared the costs of command and control regulation for water pollution to market-based reforms. *Id.* § 3.4, tbl. 3-2. All of those studies concluded that the market-based approaches were less costly, although the cost differences were less pronounced than in the air pollution studies. See *id.*

37. See *id.* Executive Summary. Although market-based alternatives are generally designed to provide environmental protection that is similar to command and control regulation, few studies have examined whether they have achieved that level of protection in practice. See *id.* § 12.

38. See *id.* §§ 3.4, 12. There are many reasons why market-based reforms have not performed as predicted. In many cases, pollution taxes and fees have been designed merely to raise revenue, and have been set too low to provide incentives to reduce pollution. See *id.* Executive Summary. Complicated regulations have inhibited participation in trading programs. See *id.* In addition, because of regulatory and legal requirements, opportunities for trading pollution rights are more limited in practice than economists propose in theory. See *id.* § 3.4. Consequently, there is little empirical evidence that emissions trading has stimulated environmental performance that is superior to traditional command and control regulation. See Driesen, *supra* note 1, at 313.

39. "Environmental injustice" is the antithesis of "environmental justice," which EPA defines as

the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. Fair

C. Inevitable Inequities in Market-Based Reforms

It is well established that minority and low-income communities suffer disproportionate exposure to a variety of types of pollution under the existing command and control regulatory approach.⁴⁰ Although the traditional ap-

treatment means that no racial, ethnic, or socio-economic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations, or from the execution of federal, state, local, or tribal programs and policies.

Environmental Protection Agency, *Environmental Justice Through Pollution Prevention Grant Program* (1998) (visited Aug. 6, 1998) <<http://www.epa.gov/opptintr/ejp2/intro-ix.htm>>.

40. Studies indicate that hazardous waste landfills and treatment facilities and industries that emit the greatest amounts of toxic chemicals have been sited predominantly in minority or low-income communities. See generally COMMISSION FOR RACIAL JUSTICE, UNITED CHURCH OF CHRIST, *TOXIC WASTES AND RACE IN THE UNITED STATES: A NATIONAL REPORT ON THE RACIAL AND SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES* (1987); BENJAMIN A. GOLDMAN, *NOT JUST PROSPERITY: ACHIEVING SUSTAINABILITY WITH ENVIRONMENTAL JUSTICE* (1993); DR. BENJAMIN A. GOLDMAN & LAURA FITTON, *TOXIC WASTES AND RACE REVISITED: AN UPDATE OF THE 1987 REPORT ON THE RACIAL AND SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES 14-15* (1994); U.S. GENERAL ACCOUNTING OFFICE, *SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES* (1983); Paul Mohai, *Methodological Issues: The Demographics of Dumping Revisited: Examining the Impact of Alternate Methodologies in Environmental Justice Research*, 14 VA. ENVTL. L.J. 615, 615-53 (1995).

A recent series of newspaper articles in the Detroit News challenged these studies and discussed an EPA study that concluded that (a) while 12% of the country's residents are African-American, only 8% of the residents that live near Superfund sites in EPA Region VI are African-American; (b) 75% of the residents that live near Region IV Superfund sites are white; and (c) the average income of residents living within a mile of Superfund sites nationwide is greater than the average national income. David Mastio, *EPA Ignored Race Report*, DET. NEWS, May 28, 1998, at A1. While the study could be interpreted to suggest that heavily polluted waste sites are not predominantly located in low-income or minority communities, it could also be interpreted to suggest that the government is quicker to include sites on the Federal Superfund list if they are not located in a low-income or minority community. Because inclusion of a site on the Federal Superfund list leads to a cleanup of the site with federal oversight by EPA, the study may actually support claims that environmental laws are being enforced in a discriminatory manner.

Studies also suggest that the federal government is bringing enforcement actions under environmental laws and making cleanup decisions under Superfund in a discriminatory manner. See UNEQUAL PROTECTION: ENVIRONMENTAL JUSTICE AND COMMUNITIES OF COLOR 7-11 (Robert D. Bullard ed., 1994); Marianne Lavelle & Marcia Coyle, *Unequal Protection: The Racial Divide in Environmental Law*, NAT'L L.J., Sept. 21, 1992, at S1, S1-12; Rae Zimmerman, *Social Equity and Environmental Risk*, 13 RISK ANALYSIS 6, 652 (July 14, 1993).

Air quality in minority and low-income communities is worse than in other communities. See Richard J. Lazarus, *Pursuing "Environmental Justice": The Distributional Effects of Environmental Protection*, 87 NW. U. L. REV. 787, 796 & n.36 (1993); see also *Hearings on Environmental Justice Before the Subcomm. on Civil and Constitutional Rights*, 103d Cong. (1993) (statement of Paul Mohai); D.R. Wernette & L.A. Nieves, *Breathing Polluted Air: Minorities Are Disproportionately Exposed*, EPA J., Mar.-Apr. 1992, at 16-17.

proach clearly has not adequately addressed distributional inequities, market-based approaches will inevitably exacerbate those inequities. While the traditional command and control environmental laws and regulations do not explicitly *require* the government to avoid actions that disparately impact low-income or minority communities, those laws also do not affirmatively *encourage* unequal distribution of pollution.⁴¹ By contrast, as explained below, many market-based approaches to environmental protection affirmatively encourage polluters to shift pollution to lower-income communities. While command and control regulation may be facially neutral, but discriminatory in practice, many market-based approaches are *designed* in a way that will inevitably treat low-income communities unfairly.

Classical economic theory institutionalizes and exacerbates existing social disparities that are based on unequal distributions of income. As Judge Richard Posner suggested, in a free market economy, in which voluntary exchange is permitted, "resources are shifted to those uses in which the *value* to consumers, as measured by their *willingness to pay*, is highest. When resources are being used where their value is highest, we may say that they are being employed *efficiently*."⁴² Although Judge Posner defined "value" in terms of "willingness to pay," on closer reflection it is clear that Judge Posner and other economists incorporated "ability to pay" into the concept of "willingness to pay."⁴³ Thus, under traditional economic theory, a pollutant trading

In addition, the federal government establishes regulations under a variety of environmental laws to protect persons from exposure to hazardous levels of toxic substances based on assumptions that may not protect various ethnic or racial communities. See Robert R. Kuehn, *The Environmental Justice Implications of Quantitative Risk Assessment*, 1996 U. ILL. L. REV. 103, 105.

41. Command and control laws establish uniform standards to achieve a minimum level of environmental protection. See sources cited *supra* note 1 (discussing command and control laws). In theory, this approach should guarantee a minimum level of protection for all communities. However, because the laws do not explicitly address distributional considerations, they do not guarantee that all communities will be exposed to the same level of pollution, at or below that minimum level. Market forces, unequal enforcement patterns, and other factors funnel higher levels of pollution into low-income and minority communities. See sources cited *supra* note 40 (discussing pollution and low-income or minority communities). If the minimum level of protection provided by command and control laws safeguarded human health and the environment, the variance in pollution levels would be less problematic. However, the minimum level of protection provided by command and control laws often does not safeguard human health and the environment. See sources cited *supra* note 1 (discussing command and control regulation).

42. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* § 1.1, at 11 (4th ed. 1992) (emphasis added).

43. Judge Posner relates the following story to explain the economist's definition of "value":

Suppose that pituitary extract is in very scarce supply relative to the demand and is therefore very expensive. A poor family has a child who will be a dwarf if he

program, tax program, or similar market-based reform that shifts pollution to low-income communities is operating efficiently and, therefore, desirably because resources, such as clean air and clean water, are shifted to the uses in which the value to consumers, as measured by their willingness (and ability) to pay, is highest. Because wealthy communities are "willing to pay" more for clean air and water than low-income communities, the market operates efficiently when it funnels those resources to those communities⁴⁴ rather than to low-income communities. In a free market, low-income communities will never have sufficient financial resources to buy clean air, clean water, and similar environmental and public health resources from wealthy communities or polluters.

As Professor James White has astutely noted, the economists' justification for the "efficiency" of the free market "takes for granted not only the existing values (or tastes) of the actors, but also the existing distributions among them of wealth, capacity and entitlement, which it has no way of criticizing."⁴⁵ Furthermore, Professor White has observed that

[t]he market ideology claims to be radically democratic and egalitarian, because it leaves every person free to do with her own what she will. But this freedom of choice is not equally distributed among all people. The market is democratic not on the principle of one person one vote, but on the far different principle of one dollar, one vote.⁴⁶

does not get some of the extract, but the family cannot afford the price A rich family has a child who will grow to normal height, but the extract will add a few inches more, and his parents decide to buy it for him. In the sense of value used in this book, the pituitary extract is more valuable to the rich than to the poor family, because value is measured by willingness to pay

Id. at 13. While Posner suggests that the rich family is more "willing to pay" for the extract than the poor family, it seems that the rich family is more "able to pay" than the poor family, rather than more "willing to pay." Posner's definition of willingness to pay, therefore, seems to incorporate ability to pay.

44. Professor Gerald Torres notes:

The essence of the market suggests that poor people will be disadvantaged in relation to relatively better off people in the acquisition of goods. Environmental quality is merely a good that also is market sensitive. Thus, it should not be surprising that poor people, and poor black people as a subset of that economic class, suffer greater environmental burdens than do better off people. Poor people merely choose, and rationally so, to spend their scarce resources on other goods.

Gerald Torres, *Environmental Justice: The Legal Meaning of a Social Movement*, 15 J.L. & COM. 597, 607-08 (1996).

45. James Boyd White, *Economics and Law: Two Cultures in Tension*, 54 TENN. L. REV. 161, 178 (1987).

46. *Id.* at 184. White further notes:

[T]he modern celebration of the market as the central social institution . . . threatens to destroy the single greatest achievement of Western political culture: the discovery that a community can govern itself through a rule of law that attempts to create

In response to those criticisms, economists admit that economic theory does not make value judgments regarding the distribution of resources or regarding the moral or social implications of "efficient" allocations of resources.⁴⁷ Economists admit that economic theory does not address the important underlying question regarding whether an efficient allocation of resources is socially or ethically desirable.⁴⁸ Nevertheless, they argue that economic theory provides a valuable tool for analysis and prediction of behavior.⁴⁹

However, environmental law developed and flourished precisely because economic theory, and the free market, did not address those social concerns.⁵⁰ Environmental laws often incorporate a moral vision and strive to advance civic values that are ignored in the free market.⁵¹ Environmental law responds to the failure of the free market to prevent pollution and the destruction of natural resources. While environmental laws should weigh economic issues, the laws should not substitute economic considerations for the important

a fundamental moral and political equality among human beings. The great phrase in the Declaration of Independence – "all men are created equal" – is partly a theological statement about the conditions under which we are created and partly a political statement about the obligation of the government to acknowledge, indeed to create or recreate, that equality. . . . The ideology of the market, if it prevailed in its desire to convert all institutions into markets, would destroy this set of political relations and create another in its stead, based upon the dollar.

Id. at 183.

47. See POSNER, *supra* note 42, at 14.

48. See *id.*

49. See *id.* at 17-18.

50. As Professor Zygmunt Plater notes:

Environmental law evolved as a response to the dark side of those dynamic market forces that have built the world's largest economy and have made modern life so materially enriched and diverse. Human nature as reflected in the marketplace, however, inherently tends to ignore and pass on social costs to the environment and to others.

Zygmunt J.B. Plater, *Environmental Law as a Mirror of the Future: Civic Values Confronting Market Force Dynamics in a Time of Counter-Revolution*, 23 B.C. ENVTL. AFF. L. REV. 733, 737 (1996).

51. Professor Plater notes:

[E]nvironmental law has come to incorporate a set of principles representing and accounting for civic values that extend far beyond the realm of science and current events. Perhaps only in environmental law has the modern legal system directly incorporated issues of long-term societal survival into its operative norms and doctrinal provisions. . . . By thus embodying civic values, environmental law transcends ecology and raises issues of social governance. Scratch an environmental law argument and you are likely to find an underlying question of democracy – how individuals, corporations, and communities are to balance their drives and needs, each day and over future years and generations.

Id. at 737-38.

social considerations that motivated legislators to enact the laws in the first place.⁵²

D. Efficiency, Market Failures, and Solutions

Despite the inherent inequities in market-based environmental protection, governments will continue to implement market-based reforms to achieve "efficient" allocations of resources. However, governments should proceed down the economic incentive path with caution because prior market-based reforms have not delivered on the promise of "efficient" allocation of resources. For example, in a traditional pollutant trading program, Company A voluntarily buys the "right" to discharge pollution from Company B because it is cheaper for Company A to buy the "right" to pollute than to reduce the amount of pollution that it discharges. Although this transaction may be "cost-effective" for Company A and Company B, it is not clear that it is an "efficient" transaction from an economic standpoint.

If the transaction is examined in terms of Pareto-optimal efficiency, where a "Pareto-superior" transaction is one that makes at least one person better off and no persons worse off,⁵³ the trade will probably not be efficient. Although Company A and Company B are better off, persons who live near Company A, fish in the streams around Company A, or hike in the woods around Company A may suffer harm from pollution that Company A would have reduced if it did not buy the right to discharge pollution from Company B. The third parties are "worse off" as a result of the trade. If the third parties were compensated for the harm that resulted from the trade, the transaction could be "Pareto-superior."⁵⁴ Trading programs, however, do not require participants to compensate third parties for harms caused by the trades.

If the transaction is examined in terms of Kaldor-Hicks efficiency,⁵⁵ under which a transaction is efficient if the economic benefits of the transaction exceed the economic harms of the transaction,⁵⁶ many trades may be

52. If the free market adequately considered the social concerns that environmental laws are designed to protect, there would be no need for environmental laws. However,

[t]he human logic of the marketplace lacks a gene for altruism. Without external constraints, social and political mechanisms driven by individualism are dominated by short-term profit expediencies, to the detriment of many short and long-term societal values. They do not incorporate principles that protect the community when the interests of the community and the individual enterprise diverge.

Id. at 763. Accordingly, economic considerations should not be the sole factor that is weighed in future environmental initiatives.

53. See POSNER, *supra* note 42, at 13.

54. See *id.* at 14.

55. "When an economist says that . . . the control of pollution or some other policy or state of the world is efficient, nine times out of ten he means Kaldor-Hicks efficient . . ." *Id.*

56. See *id.*

inefficient. A trade will only be "efficient" if the benefits to the trading parties and third parties exceed any harm caused by the trade.

The benefits for the trading partners are economically quantifiable. The seller receives a benefit equal to the amount of money that the seller receives from the buyer for the pollution "rights" minus the cost, if any, of creating those "rights" in the first place.⁵⁷ The buyer receives a benefit equal to the amount of money that the seller saved by buying the pollution "rights" instead of reducing its pollution discharge. Because most of the trading programs that have been implemented in the past limit the amount of pollution "right" that a company can buy, by requiring polluters to meet certain minimal pollution discharge limits, the economic benefits available to companies through trading have been limited.⁵⁸

While the benefits to the trading partners are economically quantifiable, the benefits and harms to third parties are often difficult to quantify. Assume, for instance, that Company A buys the right to continue to discharge 100 pounds of a pollutant into a river. The discharge of that pollution might (a) contribute to pollution of drinking water that causes adverse health effects to persons who drink the water and that creates economic costs to the community to clean up the water; (b) harm fish in the river, which could have adverse health impacts and/or economic impacts depending upon the use of the river by the community; (c) contribute to adverse health impacts to persons who swim in the water, which could have economic effects if the river is a tourist attraction; (d) contribute to a decline in plants or organisms in the river, which could have impacts on the health of the community or on the economy; (e) contribute to a decline in the aesthetic beauty of the river, which could, in addition to economic impacts, have psychological and social impacts on the community.⁵⁹ It is extremely difficult to identify the extent to which a pollution trade causes these results.⁶⁰ In addition, all of these impacts, especially the health impacts, are extremely difficult to quantify in economic terms.⁶¹ As

57. The seller may have changed its production process or otherwise reduced its pollution output to create its pollution "rights."

58. See *ELI Report*, *supra* note 1, § 3.4.

59. The pollution trade may also have benefits for third parties. For example, by purchasing pollution rights, a company may be able to continue to operate in a community, providing jobs and revenue to the community that would have been lost if the company were not able to buy the pollution rights. In addition, communities near the company that sold the pollution rights may receive benefits because the seller may have reduced its pollution emissions to create the pollution "rights" that it sold in the trade. These benefits must be weighed with the harms to determine whether the trade is "efficient."

60. In order to precisely calculate the harms and benefits of the trade, one must focus on the harms and benefits caused by the 100 pounds of pollution authorized by the trade.

61. See, e.g., David M. Driesen, *The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis*, 24 *ECOLOGICAL Q.* 545, 558 (1997) (discussing quantifica-

a result, most of the impacts are ignored or undervalued in economic calculations.⁶² To the extent that economists ignore or undervalue these impacts when analyzing pollutant trading programs, assertions that the programs operate "efficiently" should be viewed skeptically. While trading programs and similar market-based approaches may be "cost-effective" for businesses, it is not clear that they "efficiently" allocate resources throughout society.

Theoretically, in a free-market economy, if the harm that a pollution trade caused third parties outweighed the benefits to those parties, the third parties would bargain with the trading parties to prevent the harm. Accordingly, resources would be allocated efficiently in the free market. However, market failures prevent the efficient operation of the market for environmental or public health resources and often prevent low-income communities from even participating in the market. For a variety of reasons, third parties that are harmed by a pollutant trade may not bargain with the trading partners to prevent the harm. In some cases, while the aggregate harm to all third parties may outweigh the benefits of the trade, no single party, or group of parties, may be harmed sufficiently to be motivated to bargain to prevent the trade. In some cases, third parties may be willing to bargain with the traders to prevent the trade but may be unable to pay the traders enough money to prevent the trade. Finally, in some cases, the third parties will not bargain with the traders because the third parties lack information about the potential health, environmental, and economic impacts of a trade to recognize that the trade will adversely impact them or to recognize the degree of impact. In each of those situations, although the harm caused by the trade will outweigh the benefits of the trade, the trade will be made. Resources will be allocated inefficiently due to market failures.

In order to compensate for those market failures, governments that choose to adopt market-based environmental reforms should take several steps to ensure that the reforms achieve an "efficient" allocation of resources. Because third parties may individually lack the motivation to participate in the market, although their collective injury exceeds the benefits of a particular transaction, market-based reforms should include mechanisms to foster collective organiza-

tion of health impacts for cost-benefit analysis); Kuehn, *supra* note 40, at 116-29 (discussing methodological limitations of quantification of health impacts for risk assessment).

62. See Dana Clark & David Downes, *What Price Biodiversity? Economic Incentives and Biodiversity Conservation in the United States*, 11 J. ENVTL. L. & LITIG. 9, 19 (1996). Clark and Downes assert that

[t]he current national income accounting system provides an example of a perverse economic incentive Rather than recognizing the *Exxon Valdez* spill for what it was, namely a decline in the value of natural resources in the area, it is recorded as an increase in the national income. The spill boosted GNP! All the clean-up expenditures served to increase national income, but no account was taken of the consequent depreciation of the natural environment.

Id. at 20.

tion and action by third parties or at least to provide a safety net for third parties that fail to organize because of the high transaction costs. Because third parties may lack sufficient information to understand the impacts that various market-based environmental strategies may have on them, market-based initiatives should include mechanisms to increase the availability of information and the opportunities for public participation. To the extent that financial disparities reduce the ability of third parties to participate in the market, market-based initiatives could address the disparities to some extent through grants and loans. If market-based reforms do not include these safeguards, it is unlikely that they will achieve "efficient" allocations of resources.

E. The Rest of the Story

As subpart D of this Article illustrates, most market-based environmental reforms fail to address important social issues, including the distributional impacts of pollution, and ignore deficiencies in the market that lead to inefficient allocation of environmental and public health resources. As a result, those market-based reforms could exacerbate existing environmental injustices. Part II of this Article examines many of the current and proposed market-based environmental reforms and analyzes the potential disparate impacts that could arise from those reforms. Part III examines pollution prevention and multimedia regulation to demonstrate that market-based approaches could, in some cases, improve environmental quality in an efficient manner *and* foster environmental justice. Finally, Part IV explores ways that market-based reforms are being, or could be, modified to ensure that environmental protection initiatives foster environmental justice and allocate resources "efficiently."

II. Market-Based Environmental Programs and Potential Disparate Impacts

The federal government and state governments have implemented a variety of different market-based environmental protection programs over the past decade. Some of the major initiatives are pollutant trading programs, pollution taxes, and EPA's Project XL and Brownfields initiatives. While those programs are reducing the overall cost of environmental protection for businesses, they could perpetuate the disparate treatment of low-income communities.

A. Pollutant Trading Systems and Potential Disparate Impacts

Most of the pollutant trading programs that have been implemented in the United States have focused on reducing air pollution.⁶³ Despite potentially

63. See Stavins, *supra* note 5, at 24.

large cost savings, trading has been limited under most of the state and federal trading programs.⁶⁴

Although most trading programs have been implemented in the past decade, the EPA began experimenting with pollutant trading under the Clean Air Act in the 1970s.⁶⁵ Those early experiments matured into EPA's 1986 Clean Air Act emissions trading policy for "criteria" pollutants, including sulfur dioxide, nitrogen dioxide, particulates, carbon monoxide, lead, and ozone.⁶⁶ Under the policy, companies are allowed to build new major air pollution sources⁶⁷ or make major modifications to major air pollution sources in areas of the country where national air pollution standards are not being met⁶⁸ if the companies build the source to meet certain technology-based standards and enter into an agreement with an existing air pollution source in the area whereby the existing source reduces its pollution output by at least as much pollution as the new or modified source plans to discharge.⁶⁹ The policy refers to the reductions as "emission reduction credits,"⁷⁰ which can be used to "offset" proposed pollution increases. Companies can obtain offsets by entering into agreements with other companies or by reducing the output of pollution from another source that they own in the polluted area where the new or modified source will be sited.⁷¹ Because increases in air pollution by

64. See *ELI Report*, *supra* note 1, § 3.3.3.

65. *Id.* ch. 6.

66. See Final Policy Statement, 51 Fed. Reg. 43,814, 43,814 (1986).

67. The policy refers to "major stationary sources," which are defined in the Clean Air Act as sources that have the potential to emit 100 tons per year of any pollutant. 42 U.S.C. § 7602(j) (1994).

68. EPA sets national ambient air pollution limits, called national ambient air quality standards, for "criteria" pollutants. *Id.* § 7409. States are divided into geographic regions, called air quality control regions, for purposes of regulation under the Clean Air Act. *Id.* § 7407. If the air quality in an air quality control region does not meet the national ambient air quality standard for a particular pollutant, the region is said to be in "nonattainment" for that pollutant. *Id.* § 7407(d)(1)(A)(i).

69. *Id.* § 7503.

70. Under the policy, a pollution reduction can be certified as an "emission reduction credit" only if the reduction is greater than any reduction required by law, enforceable, permanent, and quantifiable. Final Policy Statement, 51 Fed. Reg. at 43,831.

71. *Id.* The Clean Air Act also allows companies to use offsets when the companies plan to build new major sources of air pollution or make major modifications to major sources in air quality control regions that meet the national ambient air quality standards. 42 U.S.C. § 7475 (1994). While the nonattainment provisions of the Clean Air Act prohibit increases in pollution in dirty air quality control regions, the Act allows a limited increase in the amount of pollution in clean air quality control regions. *Id.* If a company plans to build a new major source of air pollution or to make a major modification of a major source in a clean air quality control region, it must ensure that the increased pollution from the source will not exceed the limits allowed for the region. *Id.* If the pollution will exceed those limits, companies can only build the

new sources are offset by reductions from existing sources, the offset program should ensure that air quality remains at least as good, if not better, than it would be without the program. While the program promises cost savings for businesses, very few companies have made offset trades with other companies.⁷²

The emissions trading policy also formalizes the concepts of "bubbles" and "netting" for air pollution regulation. The "bubble" concept allows regulators to treat several existing air pollution emission points within an air quality control region as a single "source" for purposes of determining whether the emission points are complying with technology-based air pollution limits.⁷³ "Netting" allows regulators to treat several air pollution emission points within a plant as a single "source" for purposes of determining whether a modification to the plant, or construction of a new portion of the plant, triggers stringent technology-based limits and permit requirements for the plant.⁷⁴

While EPA's emission trading policy was the agency's first major foray into pollutant trading, the sulfur dioxide emission trading program created by the 1990 Clean Air Act Amendments⁷⁵ often is cited as a model for future pollutant trading programs at the federal and state levels. The trading program is designed to reduce by half sulfur dioxide emissions from coal-fired electric power plants by early in the next century. During Phase I of the program, which began in 1995 and ends in 2000, 111 of the dirtiest power plants were given annual "allowances" to emit 2.5 pounds of sulfur dioxide for every

sources if they obtain offsets equal to the amount of increased pollution. See Final Policy Statement, 51 Fed. Reg. at 43,831.

72. Nationally, only 10% of "offset" trades occur between companies. See *ELI Report*, *supra* note 1, § 6.1.1.1. Usually, companies generate emission reduction credits by closing or making changes to an existing source, and companies use those credits to "offset" the pollution from their new source. *Id.* Offset trades between companies have been frustrated by many factors including regulatory limits on trades and transaction costs of negotiating a trade. *Id.* § 6.1.1.5.

73. A bubble can include multiple emission points within a single facility, multiple facilities owned by the same company, or multiple facilities owned by different companies, as long as all of the facilities are within the same air quality control region. See *id.* § 6.1.1.2. It is estimated that bubbles have saved businesses more than \$435 million in pollution control costs. *Id.*

74. See Final Policy Statement, 51 Fed. Reg. 43,814, 43,830 (1986). Netting is used more often than offsets or bubbles. See *ELI Report*, *supra* note 1, § 6.1.1.4. Between 5000 and 12,000 air pollution sources have used netting. *Id.* Because netting allows a small increase in pollution over the limits that would exist without netting, this "reform" can have adverse effects on the environment. *Id.* Through netting, companies save money by (a) avoiding more stringent pollution control costs that would apply to the source if netting were not allowed; (b) avoiding the costs of permit review and approval; and (c) avoiding construction delays that could result from the permitting process. *Id.*

75. 42 U.S.C. §§ 7651-7651o (1994).

million Btu consumed by the plant.⁷⁶ During Phase II, which begins in 2000, all power plants that produce more than 25 megawatts will be given "allowances" to emit 1.2 pounds of sulfur dioxide for every million Btu consumed by the plant.⁷⁷ Total emissions from all of the plants are capped at 8.90 million tons of sulfur dioxide at the end of the program.⁷⁸ Utilities can trade allowances with other utilities, bank allowances for up to 30 years, and buy allowances at an annual auction sponsored by EPA.⁷⁹ Although the program targets coal-fired power plants, industrial facilities that burn fossil fuels can also "opt-in" to the program.⁸⁰ Utilities covered by the program have achieved 100% compliance with Phase I requirements,⁸¹ and the program is producing significant environmental and economic benefits.⁸² In addition to the sulfur dioxide trading program and EPA's emission trading policy, EPA has implemented pollutant trading programs in an effort to phase out production of various types of chlorofluorocarbons and halons⁸³ and to phase out the use of

76. See MARK SQUILLACE, ENVIRONMENTAL LAW VOLUME THREE: AIR POLLUTION 301 (2d ed. 1992).

77. *Id.*

78. 42 U.S.C. § 7651b(a)(1) (1994).

79. See *ELI Report*, *supra* note 1, § 6.1.7. By early 1997, utilities had traded more than 7.2 million allowances and purchased over 300,000 allowances at EPA auctions. *Id.*

80. 42 U.S.C. § 7651i (1994). EPA issued final regulations to implement the opt-in program in 1995. See *Opting Into the Acid Rain Program*, 60 Fed. Reg. 17,100 (1995) (to be codified at 40 C.F.R. pts. 9, 72-78).

81. See OFFICE OF AIR AND RADIATION, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, 1995 COMPLIANCE RESULTS: ACID RAIN PROGRAM 1 (EPA/430-R-96-012) (1996). In the first year of the program, utilities reduced sulfur dioxide emissions by 5.6 million tons, although they were only required to reduce emissions by 2.2 million tons. See *Utilities Double Required SO₂ Reductions; EPA Allowance Auction Generates \$18 Million*, 26 Env't Rep. (BNA) 2249 (Mar. 29, 1996).

82. EPA estimates that compliance with the sulfur dioxide emissions trading program costs about \$1.2 billion annually for Phase I and will cost \$2.2 billion annually for Phase II, while a command and control approach would cost between \$4.5 and \$6 billion annually. See *ELI Report*, *supra* note 1, § 6.1.7. In addition, Resources for the Future, a policy think-tank, recently published a report which concludes that the benefits of the sulfur dioxide trading program, which include reductions in illnesses and premature death, reduced impact on lakes, streams, and other aquatic environments and improved visibility, will be 13 times greater than the costs of the program by 2010. See *Benefits of EPA's Acid Rain Program Far Exceed Its Costs, Researchers Find*, 28 Env't Rep. (BNA) 888 (Sept. 19, 1997). While Congress focused on environmental benefits of sulfur dioxide emissions reductions when it created the trading program, recent studies have demonstrated that the health benefits of sulfur dioxide emission reduction dwarf all environmental benefits. See *ELI Report*, *supra* note 1, § 6.1.7.

83. In order to phase out consumption (production plus imports, minus exports) of certain chlorofluorocarbons (CFCs) and halons to comply with terms of the Montreal Protocol on Substances that Deplete the Ozone Layer, EPA distributed "allowances" to companies that produced or imported CFCs and halons, which the companies could trade among themselves. See *Protection of Stratospheric Ozone*, 53 Fed. Reg. 30,566, 30,566 (1988) (to be codified at

lead in gasoline.⁸⁴

States have also implemented pollutant trading programs, primarily to address air pollution problems. Regulators in Los Angeles have implemented the Regional Clean Air Incentives Market (RECLAIM) to reduce emissions of sulfur dioxide and nitrogen oxides.⁸⁵ The program initially targeted sources that emit 95% of the total emissions of nitrogen oxides and 66% of the total emissions of sulfur dioxide.⁸⁶ Regulators project that RECLAIM will cost businesses 42% less than a traditional command and control program.⁸⁷ Under the trading program, the South Coast Air Quality Management District (SCAQMD), the agency that regulates air pollution in the Los Angeles air quality control region, assigns a finite number of emission credits to the sources, based on historical emission patterns, and assigns fewer credits to sources each year until the emissions are capped in 2003 at a level that meets national air quality standards for sulfur dioxide and nitrogen oxides for the region.⁸⁸ Air

40 C.F.R. pt. 82). Congress capped the total number of allowances that EPA distributed in order to gradually phase out consumption, 42 U.S.C. § 7671b (1994), and imposed an excise tax on CFC production to prevent windfall profits. 26 U.S.C. §§ 4681, 4682 (1994).

The allowance trading program costs businesses about \$2.4 million, as opposed to the estimated \$300 million cost of a command and control approach. See *ELI Report*, *supra* note 1, § 6.1.8.

84. In order to reduce the amount of lead in the ambient air, EPA reduced the limit on the amount of lead in gasoline to an average level of 1.1 gm/gallon by November 1, 1982, 0.5 gm/gallon by July 1, 1985, and 0.1 gm/gallon by January 1, 1986. See *ELI Report*, *supra* note 1, § 6.1.9. EPA allowed refineries to create lead credits, which could be allocated to other refineries for purposes of determining whether the refineries were complying with the lead limits. *Id.* For instance, if Refiner A produced 200 million gallons of gasoline in 1983 with an average lead content of 0.8 gm/gallon (when the limit was 1.1 gm/gallon), the refiner could earn 60 million grams of lead credits (0.3 gm/gallon times 200 million gallons), which it could sell to Refiner B, who may have produced 200 million gallons of gasoline with an average lead content of 1.4 gm/gallon. *Id.* Refiners could bank credits for use until the end of 1987. *Id.* Almost 60% of refiners participated in trading and 90% participated in banking by the end of the program. *Id.* EPA phased out the use of lead in gasoline much more quickly through trading than would have been possible under a pure command and control approach. *Id.*

85. Ozone levels in the Los Angeles area are often twice as high as the national ambient air quality standards. See *id.* § 6.1.2. Initially, regulators also proposed to include emissions of certain volatile organic compounds (VOCs) under the trading program. *Id.* Heavy opposition, coupled with various technical problems, prevented regulators from including VOCs in the program. *Id.* In 1995, the South Coast Air Quality Management District (SCAQMD) proposed to expand the trading program to target various sources of VOC emissions, but the agency later withdrew that proposal. *Id.*

86. Regulators initially targeted over 700 sources of nitrogen oxide emissions and 50 sources of sulfur dioxide emissions. See *id.* When the program was implemented in 1994, however, it encompassed 370 sources of nitrogen oxides and 40 sources of sulfur dioxide. *Id.* Those sources emit more than 70% of the total emissions of both pollutants. *Id.*

87. See *id.*

88. See *id.*

pollution sources can trade credits, but the credits can only be used in the year that they are issued.⁸⁹ The SCAQMD also implemented two controversial initiatives to encourage nitrogen oxide emission reductions. Under one SCAQMD rule, companies can earn RTCs by buying and scrapping homeowners' gasoline-powered lawn mowers and other garden equipment.⁹⁰ The rule is modeled on another SCAQMD program that allows companies to earn emission reduction credits by buying and scrapping heavily polluting automobiles.⁹¹

The Texas Air Control Board administers a trading program for several pollutants that contribute to ozone pollution in the Houston air quality control region.⁹² The program includes an automobile scrapping program similar to the California program.⁹³

While the state and federal pollutant trading programs promise to reduce pollution in a "cost-effective" manner, these programs could disparately impact low-income communities. First, while some trading programs limit trading to a specific air quality control region, many trading programs do not include any geographic limits on trades. As a result, while trading programs may decrease overall pollution levels, they may increase pollution in certain areas and create "toxic hot spots." Older, heavily polluting industries may find that it is more cost-effective to continue polluting and to buy pollution rights than to install new technologies to reduce pollution. Thus, communities surrounding those industries will be exposed to higher levels of pollution than other communities. Geographic limits on trades will not eliminate the "toxic hot spot" problem, especially if the geographic area in which trades are authorized is fairly large, but the limits could, at least, reduce the potential volume of pollution that will be imparted into a toxic hot spot. Professors Bruce Ackerman and Richard Stewart, early advocates of pollutant trading programs, recognized the "hot spot" problem over a decade ago,⁹⁴ and recent

89. *Id.*

90. See Marla Cone, *Lawn Mower Buyback Plan Approved*, L.A. TIMES, May 11, 1996, at A20. Studies suggest that a single lawn mower can emit as much ozone-causing pollution in 20 hours as a 1996 car emits when it is driven for 26,000 miles. *Id.*

91. *Id.* Between 1994 and 1996, more than 7000 cars were scrapped under the auto buy-back rule. *Id.*

92. See *ELI Report*, *supra* note 1, § 6.1.3.6. The Texas Air Control Board began to design the program in 1992, and the first trade under the program occurred in July 1995. *Id.*

93. *Id.* However, while the California program uses mathematical models to determine the amount of emission reductions that can be earned for each vehicle that is scrapped, the Texas program assigns emission reduction credits based on the actual emissions of the vehicles that are scrapped. *Id.*

94. See Ackerman & Stewart, *supra* note 1, at 1350. Ackerman and Stewart defended their proposal by arguing that the command and control approach also does not prevent "hot spots." *Id.*

commentators⁹⁵ and the National Environmental Justice Advisory Council (NEJAC)⁹⁶ echo their concerns today.⁹⁷

Even without trading programs, "grandfathering" provisions in environmental laws that establish more lenient standards for existing polluters than for new polluters provide incentives for old, heavily polluting industries to continue to pollute.⁹⁸ Trading programs will provide additional incentives for those facilities to continue to pollute and will perpetuate the distributional inequities that are already caused, in part, by "grandfathering" provisions.⁹⁹

If the trading programs will create toxic hot spots, economic theory suggests that the hot spots will most likely occur in low-income communities.¹⁰⁰ Low-income communities are disproportionately impacted by air pollution,¹⁰¹ the siting of locally unwanted land uses (LULUs),¹⁰² and the

95. See Driesen, *supra* note 1, at 310; Alice Kaswan, *Environmental Justice: Bridging the Gap Between Environmental Laws and "Justice,"* 47 AM. U.L. REV. 221, 269 (1997); Rena I. Steinzor, *Reinventing Environmental Regulation: The Dangerous Journey From Command to Self-Control*, 22 HARV. ENVTL. L. REV. 103, 115 (1998).

96. In a 1995 report, the NEJAC suggested that it would closely monitor the implementation of pollution trading policies because the policies could encourage inequitable distribution of pollution in toxic hot spots. See *Increased Enforcement Recommended in Minority, Low-Income Communities*, 26 Env't Rep. (BNA) 1554 (Dec. 22, 1995).

97. Critics might argue that the concerns about toxic hot spots are inflated. Trading schemes are often coupled with command and control standards, so that an industrial source must meet certain technology-based standards before they can trade for pollution rights. See ZYGMUNT J.B. PLATER ET AL., *ENVIRONMENTAL LAW AND POLICY: NATURE, LAW AND SOCIETY* 748 (2d ed. 1998) (illustrating table identifying technology-based air pollution limits that cannot be avoided through trading). Thus, there are limits on the amount of pollution that will flow to a toxic hot spot.

This criticism is flawed for several reasons. Technology-based standards are not necessarily designed to protect human health or the environment. See *id.* at 501-03 (contrasting technology-based standards in Clean Water Act with harm-based standards in Clean Air Act). Thus, if several sources are emitting pollution into the air or water at levels that meet technology-based standards in a toxic hot spot, those standards will not necessarily protect the health or environment of the surrounding community. Although states may impose more stringent limits on sources in those toxic hot spots in order to meet health-based or environmentally-based water quality standards or air quality standards, see, e.g., 33 U.S.C. § 1311 (b)(1)(C) (1994), the health-based or environmentally-based standards do not necessarily protect the health and safety of communities because the standards are set based on risk assessments that do not address the cumulative or synergistic impacts that pollution can have on persons. See Kuehn, *supra* note 40, at 117-21.

98. See Heidi Gorovitz Robertson, *If Your Grandfather Could Pollute, So Can You: Environmental 'Grandfather Clauses' and Their Role in Environmental Inequity*, 45 CATH. U. L. REV. 131, 134 (1995); see also Steinzor, *supra* note 95, at 115-16.

99. See Kaswan, *supra* note 95, at 270-71; Robertson, *supra* note 98, at 134, 139.

100. See *supra* notes 40-49 and accompanying text.

101. See *supra* note 40.

102. See *supra* note 40; see also Andrew Szasz et al., *The Demographics of Proximity to*

siting of heavily polluting industries.¹⁰³ This trend will likely continue as pollution trading programs expand for several reasons that are grounded in economic theory. First, heavily polluting industrial facilities (the facilities that may purchase pollution credits) will more likely be sited in low-income, urban areas than in middle- to upper-income, suburban areas.¹⁰⁴ Second, low-income communities may be less likely than affluent communities to urge an outdated, heavily polluting industry to implement new pollution controls instead of buying pollution rights. Low-income communities may fear that if they urge the industry to adopt new pollution controls, then the industry will close, depriving the community of essential jobs and tax revenue. Finally, low-income communities often lack the political power to influence industries to adopt new pollution controls instead of buying pollution rights.¹⁰⁵

As trading programs have proliferated, examples of the disparate impacts of such programs have begun to proliferate as well. For instance, Citizens for a Better Environment and the NAACP Legal Defense Fund recently challenged the auto scrapping program of the SCAQMD on the grounds that the program discriminates against minorities in violation of federal civil rights laws.¹⁰⁶ Over the past few years, oil companies have scrapped 17,000 cars to generate emission reduction credits that enable the companies to avoid installing vapor-recovery systems at oil refineries in low-income, Latino communities.¹⁰⁷ The auto scrapping program has, therefore, concentrated thousands of

Toxic Releases: The Case of Los Angeles County (visited Aug. 21, 1998) <<http://www.mapcruzin.com/scruztri/docs/seek55.htm>>.

103. See OFFICE OF POLLUTION PREVENTION AND TOXICS, ENVIRONMENTAL PROTECTION AGENCY, TOXICS RELEASE INVENTORY & EMISSION REDUCTIONS 1987-1990 IN THE LOWER MISSISSIPPI RIVER INDUSTRIAL CORRIDOR 25 (1993); LOUISIANA ADVISORY COMM. TO THE U.S. COMM'N ON CIVIL RIGHTS, THE BATTLE FOR ENVIRONMENTAL JUSTICE IN LOUISIANA . . . GOVERNMENT, INDUSTRY, AND THE PEOPLE 8 (1993); *Controversial Report on Health Effects in Poor Areas of Tennessee Released by EPA*, 24 Env't Rep. (BNA) 1468 (Dec. 3, 1993); *Review of 64 Previous Studies Confirms Conclusions on Pollution's Impact on Poor*, 25 Env't Rep. (BNA) 22 (May 6, 1994); Dr. Andrew Szasz & Michael R. Meuser, *Environmental Inequality: Silicon Valley Toxics and Demographics* (visited Aug. 8, 1998) <<http://www.cruzio.com/~meuser/EI/project.html>>.

104. See sources cited *supra* note 103.

105. The limited political power of low-income communities is illustrated most dramatically by a passage in a 1984 study on the siting of waste incinerators prepared by Cerrell Associates for the California Waste Management Board. See Kaswan, *supra* note 95, at 236-37. The study concluded that "all socioeconomic groupings tend to resent the nearby siting of major facilities, but middle and upper socioeconomic strata possess better resources to effectuate their opposition. Middle and higher socioeconomic strata neighborhoods should not fall within the one-mile and five-mile radius of the proposed site." *Id.* at 236-37; see Robertson, *supra* note 98, at 165.

106. See Greg Goldin, *Credit Crash: State Enters Fray over Swapping of Pollution Credits*, L.A. WEEKLY, Sept. 12, 1997, at 14.

107. *Id.*

pounds of pollution that were previously dispersed throughout the air quality control region, into several low-income, minority communities.¹⁰⁸

Future pollutant trading programs may create additional toxic hot spots if regulators do not design the programs to prevent such inequities. In the next few years, the sulfur dioxide trading program will expand significantly,¹⁰⁹ and several major pollutant trading programs may be launched.

Eleven northeastern states and the District of Columbia¹¹⁰ have agreed to implement a pollutant trading program, beginning in 1999, to reduce emissions of nitrogen oxides from utilities and industrial boilers.¹¹¹ EPA is developing a rule that would establish a similar cap and trade program to reduce nitrogen oxide emissions in the thirty-seven states that are located east of the Mississippi River.¹¹² Both proposals include an overall cap on emissions but

108. In response to the challenge of Citizens for a Better Environment, the SCAQMD adopted a ten-point plan to prevent toxic hot spots in minority communities. See *South Coast Air District Adopts Environmental Justice Program*, 28 Env't Rep. (BNA) 1265 (Oct. 24, 1997). The ten-point plan created a new monitoring system to evaluate the cumulative impacts of emissions from multiple sources, required the agency to conduct a comprehensive 15-month study regarding the distributional impacts of pollution in the region and to hold a series of town hall meetings to improve public access to the agency, and created a task force of business, environmental, and community representatives to address environmental justice issues in air pollution regulation. *Id.*

109. Phase II of the sulfur dioxide emissions trading program, which begins in 2000, will involve 700 additional sources, and experts are forecasting increased trading by sources in Phase II. See *ELI Report*, *supra* note 1, § 6.1.7.

110. The 11 states and the District of Columbia are members of an "Ozone Transport Commission" that was created by the 1990 Clean Air Act Amendments to formulate consensus recommendations to control ozone pollution in the states. See 42 U.S.C. § 7511c(a) (1994).

111. The agreement divides the states into three "zones," which must achieve different nitrogen dioxide reduction levels from 1999 through 2003. See *ELI Report*, *supra* note 1, § 6.1.5. The agreement specifies the number of emission allowances that are allocated to each state, and the states determine the manner in which allowances will be distributed within each state. *Id.* Allowances can be traded or banked by sources in the state. *Id.* Several northeastern states have already created nitrogen oxide cap and trade programs to implement the agreement. See, e.g., *Biggest Planned Northeast Nox Trade Preparing Region for 1999, Traders Say*, 28 Env't Rep. (BNA) 1336 (Nov. 7, 1997) (describing Massachusetts's program); *State Proposes Market-Based Plan to Slash Power Plant Nox Emissions*, 28 Env't Rep. (BNA) 1006 (Sept. 26, 1997) (describing New Jersey's program). The Ozone Transport Commission estimates that the trading program will cost 30% less than a pure command and control approach. See *ELI Report*, *supra* note 1, § 6.1.5.

112. In 1995, EPA created an Ozone Transport Assessment Group (OTAG), with representatives of those 37 states and the District of Columbia, to review potential controls to limit ozone formation in the region. See *ELI Report*, *supra* note 1, § 6.1.5. Based on OTAG recommendations, EPA issued proposed rules to cap nitrogen oxide emissions from each state in the region and to establish a nitrogen oxide emissions trading program for the region. See *Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone*, 62 Fed. Reg.

neither imposes any geographic limit on pollutant trades within the areas covered by the program. Accordingly, both programs have the potential to create pollution hot spots.

When the federal and state governments complete the ongoing restructuring of electric power transmission regulation, heavily polluting, outdated power plants may have additional incentives to continue operating and creating toxic hot spots. In 1996, the Federal Energy Regulatory Commission (FERC) began a process that will require utilities to provide open access, non-discriminatory transmission services over their power lines.¹¹³ This will allow utilities to deliver power to a wider distribution area and, presumably, lead to more cost-efficient energy production.¹¹⁴ EPA and public interest groups criticized the proposal because it could increase the market for older, heavily polluting power plants and could encourage utilities to continue operating those plants.¹¹⁵ Accordingly, the proposal could lead to the creation of toxic hot spots of pollution around the power plants¹¹⁶ and downwind from the

60,318 (proposed Nov. 7, 1997). Midwestern and southern states are lobbying strongly against the proposal, *see Governors Offer Ozone Transport Proposal, Ask Clinton to Rethink Administration Plan*, 28 Env't Rep. (BNA) 2381 (Mar. 13, 1998), while northeastern states are strongly supporting it. *See Northeast Governors Press Clinton to Move Forward with Ozone Proposal*, 28 Env't Rep. (BNA) 2717 (Apr. 24, 1998). While EPA planned to finalize the rule by September 1998, legislation has been introduced to delay the implementation of the rule, and political pressure may derail the proposal. *See Legislation Would Delay Promulgation of EPA Rule Addressing Ozone Transport*, 28 Env't Rep. (BNA) 2510 (Apr. 3, 1998).

113. *See Order 888: Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, 75 FERC 61,080 (1996) (visited Aug. 6, 1998) <<http://www.ferc.fed.us/news1/rules/data/rm95-8-00V.txt>>.

114. *Id.*

115. EPA raised its concerns in the context of the environmental review procedures of the National Environmental Policy Act. *See Air Quality Could Be Lowered by Proposal to Increase Utility Competition, EPA Says*, 26 Env't Rep. (BNA) 859 (Sept. 1, 1995). The Center for Clean Air Policy concluded that, without a cap on nitrogen oxide emissions, FERC's open access rules would increase emissions by 11-18% in New York during the summer ozone season. *See Study Says Increased Utility Competition Will Boost Ozone in East Absent Controls*, 27 Env't Rep. (BNA) 2339 (Apr. 4, 1997). Public utilities in several northeastern states raised similar concerns to FERC and requested a rehearing on FERC's decision to allow open access. *See Order 888-A: Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities (Order on Rehearing)*, 78 FERC 61,220 (1997) (visited Aug. 6, 1998) <<http://www.ferc.fed.us/news1/rules/data/rm95-8p1-000.txt>> [hereinafter *Order 888-A*].

116. A recent EPA report concludes that utilities emit between 13-26% of the total airborne emissions of mercury. *See Utility Air Toxics Report Highlights Mercury as Pollutant of Concern, Lists Other HAPs*, 28 Env't Rep. (BNA) 2285 (Feb. 27, 1998). Studies have suggested that mercury can cause death, can cause reduced reproductive success, can impair growth and development and cause behavioral abnormalities in wildlife, and may cause neurological and developmental defects in humans. *Id.* at 2286. In light of those findings, EPA used author-

plants.¹¹⁷ FERC prepared an environmental impact statement for its proposal and concluded that the open access rule would not result in significant overall increases in nitrogen oxide emissions and that EPA should address any distributional inequities or other environmental concerns through EPA's nitrogen oxide strategy under the Clean Air Act.¹¹⁸ Utilities are lobbying Congress to include air pollution controls in electricity deregulation legislation,¹¹⁹ and the Clinton Administration recently announced plans for electric utility restructuring legislation that would establish a national nitrogen oxide trading emissions open trading program.¹²⁰

The Clinton Administration might also seek legislation to establish a trading program to reduce carbon dioxide and other greenhouse gas emissions.¹²¹ The Administration plans to sign the Kyoto Protocol to the United

ity under Section 114 of the Clean Air Act, 42 U.S.C. § 7414 (1994), to require utilities to monitor and report mercury levels in the coal that they burn. Agency Information Collection Activities: Proposed Collection; Comment Request; Electric Utility Steam Generating Unit Mercury Emissions Collection Effort, 63 Fed. Reg. 17,406 (1998) (proposed Apr. 9, 1998). EPA is trying to determine whether it is necessary to regulate mercury emissions from utilities. *Id.* at 17,407.

117. Although it is hard to predict what areas would be impacted by nitrogen oxide emissions from old, heavily polluting power plants, it is likely that the pollutants will exacerbate problems in cities and urban areas where there are other sources of ozone pollution, rather than in suburban communities. Studies have consistently determined that air pollution disparately impacts low-income communities. See Charles Lee, *Developing the Vision of Environmental Justice: A Paradigm for Achieving Healthy and Sustainable Communities*, 14 VA. ENVTL. L.J. 571, 573 (1995); see also *Hearings on Environmental Justice Before the Subcomm. on Civil and Constitutional Rights*, *supra* note 40.

118. See *Order 888-A*, *supra* note 115, at I.17. The Council on Environmental Quality (CEQ) mediated the dispute between EPA and FERC. See *EPA-FERC Battle Over Utility Access Rule Resolved Under Referral Process*, *CEQ Says*, 27 Env't Rep. (BNA) 463 (June 21, 1996).

119. See *Environmental Group, N.J. Utility Agree on Role of Pollution Control in Restructuring*, 28 Env't Rep. (BNA) 2421 (Mar. 20, 1998). Legislation introduced in the 105th Congress would impose caps on emissions of nitrogen oxides, sulfur dioxide, carbon dioxide, and mercury from power plants. See S. 687, 105th Cong. (1997).

120. See *Electric Restructuring Plan Seeks Efficiency Through Renewable Energy, Market Trading*, 28 Env't Rep. (BNA) 2461 (Mar. 27, 1998). Environmental groups criticized the plan because it did not include caps on emissions of carbon dioxide, nitrogen oxides, and sulfur dioxide. *Id.* In response to concerns that FERC's open access rules will encourage older, heavily polluting power plants to continue to operate, Clinton Administration officials argue that such plants would be operated at full capacity regardless of the rules. See *Energy Official Says Utility Competition Unlikely to Boost Old Plants' Emissions*, 28 Env't Rep. (BNA) 2672 (Apr. 17, 1998).

121. See *EPA May Seek More Authority for Trading Through Utility Restructuring Legislation*, 28 Env't Rep. (BNA) 2382 (Mar. 13, 1998); *Administration Plans to Sign Kyoto Deal, Will Hold Off Seeking Senate Ratification*, 28 Env't Rep. (BNA) 2152 (Feb. 20, 1998) [hereinafter *Kyoto Deal*].

Nations Framework Convention on Climate Change¹²² and believes that a trading program would enable the United States to reduce its greenhouse gas emissions to the levels required by the treaty in a cost-effective manner.¹²³

In addition to air pollution emissions trading programs, EPA and states are expected to establish more water pollution effluent trading programs. In order to encourage states to adopt trading programs, EPA recently issued a Draft Framework for Watershed-Based Trading.¹²⁴ Polluters would still have to meet applicable technology-based water pollution standards under the trading programs.¹²⁵ However, polluters could avoid reducing their pollution discharges beyond technology-based limits to meet limits that are necessary to protect water quality¹²⁶ by entering into agreements with other

122. In December 1997, 160 countries reached agreement on the Protocol, which addresses emissions of carbon dioxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. See *Negotiators in Japan Reach Agreement for 6 Percent Emission Cut by 2008-2012*, 28 Env't Rep. (BNA) 1565 (Dec. 12, 1997) [hereinafter *Agreement*]. Before the United States signs the treaty, the Clinton Administration hopes to enter into bilateral agreements with several developing nations in order to appease members of Congress who were upset that developing nations are not required to meet emission limits in the treaty. See *Kyoto Deal*, *supra* note 121, at 2152; *White House Plans to Seek Emission Cuts in Developing Countries Before Pact Ratified*, 28 Env't Rep. (BNA) 1615 (Dec. 19, 1997).

While developing countries do not have to reduce their greenhouse gas emissions, the treaty allows industrialized countries to sponsor and receive credit for projects that reduce emissions levels in developing countries. See *Agreement*, *supra*, at 1565. The treaty also allows countries to claim credits for maintaining forests because forests can function as "sinks" for greenhouse gas emissions. *Id.* Japan is currently negotiating with Russia to exchange energy efficient technologies for emission reduction credits attributable to Russia's vast forestry resources. See *Japan Eyes Greenhouse Gas Trades with Russia to Meet Pact Reductions*, 28 Env't Rep. (BNA) 2106 (Feb. 13, 1998).

123. The treaty requires the United States to reduce its greenhouse gas emissions to 7% less than 1990 levels by 2008-2012. See *Agreement*, *supra* note 122, at 1565. The Clinton Administration believes that the United States can achieve these reductions primarily by entering into agreements with developing countries to reduce emissions in those countries instead of implementing stringent measures to reduce emissions in the United States. See *White House Analysis Call Cost of Kyoto Protocol Reductions Modest*, 29 Env't Rep. (BNA) 729, 729 (Aug. 7, 1998).

124. See U.S. Environmental Protection Agency, *Draft Framework for Watershed-Based Trading* (1996) (last modified June 6, 1996) <<http://www.epa.gov/OWOW/watershed/summary.html>> [hereinafter *Framework*].

125. *Id.*

126. The Clean Water Act requires polluters to comply with certain water quality-based standards in addition to technology-based standards. For instance, the Clean Water Act authorizes the agency that issues NPDES water pollution permits to require polluters to reduce their pollution discharges beyond the levels required by technology-based standards if the additional reductions are necessary to meet water quality standards. 33 U.S.C. § 1311(b)(1)(C) (1994). In addition, the Clean Water Act requires states to identify the total amount of pollution that may be discharged into certain heavily polluted waters (the "total maximum daily load" or TMDL) and to limit discharges by all polluters to ensure that pollution discharges do not exceed

polluters, which then must reduce their pollution discharges beyond levels required by law.¹²⁷ Assume, for instance, that a sewage treatment plant and several farms are located in the watershed of the Mercer River¹²⁸ and that the river is polluted by excess nutrients. In an effluent trading program, the sewage treatment plant could enter into an agreement with the farms instead of installing expensive pollution controls to reduce its own nutrient discharges. The farms would then agree to change their farming practices to reduce overall nutrient discharges. A few states and local governments have implemented effluent trading programs,¹²⁹ and EPA hopes that its "framework" for trading will encourage more governments to implement similar programs.¹³⁰ Consequently, to the extent that pollutant trading programs disparately impact low-income communities, those inequities may be compounded in the near future as regulators launch the new trading initiatives described in this Part.

B. Pollution Taxes, Fees, and Charges and Their Potential Disparate Impacts

Pollution taxes, fees, and charges¹³¹ promise to reduce pollution in cost-effective ways similar to pollutant trading programs. However, thus far, the federal government and state governments have been reluctant to take advantage of those tools.¹³²

the water's TMDL. *Id.* § 1313(d). Additional pollution reductions may be required to comply with EPA's "antidegradation" policy. *See* 40 C.F.R. § 131.12 (1997).

127. Several types of trading are possible in effluent trading programs. A point source polluter may enter into an agreement with another point source or with a nonpoint source. *See Framework, supra* note 124, Exec. Summ. Two nonpoint sources may enter into an agreement. *Id.* Several discharges from a single point source might be treated as a single discharge in the same way that air pollution emissions are "bubbled." *Id.* Finally, a pretreatment plant may enter into an agreement with polluters that dispose of their pollution in the pretreatment plant. *Id.*

128. Usually, effluent trades can only be made by polluters in the same watershed. *See Framework, supra* note 124, at 2-8 (describing "Principles for Trading"). This should reduce the potential for environmental injustice to some extent.

129. Wisconsin has implemented a program that allows polluters to trade biological oxygen demand (BOD) effluent reduction credits on the Fox River. *See ELI Report, supra* note 1, § 6.2.2. Regulators in Denver, Colorado have implemented a phosphorous trading program for the Dillon Reservoir. *Id.* § 6.2.3.1.

130. EPA concluded that the use of water pollution effluent trading was limited, in the past, by the absence of clear and unambiguous authorization for trading in the Clean Water Act. *See* GAO REINVENTION REPORT, *supra* note 2, ch. 3:5:4.

131. Taxes are designed to raise revenue, while charges or fees operate to offset costs to government. *See ELI Report, supra* note 1, § 4.1.

132. *See ELI Tax Report, supra* note 23, at 2. There are several reasons why governments have been reluctant to use taxes to achieve environmental protection. First, it is politically difficult to enact pollution taxes because the regulated community usually opposes such taxes,

The federal government has used pollution taxes to phase out the production of various chlorofluorocarbons¹³³ and to encourage auto makers to manufacture fuel-efficient cars.¹³⁴ The federal government has also considered adopting a carbon tax, or other energy tax, to spur energy conservation and to reduce greenhouse gas emissions.¹³⁵ However, most pollution taxes, charges, and fees have been implemented by states rather than by the federal government.¹³⁶ The Clean Air Act specifically endorses pollution taxes as a tool for states to comply with national air quality standards.¹³⁷

Some states have imposed fees on the sale of tires¹³⁸ or fertilizers¹³⁹ in order to finance the cleanup of improper tire disposal sites and the inspection of fertilizers. Several states impose variable fees on polluters for water pollution permits¹⁴⁰ or air pollution permits¹⁴¹ based on the volume or toxicity

especially if the taxes will be set high enough to materially change behavior. See *ELI Report*, *supra* note 1, § 3.3.1; Thompson, *supra* note 3, at 18. Second, regulators have less control over the total volume of pollution that is discharged under a pollution tax system than under a "capped" pollutant trading program. See *ELI Report*, *supra* note 1, § 3.3.1. Third, administration of a pollution tax system raises numerous complicated issues. For instance, regulators must determine an appropriate tax rate that encourages pollution reduction, raises revenue, protects viability of businesses, and possibly achieves several other conflicting policy goals. See *ELI Tax Report*, *supra* note 23, at 9; Ottinger & Moore, *supra* note 23, at 107. Measurement of the pollution that will be taxed is often difficult. See *ELI Report*, *supra* note 1, § 3.4. Finally, some environmentalists oppose pollution taxes because they appear to give polluters a right to pollute. *Id.* § 3.3.1.

133. 26 U.S.C. § 4681 (1994). CFC consumption fell from 318,000 metric tons in 1989 to 200,000 metric tons in 1990, and the tax raised \$2.9 billion in its first five years. See *ELI Report*, *supra* note 1, § 4.5.1.3.

134. Manufacturers must pay a tax, ranging from \$1000 to \$7700, depending on fuel efficiency, for each car that they sell that averages less than 22.5 miles per gallon. See *ELI Report*, *supra* note 1, § 4.5.1.2.

135. See, e.g., H.R. 4805, 101st Cong. (1990); Christian, *supra* note 23; Dawn Erlandson, *The Btu Tax Experience: What Happened and Why It Happened*, 12 PACE ENVTL. L. REV. 173 (1994); see also Stavins, *supra* note 5, at 23.

136. See *ELI Report*, *supra* note 1, § 4.1.

137. 42 U.S.C. § 7410(a)(2)(A) (1994).

138. *ELI Report*, *supra* note 1, § 4.5.2.1.

139. *Id.* § 4.5.2.2.

140. Eighteen states that administer the Clean Water Act Section 402 (NPDES) permit program assess permit fees based on discharge volume, and ten other states assess fees based on discharge volume and toxicity. See *id.* § 4.2.2. For instance, permit fees in Louisiana range from \$227.50 to \$90,000 and are based on a variety of factors, including pollutants released, heat load, volume, complexity of the discharger, and potential public health threat of the discharge. *Id.* § 4.2.3. In California, fees range from \$400 to \$10,000 per year and depend on both the threat to water quality from the discharge and the complexity of the permit. *Id.*

141. Maine imposes an air pollution permit fee that ranges from \$2 per ton (for emissions up to 1000 tons) to \$15 per ton (for emissions in excess of 4000 tons), and the state imposes a surcharge based on the toxicity of emissions. See *id.* § 4.3.1.1. New Mexico charges permit

of the pollution authorized by the permit. Municipalities often adopt a similar approach when they establish fees for persons or businesses that dispose of wastewater in a sewage treatment plant.¹⁴² While those fees provide some incentive for polluters to reduce their pollution, the primary purpose for most fees is to raise revenue to cover the costs of administering the permit or the regulatory program.¹⁴³

By contrast, many municipalities are implementing variable waste disposal fees, a pollution tax system that primarily aims to reduce pollution rather than to raise revenue.¹⁴⁴ In a variable rate waste disposal program, residents pay variable waste disposal fees, which depend on the amount of waste that they dispose, instead of paying uniform fees.¹⁴⁵ This creates an incentive for residents to reduce the amount of waste that they generate. Waste disposal rates have been reduced significantly in cities that have implemented variable rate waste disposal fees.¹⁴⁶

While variable rate waste disposal fees, energy taxes, and other pollution taxes, fees, and charges promise to reduce pollution in cost-effective ways, they can also perpetuate environmental injustices. First, if governments impose uniform tax rates on pollution discharges based on the volume or toxicity of the discharge without regard to the location of the discharge, pollution taxes could create toxic hot spots in the same manner as pollutant trading systems.¹⁴⁷ It may be more cost-effective for old, heavily polluting industries to pay pollution taxes than to reduce their pollution discharges, especially when the taxes are not set at rates that force polluters to reduce pollution.¹⁴⁸

Unless governments tax pollution in heavily polluted areas at a higher rate than pollution in other areas, only newer, cleaner industries will have any incentive to reduce their pollution.¹⁴⁹

fees that range from \$10 per ton for criteria pollutants to \$150 per ton for air toxics. *Id.* § 4.3.1.

142. *See id.* § 4.2.1.

143. *Id.* § 4.2.3. The 1990 Clean Air Act Amendments require states to impose permit fees that recover the administrative costs of operating the air pollution permitting program. *See* 42 U.S.C. § 7661a(b)(3)(A) (1994).

144. Variable rate ("pay as you throw") programs have been implemented in 3400 communities in 37 states. *See ELI Report, supra* note 1, § 4.4.1.

145. *Id.*

146. A study of 21 northeastern cities that implemented variable rate programs found that waste disposal rates dropped from 17% to 74% in those cities. *Id.* A 1992 survey of 14 cities found that the waste disposal rates dropped an average of 44% in those cities. *Id.* At the same time, though, these programs can create incentives for illegal waste disposal ("midnight dumping"). *Id.*

147. *See* Ottinger & Moore, *supra* note 23, at 108.

148. In the past, pollution taxes have generally been set too low to create any significant incentives for pollution reduction. *See ELI Report, supra* note 1, § 3.4.

149. *See ELI Tax Report, supra* note 23, at 9, 26.

More significantly, though, pollution taxes could have regressive effects on low-income communities.¹⁵⁰ For instance, low-income households would feel the impacts of an energy tax much more keenly than high-income households because low-income households spend a greater proportion of their income on heat, electricity, and gasoline than high-income households.¹⁵¹ Similarly, variable-rate waste disposal fees impose more significant financial burdens on low-income residents than high-income residents.¹⁵² At least one commentator has suggested that low-income communities *should* bear a greater proportional share of pollution reduction costs because those communities will receive the greatest benefit from pollution reductions.¹⁵³ Following that logic one step further, though, shouldn't the communities that benefitted from the existing inequitable distribution of pollution be taxed for those benefits? Couldn't that money be used to compensate the communities that have endured heavier pollution burdens? More sensitive commentators have suggested that more progressive pollution taxes could be structured at different rates¹⁵⁴ or coupled with subsidies or other companion measures.¹⁵⁵

While governments may increasingly turn to pollution taxes, fees, and charges in the future,¹⁵⁶ they should structure such programs to avoid these potential inequitable impacts.

C. Project XL and Brownfields Programs

Project XL is another market-based reform that could disparately impact low-income communities. Through Project XL, which stands for "excellence in leadership," EPA has committed to approve fifty pilot projects to examine innovative ways to achieve environmental and public health protection in a more cost-effective manner.¹⁵⁷ In Project XL, EPA enters into agreements with polluters that authorize the polluters to avoid certain regulatory and legal requirements if the polluters can operate their businesses in a manner that achieves "superior environmental results" while meeting certain other criteria.¹⁵⁸ EPA

150. See Dower & Repetto, *supra* note 25, at 167-69.

151. See Christian, *supra* note 23, at 250.

152. See *ELI Report*, *supra* note 1, § 4.4.1.

153. See Dower & Repetto, *supra* note 25, at 169.

154. See Christian, *supra* note 23, at 253-54.

155. See *id.* at 252-53; Ottinger & Moore, *supra* note 23, at 118.

156. See *ELI Tax Report*, *supra* note 23, at 46-47; Stavins, *supra* note 5, at 23.

157. See *Environmental Protection Agency, XL at a Glance* (visited Aug. 6, 1998) <http://yosemite.epa.gov/xl/xl_home.nsf/all/xl_glance> [hereinafter *XL at a Glance*]. Some states are also modeling initiatives on EPA's Project XL. See Steinzor, *supra* note 95, at 111.

158. See *XL at a Glance*, *supra* note 157.

To participate in Project XL, applicants must have a good history of compliance with EPA regulations. Successful XL proposals must also develop alternative

hopes that the initiative will stimulate regulatory flexibility and will create models for future reforms.¹⁵⁹

In a Project XL pilot project, EPA might (a) authorize emissions trading, caps, or bubbles that are not otherwise authorized by law;¹⁶⁰ (b) waive permit or reporting requirements or procedures to allow businesses to consolidate permits or reports;¹⁶¹ or (c) allow businesses to comply with performance standards instead of applicable technology-based standards.¹⁶²

EPA waives or modifies regulatory and legal requirements in Project XL pilot projects in order to achieve environmental protection in a more cost-effective manner. However, these waivers may actually increase pollution in the communities surrounding the pilot project because determining whether a project produces "superior environmental results" is a very subjective task. First, it is difficult to calculate baseline pollution levels in order to determine whether a project increases or decreases pollution.¹⁶³ Second, Project XL pilot projects may decrease discharges of one pollutant but increase the production of another pollutant, or the projects may transfer pollution from one medium to another.¹⁶⁴ While the project might seem, initially, to produce "superior environmental results," it could aggravate health or environmental impacts to the surrounding community because of the synergistic or cumulative impacts of the new pollutant or new discharge, coupled with existing pollution.¹⁶⁵ Those impacts might not be apparent without detailed study and analysis.

To the extent that Project XL pilot projects will increase pollution levels in particular communities, it is likely that the projects will disparately impact

environmental management strategies that: (1) produce *superior environmental results* . . . ; (2) produce benefits such as cost savings, paperwork reduction [and] *regulatory flexibility* . . . ; (3) are supported by *stakeholders*; (4) achieve innovation/pollution prevention; (5) . . . are transferable to other facilities; (6) are feasible; (7) establish accountability through agreed upon methods of monitoring, reporting, and evaluations; and (8) avoid shifting the risk burden . . .

Id.

159. See Beth S. Ginsberg & Cynthia Cummis, *EPA's Project XL: A Paradigm for Promising Regulatory Reform*, 26 *Envtl. L. Rep. (Envtl. L. Inst.)* 10,059, 10,061 (Feb. 1996).

160. *Id.*; see Environmental Protection Agency, *Status of OSi Specialties Project XL* (last modified July 20, 1998) <http://yosemite.epa.gov/xl/xl_home.nsf/all/osi.html> (describing Project XL pilot project for OSi Specialties Incorporated plant in West Virginia).

161. See, e.g., Environmental Protection Agency, *Weyerhaeuser Proposes Multimedia Approach to Environmental Protection* (last modified Apr. 23, 1997) <http://yosemite.epa.gov/xl/xl_home.nsf/all/weyer.html> (describing Project XL pilot project for Weyerhaeuser pulp manufacturing plant in Oglethorpe, Georgia).

162. See Ginsberg & Cummis, *supra* note 159, at 10,061.

163. See *id.* at 10,062; Steinzor, *supra* note 95, at 131-32.

164. See Steinzor, *supra* note 95, at 133-34.

165. *Id.*

low-income communities. Project XL pilot projects are developed through a very time-consuming, technical process, and the projects involve detailed analyses of industrial processes and economics. While affluent communities will be able to hire consultants and experts to evaluate and to comment on the pilot project proposals or to challenge the validity of the agency's agreements, it will be more difficult for lower-income communities to shoulder those expenses.¹⁶⁶ As a result, to the extent that the Project XL pilot project development process frustrates the ability of low-income communities to participate in the process, it is more likely that EPA will enter into Project XL agreements that increase pollution in low-income communities rather than in affluent communities. However, potential disparate impacts of Project XL may not be a major concern for any communities because the program has not been very successful thus far.¹⁶⁷

Brownfields¹⁶⁸ redevelopment initiatives may raise some of the same concerns as Project XL pilot projects regarding inequitable treatment of com-

166. Public interest groups and other commentators have criticized Project XL's public participation procedures because they fail to provide communities with financial or technical assistance that is necessary to participate in the process and because much of the negotiations to develop the agreements takes place without public participation. See *EPA's Project XL in Need of Adjustments to Ease Participation*, *Forum Participants Assert*, 27 *Env't Rep. (BNA)* 1839 (Jan. 3, 1997) [hereinafter *XL Forum*]; see also Steinzor, *supra* note 95, at 142-43; Thompson, *supra* note 3, at 14, 16.

167. Although EPA hopes to approve 50 pilot projects, the agency only approved 7 as of April 1998. See *XL at a Glance*, *supra* note 157. There are several reasons why the agency has not approved more pilot projects. First, EPA has found it difficult to determine whether proposed projects achieve "superior environmental performance" or to develop a precise definition of "superior environmental performance." See Steinzor, *supra* note 95, at 130.

Second, negotiation and development of Project XL pilot project agreements is time-consuming and expensive for EPA, businesses, and communities. See *GAO REINVENTION REPORT*, *supra* note 2, ch. 4.2; Steinzor, *supra* note 95, at 128; Thompson, *supra* note 3, at 16; *XL Forum*, *supra* note 166.

Finally, by their very nature, Project XL pilots may violate statutory or regulatory requirements. See Ginsberg & Cummis, *supra* note 159, at 10,063. While EPA can decide, as a matter of enforcement discretion, not to prosecute Project XL participants for statutory or regulatory violations, citizens may be able to challenge the pilot projects through citizen suit provisions of the environmental laws. *Id.*

EPA has attempted to address that problem by using permit modifications, site-specific rulemakings, and alternative compliance strategies as ways to exercise their discretion, when the environmental laws grant EPA discretion, to modify regulatory requirements. See *Notice of Modifications*, 62 *Fed. Reg.* 19,872, 19,876 (1997) (notice issued Apr. 23, 1997). While EPA feels that it has authority to implement many of the Project XL pilot projects under existing laws, see *GAO REINVENTION REPORT*, *supra* note 2, ch. 3:5.1, legislators have introduced legislation that would explicitly authorize EPA to waive or modify statutory or regulatory requirements for Project XL pilot projects. See S. 1348, 105th Cong. (1997); H.R. 3180, 105th Cong. (1998).

168. "Brownfields" are defined by EPA as "abandoned, idled or underused industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived

munities. Through EPA's Brownfields Action Agenda and state voluntary cleanup programs, the federal government and state governments are providing liability limitations,¹⁶⁹ grants, loans, tax breaks,¹⁷⁰ and other economic incentives to developers to encourage them to clean up and to redevelop property that has been contaminated by toxic or hazardous substances.¹⁷¹ In many cases, regulators encourage developers to redevelop property by streamlining the cleanup process for the contaminated property or by establishing site-specific cleanup standards for the property.¹⁷²

Critics of EPA's Brownfields Agenda and state voluntary cleanup programs (collectively referred to as "brownfields programs") argue that the streamlined, site-specific cleanup standards provide less protection to public health and the environment than standards that would otherwise apply to the cleanup of the property.¹⁷³ Most brownfields properties are located in inner-city communities, rather than in suburban or rural communities.¹⁷⁴ Accordingly, critics argue that brownfields programs could force inner-city communities to accept substandard environmental cleanups.

On the other hand, critics of Superfund often assert that Superfund cleanup standards are unnecessarily overprotective.¹⁷⁵ EPA defends brownfields programs by pointing out that (a) cleanup standards under those programs must, at a minimum, protect human health¹⁷⁶ and (b) most brownfields properties would not be cleaned up at all without a brownfields program.¹⁷⁷ In addition, the redevelopment can revitalize the communities and bring back businesses and jobs.¹⁷⁸ Accordingly, many environmental justice advocates praise

environmental contamination." Office of Solid Waste and Emergency Response, Environmental Protection Agency, *Brownfields Glossary of Terms: Brownfields* (last modified Sept. 30, 1997) <<http://www.epa.gov/swerosps/bf/glossary.htm>>. The Government Accounting Office estimates that there may be as many as 500,000 brownfields in the United States. Stephen M. Johnson, *The Brownfields Action Agenda: A Model for Future Federal/State Cooperation in the Quest for Environmental Justice*, 37 SANTA CLARA L. REV. 85, 94 (1996).

169. See Johnson, *supra* note 168, at 102, 105.

170. *Id.* at 104, 112-15.

171. Without incentives, uncertain cleanup standards, uncertain liability, and inadequate financing opportunities often prevent the redevelopment of brownfields. *Id.* at 97-100.

172. *Id.* at 103.

173. *Id.* at 96.

174. *Id.* at 94.

175. See Zygmunt J.B. Plater, *Facing a Time of Counter-Revolution—The Kepone Incident and a Review of First Principles*, 29 U. RICH. L. REV. 657, 696 (1995) (discussing "Cadillac cleanups"); see also PERCIVAL, *supra* note 1, at 393-99; Peter Huber, *Crime: Buck-Passing*, FORBES, Mar. 14, 1994, at 120.

176. See Johnson, *supra* note 168, at 95-96.

177. *Id.*

178. *Id.* at 95.

brownfields programs.¹⁷⁹ At the same time, though, most caution that brownfields programs can only protect and revitalize communities if the communities are provided with opportunities for "full and informed" participation in the cleanup and redevelopment process.¹⁸⁰

III. Market-Based Reforms That Facilitate Environmental Justice

Although many of the market-based reforms that have been instituted could exacerbate problems of environmental injustice, a few reforms could potentially reduce inequities. Pollution prevention and multimedia initiatives hold the most promise for environmental justice.¹⁸¹

Instead of regulating the manner in which pollution is managed or disposed after it is created, pollution prevention initiatives attempt to reduce pollution at the source¹⁸² and prevent businesses from creating pollution in the first place.¹⁸³ It is appropriate to label pollution prevention as a market-based reform because pollution prevention practices can save businesses millions of dollars, enable businesses to operate more efficiently, and facilitate the reduction of waste.¹⁸⁴

179. *Id.* at 95-96.

180. *Id.* at 96, 100. In a 1996 report, the National Environmental Justice Advisory Council stressed the importance of public participation and recommended several other improvements to brownfields initiatives that would foster environmental justice. See WASTE AND FACILITY SITING SUBCOMMITTEE, NATIONAL ENVIRONMENTAL JUSTICE ADVISORY COUNCIL, ENVIRONMENTAL PROTECTION AGENCY, ENVIRONMENTAL JUSTICE, URBAN REVITALIZATION, AND BROWNFIELDS: THE SEARCH FOR AUTHENTIC SIGNS OF HOPE 20-28, 29-56 (EPA-500-R-96-002) (1996).

181. For a good discussion of the history of federal and state pollution prevention efforts, see generally Robert F. Blomquist, *Government's Role Regarding Industrial Pollution Prevention in the United States*, 29 GA. L. REV. 349 (1995).

182. "Source reduction" refers to any practice that "reduces the amount of any hazardous substance, pollutant or contaminant entering any waste stream or otherwise released into the environment . . . prior to recycling, treatment, or disposal and . . . reduces the hazards to public health and the environment associated with the release of such substances, pollutants or contaminants." 42 U.S.C. § 13102(5)(A) (1994). "Source reduction" does not include recycling.

183. Pollution prevention practices that businesses could implement include: (a) changes in process inputs; (b) improved plant management or housekeeping; (c) changes in process equipment or process technology; (d) recycling and reuse within a process; and (e) changes in the design of end products. See Stephen M. Johnson, *From Reaction to Proaction: The 1990 Pollution Prevention Act*, 17 COLUM. J. ENVTL. L. 153, 157 (1992) [hereinafter Johnson II].

184. See Environmental Protection Agency, *Pollution Prevention 1997: A National Progress Report*, Exec. Summ.:2 (1997) (visited Aug. 8, 1998) <http://www.epa.gov/opptintr/p2_97/execsumm.pdf> [hereinafter *Progress Report*]; Johnson II, *supra* note 183, at 157 n.21, 161 n.43, 162 n.44 (citing economic success stories for Dow Chemical, 3M, Chevron, and Clairol); see also Kurt A. Strasser, *Preventing Pollution*, 8 FORDHAM ENVTL. L.J. 1, 11 (1996). Businesses save money by reducing or avoiding waste disposal costs and by avoiding waste of

At the same time, pollution prevention initiatives can reduce the amount of toxic substances in the environment, reduce worker exposure to toxic substances, reduce the potential for accidents and spills in transporting toxics, and reduce the amount of toxic substances in consumer products.¹⁸⁵ The "environmental justice" benefits of pollution prevention are obvious. If pollution prevention initiatives actually reduce pollution, they reduce the likelihood that low-income communities will be disparately impacted by cumulative or synergistic exposure to multiple pollutants. EPA considers pollution prevention to be the most effective tool for battling environmental injustice.¹⁸⁶

Congress enacted the Pollution Prevention Act of 1990 to encourage businesses to adopt pollution prevention measures. Because legislators believed that mandatory pollution prevention requirements would stifle innovation,¹⁸⁷ the Pollution Prevention Act focuses on providing information,¹⁸⁸ grants,¹⁸⁹ and other incentives to encourage voluntary pollution prevention.¹⁹⁰ EPA has launched dozens of initiatives aimed at encouraging voluntary pollution

raw materials. See Johnson II, *supra* note 183, at 158. Amoco recently concluded that pollution prevention approaches at one of its refineries could eliminate as much pollution as required by command and control regulations for one-fourth the cost of the regulations. See Strasser, *supra*, at 9. A Dow Chemical study concluded that the company received a 50% return on funds that they spent on pollution prevention, while they only received a 13% return on funds that they spent on regulatory compliance. See *id.* A study by New Jersey's environmental regulators concluded that five to eight dollars are saved for every dollar that government and industry spend on pollution prevention. See *Pollution Prevention Planning Reported to Save Industry \$5-\$8 for Each Dollar Spent*, 26 Env't Rep. (BNA) 671 (Aug. 4, 1995). Pollution prevention approaches were used to remove phosphates from household detergents, see Strasser, *supra*, at 27-29, and are being used to remove chlorine from paper manufacturing processes. See *Louisiana-Pacific Kraft Paper Mill Converts to Chlorine-Free Operation*, 25 Env't Rep. (BNA) 866 (Sept. 9, 1994).

185. See *Progress Report*, *supra* note 184, Exec. Summ.:2; Johnson II, *supra* note 183, at 162. Pollution prevention plays a prominent role in the Principles of Environmental Justice adopted at the First National People of Color Environmental Leadership Conference in 1991. See PROCEEDINGS, THE FIRST NATIONAL PEOPLE OF COLOR ENVIRONMENTAL LEADERSHIP SUMMIT: THE WASHINGTON COURT ON CAPITOL HILL, WASHINGTON, D.C., OCT. 24-27, 1991 xiii-xiv (Charles Lee ed., 1992) (listing seventeen Principles of Environmental Justice adopted at United Church of Christ Commission for Racial Justice sponsored summit).

186. See Environmental Protection Agency, *Environmental Justice Through Pollution Prevention Grant Program* (visited Aug. 8, 1998) <<http://www.epa.gov/opptintr/ejp2/intro-ix.htm>>.

187. See Johnson II, *supra* note 183, at 170 & n.95.

188. See 42 U.S.C. § 13105 (1994).

189. See *id.* § 13104.

190. However, the Pollution Prevention Act includes a mandatory reporting requirement. See *id.* § 13106. Owners or operators of businesses that must file a toxic chemical release form under the Emergency Planning and Community Right to Know Act (EPCRA) must include, on that form, information about their source reduction and recycling activities. See *id.*

prevention, including its 33/50,¹⁹¹ Waste Wise,¹⁹² and Design for the Environment¹⁹³ initiatives.¹⁹⁴

In addition, EPA uses its negotiating leverage in enforcement actions to encourage businesses to adopt pollution prevention practices.¹⁹⁵ In appropriate circumstances, EPA will agree to reduce the financial penalty that it is seeking from a polluter to settle an enforcement action if the polluter agrees to implement a "supplemental environmental project" (SEP).¹⁹⁶ SEPs may include pollution prevention projects, pollution reduction projects, environmental

191. The goal of the 33/50 initiative was to reduce emissions of 17 toxic chemicals by 33% by 1992 and 50% by 1995, preferably through source reduction, but possibly through recycling, reuse, and other pollution control measures. See GENERAL ACCOUNTING OFFICE, TOXIC SUBSTANCES: EPA NEEDS MORE RELIABLE SOURCE REDUCTION DATA AND PROGRESS MEASURES, ch. 0:2 (GAO/RCED-94-93) (Sept. 23, 1994) [hereinafter SOURCE REDUCTION REPORT]. More than 1200 companies participated in the initiative, see *id.* ch. 0:4.2, and emissions of the 17 chemicals were reduced by 50% a year ahead of schedule. See *id.* ch. 3:2.1. While EPA touted the program as a success, many critics argued that (a) substantial emissions reductions were achieved through pollution control measures or recycling, rather than source reduction; (b) many of the emissions reductions were planned by companies prior to the initiative; and (c) substantial emissions reductions that were attributed to the program were achieved by companies that did not participate in the program. See SOURCE REDUCTION REPORT, *supra*, ch. 3; Joel S. Hirschhorn, *Pollution Prevention Comes of Age*, 29 GA. L. REV. 325, 332-33 (1995); *Voluntary Pollution Prevention Program Labeled "Sham" by Environmental Group*, 25 Env't Rep. (BNA) 280, 280-81 (June 10, 1994).

192. Waste Wise is a voluntary initiative to reduce solid waste through prevention, reuse, and recycling. See Environmental Protection Agency, *Waste Wise* (visited Aug. 8, 1998) <<http://www.epa.gov/epaoswer/non-hw/reduce/wstewise/index.htm>>.

193. The Design for the Environment initiative "helps businesses incorporate environmental considerations into the design and redesign of products, processes, and technical and management systems." See Environmental Protection Agency, *Design for the Environment* (visited Aug. 8, 1998) <<http://www.epa.gov/dfe>>.

194. EPA's "Partners for the Environment" web page lists 21 national voluntary partnership programs. See Environmental Protection Agency, *Partners for the Environment* (visited Aug. 8, 1998) <<http://www.epa.gov/partners/brochure.htm>>. This web page also includes links to EPA's 10 regional offices, each of which have organized "voluntary programs aimed at addressing specific regional environmental priorities." *Id.*

195. In EPA's 1991 Pollution Prevention Strategy, the agency announced that it anticipated including conditions in administrative and civil settlements of enforcement actions that require firms to adopt pollution prevention practices either as a means of correcting violations of environmental protection laws or in exchange for reduced fines and penalties for violations of those laws. See Pollution Prevention Strategy, 56 Fed. Reg. 7849, 7859 (1991).

196. See Environmental Protection Agency, *EPA Supplemental Environmental Projects Policy* (visited Aug. 8, 1998) <<http://es.epa.gov/oeca/sep/sepfinal.html>> [hereinafter *SEP Policy*]. An SEP is an "environmentally beneficial project[] which a defendant/respondent agrees to undertake in settlement of an enforcement action, but which the defendant/respondent is not otherwise legally required to perform." *Id.* § B. EPA's policy "applies to all civil judicial and administrative enforcement actions taken under the authority of the environmental statute and regulations that the EPA administers." *Id.* § A.4.

assessments and audits, and similar enterprises.¹⁹⁷ Instead of paying money into the Federal Treasury, the polluter may invest money in a project that will improve the performance of its business and reduce the likelihood that the polluter will violate environmental laws in the future.¹⁹⁸ EPA benefits because the project improves the quality of the environment and/or public health, and EPA would not have been able to require the polluter to undertake the project if the polluter did not agree to implement the project in order to settle the enforcement action.¹⁹⁹ EPA's SEP policy explicitly encourages the agency to use SEPs as tools for reducing environmental injustice.²⁰⁰ Despite the efforts of Congress and EPA, many businesses have not yet adopted pollution prevention practices.²⁰¹ Some mandatory measures, such as pollution prevention planning requirements, may be necessary to spur additional pollution prevention.²⁰²

197. See *id.* § D. All projects must have an adequate "nexus" to the violation. See *id.* § C2.

Nexus is the relationship between the violation and the proposed project. This relationship exists only if: a. the project is designed to reduce the likelihood that similar violations will occur in the future; or b. the project reduces the adverse impact to public health or the environment to which the violation at issue contributes; or c. the project reduces the overall risk to public health or the environment potentially affected by the violation at issue. Nexus is easier to establish if the primary impact of the project is at the site where the alleged violation occurred or at a different site in the same ecosystem or within the immediate geographic area. Such SEPs may have sufficient nexus even if the SEP addresses a different pollutant in a different medium.

Id.

198. See Elaine G. Levine, *Supplemental Environmental Projects: A Win/Win/Win for the Company, the Agency and the Environment*, Presented at the American Bar Association's Section on Natural Resources, Energy and Environmental Law Briefing on Environmental Issues in U.S. EPA Region IV 2-3 (June 7-8, 1994).

199. See *id.*

200. "Environmental justice" is one of six factors that the agency considers when deciding how much a penalty should be reduced in exchange for an SEP. See *SEP Policy*, *supra* note 196, § E. In addition,

[e]mphasizing SEPs in communities where environmental justice concerns are present helps ensure that persons who spend significant portions of their time in areas, or depend on food and water sources located near, where the violations occur would be protected. . . . EPA encourages SEPs in communities where environmental justice may be an issue.

Id. § A.2.

201. See Johnson II, *supra* note 183, at 155 n.9; Strasser, *supra* note 184, at 13. While toxic emissions, as measured by the Toxic Release Inventory (TRI), are declining, the quantity of toxic chemicals in waste is increasing. See Environmental Protection Agency, *1995 Toxics Release Inventory Public Data Release* ch. 4 (visited Aug. 8, 1998) <<http://www.epa.gov/opptintr/tri/pdr95/drover01.htm>> [hereinafter *1995 TRI Data Release*]. When EPA released TRI emissions data in 1997, the agency noted that facilities submitting data did "not anticipate discernible progress in moving" toward pollution prevention in the next two years. *Id.*

202. See Johnson II, *supra* note 183, at 189-94 (describing state pollution prevention planning requirements).

Traditionally, environmental laws and programs focused on controlling and managing pollution in the air, water, and land separately.²⁰³ This single-media approach encourages businesses and regulators to focus on "end of pipe" pollution controls²⁰⁴ and inadvertently causes pollution to be transferred from one medium to another.²⁰⁵ Multimedia initiatives provide similar economic and environmental benefits as pollution prevention initiatives. Recently, governments have begun to experiment with multimedia initiatives to address simultaneously air, water, and land discharges of a particular pollutant or polluter. When the agency simultaneously examines the air, water, and land discharges of a pollutant or polluter, the agency can create a more efficient, less expensive²⁰⁶ regulatory regime for businesses by eliminating duplicative, conflicting, and inefficient requirements that often arise in single-media permitting and regulation.²⁰⁷ More importantly, when the agency simultaneously examines all of the impacts of a polluter or pollutant, the agency can identify cumulative or synergistic impacts more readily, and the agency can take steps to ensure that pollution is prevented or reduced, rather than redistributed to low-income communities.

EPA and several states have implemented several noteworthy multimedia initiatives. First, EPA recently issued multimedia regulations that limit air and water emissions from pulp and paper companies.²⁰⁸ The regulations are the agency's first multimedia regulations and encourage companies to substitute chlorine dioxide for chlorine to reduce dioxin and furan emissions from

203. See GENERAL ACCOUNTING OFFICE, ENVIRONMENTAL MANAGEMENT: AN INTEGRATED APPROACH COULD REDUCE POLLUTION AND INCREASE REGULATORY EFFICIENCY, LETTER REPORT, LETTER: 2 (GAO/RCED-96-41) (Jan. 31, 1996) [hereinafter GAO LETTER REPORT]. Because most environmental laws focus on single media, EPA and most state environmental agencies have been organized around separate media-specific offices (for example, water pollution office, air pollution office). See *id.* Program offices may have little contact with each other. See *id.*

204. See *id.*

205. See *id.* For instance, when a sewage treatment plant removes heavy metals and other contaminants from its wastewater discharges, the pollutants are concentrated in sludge, which is often disposed of on land instead of in the water. Similarly, when a power plant installs filters to remove pollutants from its air emissions, the filtered pollutants are often disposed of on the land instead of in the air. See GAO REINVENTION REPORT, *supra* note 2, ch. 1:1. The single-media environmental statutes are not coordinated or integrated, and often contain differing philosophies or approaches. *Id.*

206. See GAO LETTER REPORT, *supra* note 203, at :3.7; GAO REINVENTION REPORT, *supra* note 2, ch. 1.1.

207. See GAO LETTER REPORT, *supra* note 203, at :3.7.

208. See National Emissions Standards for Hazardous Air Pollutants for Source Category: Pulp and Paper Production; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards: Pulp, Paper, and Paperboard Category, 63 Fed. Reg. 18,504 (1998) (to be codified at 40 C.F.R. pts. 63, 261, 430).

paper manufacturing.²⁰⁹ EPA also has reorganized many of its offices to facilitate multimedia initiatives.²¹⁰

Among the states, Massachusetts has adopted a program to conduct multimedia inspections of polluters and to bring multimedia enforcement actions whenever possible.²¹¹ New Jersey is experimenting with multimedia permits that replace a multitude of single-media permits.²¹² New York assigns employees of the state environmental agency to coordinate multimedia planning at individual industrial plants.²¹³ EPA provides funding for many of these experiments and encourages states to continue those initiatives.²¹⁴

Although EPA and states are experimenting with multimedia approaches, there are many barriers to a broader adoption of those approaches. Environmental laws and the organizational structure of environmental agencies make it difficult to establish multimedia permitting, regulatory, or enforcement programs.²¹⁵ In addition, multimedia programs are complex, costly, and time-consuming for governments.²¹⁶ Although multimedia initiatives provide clear benefits for low-income communities and for the public at large, legislative changes and increased funding may be necessary to spur their continued growth.²¹⁷

209. *See id.*

210. *See* GAO REINVENTION REPORT, *supra* note 2, ch. 0:4.1.

211. *See* GAO LETTER REPORT, *supra* note 203, at :1, :3. The state environmental agency reorganized its compliance and enforcement office to facilitate the multimedia approach and implemented the program statewide in 1993. *See id.* at :3.1. Facility-wide inspections are unworkable at the state's largest, most complex facilities, where the agency continues to conduct single-media inspections. *See id.* at :3:2.

212. *See id.* at :1. The agency recently issued a single five-year permit to replace 70 separate air, water, and waste permits or approvals for an industrial facility. *See id.* at :3:7. The state instituted the multimedia permit program, which is a pilot program, in 1991. *See id.* at :2. It took three years for the agency to issue the first permit, and the agency only issued three permits in the first four years of the program. *See id.* at :3:5.

213. *See id.* at :1, :2, :3:3.

214. *See id.* at :1. However, most of EPA's funding for state environmental programs traditionally has been medium-specific, which discourages multimedia initiatives. *See id.* at :2. EPA has provided some initial funding for multimedia initiatives through single-media programs in the past and has recently launched a "performance partnership" grant program that should provide easier access to funds for multimedia programs. *See id.* at :4.1, :4.3; *see also* Environmental Protection Agency, *Performance Partnership Grants* (visited Aug. 8, 1998) <<http://aspe.os.dhhs.gov/cfda/p66605.htm>>.

215. Because the environmental laws are not integrated or coordinated, they may impose conflicting requirements that cannot be satisfied in a unified rulemaking or permitting process. *See supra* note 205. Accordingly, Congressional legislators have introduced bills that would explicitly authorize EPA to issue "integrated permits" or to issue multimedia regulations. *See* S. 1348, 105th Cong. (1997); H.R. 3180, 105th Cong. (1997).

216. *See supra* note 212.

217. Policymakers often have considered the merits of harmonizing all environmental

IV. Addressing Environmental Justice in Market-Based Reforms

Pollution prevention and multimedia reforms advance environmental justice because they focus on reducing pollution, but many market-based reforms merely attempt to redistribute pollution in a more "cost-effective" manner. However, as Part I of this Article notes, although the market-based reforms generally provide cost savings to polluters over command and control approaches, many of the reforms do not allocate resources "efficiently" because low-income communities often (a) lack information about the decisions that are being made that will adversely affect the health and environment of their community; (b) lack the financial resources to participate in that decisionmaking process; and (c) lack notice of, and the opportunity to participate equally in, that decisionmaking process. In short, market failures prevent the efficient allocation of environmental and public health amenities ("resources").

Because Congress and EPA will continue to implement market-based environmental reforms, this Part examines some of the ways that laws could be reformed to empower low-income communities to participate more fully in the markets for environmental or public health benefits. When those reforms correct the existing market failures, perhaps the market will allocate resources more efficiently.

A. Information and the Market

Theoretically, markets operate "efficiently" if consumers have perfect information.²¹⁸ In practice, consumers almost never have perfect information.²¹⁹ As a result, in the environmental arena, a community may be unaware that a particular action could adversely affect the health or the environment of the community, and the community may, therefore, fail to bargain with the actors to prevent the action. If the community had more information, it might bargain with the actor to prevent the harm. In such a situation, the market allocates resources inefficiently because consumers have imperfect information.

One obvious way to address this market failure and to foster environmental justice is to improve consumers' access to information. Market-based

requirements in a single, unified environmental law. See, e.g., *Recommendations on Unified Environmental Law Expected Before End of 1996*, EPA Official Says, 26 Env't Rep. (BNA) 1125, 1125-26 (Oct. 27, 1995); *Unified Statute Would Help States Move Forward with Multimedia Permits, Other Plans*, NEPI Says, 27 Env't Rep. (BNA) 1469, 1469 (Nov. 15, 1996).

218. See Clifford Rechtschaffen, *The Warning Game: Evaluating Warnings Under California's Proposition 65*, 23 ECOLOGY L.Q. 303, 313 (1996) (discussing information disclosure laws).

219. See *id.* at 315-18 (discussing limits of information disclosure laws).

reforms could include provisions that require participants or the government to provide detailed information to communities about the potential environmental and public health impacts of pollution trades, waivers, or modifications of regulatory requirements or similar market-based initiatives. Existing "information disclosure" laws should also be expanded and improved. Those information disclosure requirements would reduce, but not eliminate, the likelihood that the market would allocate resources inefficiently.²²⁰ Information disclosure provisions would also promote individual autonomy and advance democratic decisionmaking.²²¹

Over the past decade, Congress, EPA, and the states have increasingly relied on information disclosure laws to produce environmental benefits in economically efficient ways. The Emergency Planning and Community Right to Know Act of 1986 (EPCRA)²²² is the most notable of those efforts²²³ and is a model for laws in other nations.²²⁴ EPCRA requires thousands of manufacturing facilities to provide EPA and states with information about the quantity of regulated chemicals that they used or released into the air, water, or land in a previous year.²²⁵ That information is made available to the public as a "Toxic Release Inventory" (TRI). EPA calls the TRI one of its most effective and powerful tools for improving environmental performance.²²⁶ Facilities that report their pollution releases for the TRI reduced their releases by 44% in the first 8 years of reporting.²²⁷ Theoretically, citizens armed with TRI data can negotiate with polluters to encourage them to reduce their releases, lobby legislators or agencies to limit pollution, boycott polluters, or even use the information as a basis for citizen suits when the information discloses violations of other environmental laws.²²⁸ The release of the infor-

220. Obviously, the community may still lack the financial resources or power to bargain to prevent harm. *See id.* at 317 & n.68. However, even communities that lack sufficient resources to prevent harm can participate in the market to increase the cost of pollution to polluters by holding demonstrations and by creating bad publicity for polluters.

221. *See id.* at 314-15.

222. 42 U.S.C. §§ 11001-11050 (1994).

223. *See generally* Gary D. Bass & Alair MacLean, *Enhancing the Public's Right-to-Know About Environmental Issues*, 4 VILL. ENVTL. L.J. 287 (1993).

224. "Pollutant Release and Transfer Registers" have been implemented in Canada, France, Norway, the Netherlands, and the United Kingdom and are being established in at least nine other countries. *See 1995 TRI Data Release, supra* note 201, ch. 3.

225. *See* 42 U.S.C. § 11023 (1994).

226. *See* Addition of Reporting Elements; Toxic Chemical Release Reporting; Community Right-to-Know, 61 Fed. Reg. 51,322, 51,322 (1996) (to be codified at 40 C.F.R. pt. 372) (proposed Oct. 1, 1996).

227. *See id.*

228. *See ELI Report, supra* note 1, § 9.1; *1995 TRI Data Release, supra* note 201, ch. 2; Bass & MacLean, *supra* note 223, at 297-98. As a practical matter, though, low-income

mation also fosters environmental justice because it enables governments and citizens to identify and to act to prevent hot spots of pollution.

Other federal initiatives also have included information disclosure requirements. Recent revisions to the Safe Drinking Water Act require drinking water suppliers to provide consumers with reports about the source of their drinking water, about the health and environmental effects of contaminants in their drinking water, and about the compliance history of the drinking water supplier.²²⁹ EPA recently launched a "consumer labeling initiative" to improve the quality of health and environmental information on insecticide, pesticide, and household cleaner labels,²³⁰ and the Federal Trade Commission has issued "green marketing guidelines" to prevent businesses from making false or misleading advertising claims about the environmental benefits of products.²³¹ All of these initiatives provide consumers with more complete information so that they can make informed choices about purchasing products or using resources in ways that protect their health and environment.

Information disclosure requirements are central to many recent state laws as well. For instance, California's Proposition 65 requires businesses to provide notices to the public about exposures to toxic chemicals²³² in consumer

communities often lack the political or economic power to use the TRI information in these ways.

229. See 42 U.S.C. § 300g-3(c) (Supp. 1997). The amendments require suppliers to notify consumers within 24 hours of any violations that present a threat to public health. See *id.* § 300g-3(c)(2)(C). The amendments also require all suppliers who serve more than 10,000 people to send consumers an annual "consumer confidence report" that describes the source and quality of the drinking water. See *id.* § 300g-3(c)(4). Smaller suppliers must prepare the reports as well, but they may only be required to publish the report in a newspaper or to make it available upon request to consumers. See *id.* The law requires EPA to establish a national database to track the occurrence of contaminants in drinking water, and EPA plans to make the database available electronically by 1999. See *id.* § 300j-4(g). EPA issued proposed regulations in February 1998 to implement the information disclosure requirements of the amendments. National Primary Drinking Water Regulations: Consumer Confidence Reports, 63 Fed. Reg. 7605-33 (1998) (to be codified at 40 C.F.R. pts. 141-42) (proposed Feb. 13, 1998). The regulations would apply to 56,000 water systems that serve more than 240 million people. See *Design Phase of National Database Under Development at EPA*, 28 Env't Rep. (BNA) 2166, 2166 (Feb. 20, 1998). The regulations were finalized in August 1998. See National Primary Drinking Water Regulations: Consumer Confidence Reports, 63 Fed. Reg. 44,511, 44,511-36 (1998) (to be codified at 40 C.F.R. pts. 141-42).

230. See Notice of Project Initiation, 61 Fed. Reg. 12,011 (1996); see also Environmental Protection Agency, *For Your Information: Consumer Labeling Initiative* (visited Aug. 8, 1998) <http://www.epa.gov/oppead1/cb/csb_page/qsas/clifyi.htm>.

231. See 16 C.F.R. pt. 260 (1998); see also *ELI Report*, *supra* note 1, § 9.7.1.

232. The law applies to carcinogens or reproductive toxicants that are included on a list that the state prepares. See CAL. HEALTH & SAFETY CODE § 25249.6 (West 1992 & Supp. 1997).

products, at work, and in the environment.²³³ The law aims to provide information to the public that will enable citizens to reduce their exposure to toxic chemicals²³⁴ and will encourage businesses to reduce their use or release of toxics.²³⁵ Proposition 65 has successfully encouraged many companies to reformulate consumer products to reduce the use of toxics in their products²³⁶ and has played some role in encouraging businesses to reduce releases of toxics at work and in the environment.²³⁷

There are some limits to the effectiveness of information disclosure laws, though. The information that the laws provide to consumers may be incomplete,²³⁸ inaccurate,²³⁹ or confusing²⁴⁰ at times. In addition, the public may not

233. See *id.* §§ 25249.5-.13. The law identifies optimal warnings that businesses can use, but are not required to use, to satisfy the notice requirements of the law. See CAL. CODE REGS. tit. 26 § 22-12601(a) (1996).

234. The law can be enforced by public prosecutors or by "any person in the public interest." See CAL. HEALTH & SAFETY CODE § 25249.7(d).

235. See *Rechtschaffen*, *supra* note 218, at 307.

236. See *id.* at 341. Numerous manufacturers of glazed ceramic-ware have agreed to reduce lead levels in their flatware by 50%, and approximately 300 wineries have agreed to phase out the use of lead foil caps on their wine bottles. See *id.* at 341-42. Several cosmetic manufacturers have agreed to remove toluene from a variety of different types of nail polish. See *id.* at 342. Although the product modifications seem to be motivated by concerns about liability rather than by consumer pressure, they are caused to some extent by manufacturers' concerns that "green consumers" will not buy products that contain warnings that suggest that the products contain toxic chemicals. See *id.* at 343-46.

237. See *id.* at 307, 348-50.

238. For instance, EPCRA does not require federal manufacturing facilities to report information about pollution emissions. See *Bass & MacLean*, *supra* note 223, at 301. Moreover, EPCRA exempts from its requirements large chemical users such as utilities and mines. See *id.* Although the White House extended the reporting requirement to federal facilities, see Exec. Order No. 12,856, 58 Fed. Reg. 41,981 (1993), and EPA issued rules to extend the reporting requirements to seven other industries, see *Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know*, 62 Fed. Reg. 23,833, 23,834 (1997) (to be codified at 40 C.F.R. pt. 372), many polluters do not have to file reports under EPCRA. In addition, although polluters must file reports regarding emissions of approximately 600 chemicals, see *Addition of Certain Chemicals; Toxic Chemical Release Reporting; Community Right-to-Know*, 59 Fed. Reg. 61,432, 61,432 (1994) (to be codified at 40 C.F.R. pt. 372), many dangerous chemicals are not covered by EPCRA. Furthermore, although businesses must report total annual emissions of regulated pollutants, businesses do not have to report the pattern of releases under EPCRA. See *Bass & MacLean*, *supra* note 223, at 301-02. "For example, if a company released 10,000 pounds of benzene to the air, there is no way to know if small amounts were released throughout the year, or whether 8000 pounds of benzene were released in one week." *Id.* at 302.

Similar problems plague California's Proposition 65. The consumer product, workplace, and environmental warnings that businesses have provided under the law have been very vague and general and have usually failed to inform citizens about the nature of the risk that the businesses' practices pose to health or to the environment. See *Rechtschaffen*, *supra* note 218, at 307, 326-27, 333-37. For instance, the generic warning that is placed on consumer products

be aware that the information exists,²⁴¹ or the public may be unable to access or to understand the information.²⁴² In those situations, it is less likely that the information disclosure laws will achieve their goal of empowering citizens to use the market to protect health and the environment.²⁴³

Accordingly, legislators and regulators should take several steps to incorporate information disclosure requirements into market-based reforms and to expand and to improve the information disclosure requirements in existing laws (like EPCRA) to provide more complete and more accurate information.²⁴⁴ Data that agencies collect under any of the environmental

merely says that the product contains a *chemical* (without specifying which) known to the state to cause cancer, birth defects, or other reproductive harm. See *id.* at 325. Accordingly, the warnings fail to promote informed choice and enhanced decisionmaking by citizens. See *id.* at 307, 340.

239. For instance, under EPCRA, manufacturers report their pollution emissions based on their own estimates, and manufacturers may change their methods of estimating emissions from year to year. See Bass & MacLean, *supra* note 223, at 301. As a result, EPA estimated that a significant portion of the reduction in emissions over the first few years of the Toxic Release Inventory was due, in part, to changes in the way releases were estimated, rather than to environmental improvements. See SOURCE REDUCTION REPORT, *supra* note 191, ch. 3. In addition, information must be released in a timely fashion in order to remain useful. See Bass & MacLean, *supra* note 223, at 288.

240. The Toxic Release Inventory, for example, only includes information about the amount and location of pollution releases and does not include information about the health or environmental risks caused by regulated pollutants. See *ELI Report*, *supra* note 1, § 9.2; 1995 TRI Data Release, *supra* note 201, ch. 2. Industries have complained that the public misinterprets the data that is released under EPCRA because the data is not explained in more detail or in context. See Bass & MacLean, *supra* note 223, at 302; Panel Drafts Recommendations to Help EPA Improve Public Understanding of TRI Data, 28 Env't Rep. (BNA) 2031, 2031 (Feb. 6, 1998).

241. A few years after the Toxic Release Inventory was created, the General Accounting Office conducted a telephone survey of residents in three counties with high levels of toxic emissions and concluded that nearly 60% of the residents in those counties did not know that the Toxic Release Inventory data was publicly available. See GENERAL ACCOUNTING OFFICE, TOXIC CHEMICALS: EPA'S TOXIC RELEASE INVENTORY IS USEFUL BUT CAN BE IMPROVED 33 (GAO/RCED-91-121) (June 1991).

242. In order to enable citizens to use information efficiently, the information must be provided to citizens in a user-friendly format. See Bass & MacLean, *supra* note 223, at 288. If there is too much information available to citizens, it may be difficult to access useful information. See *id.* at 295. "Presenting information in a manner that facilitates understanding and analysis by the public is essential to democratic right-to-know principles." *Id.* at 289.

243. Nevertheless, only a small group of information-seeking consumers actually needs to use the information to achieve the health and environmental goals of the laws. See Rechtschaffen, *supra* note 218, at 318. A small group of citizens that discovers and uses the information can encourage businesses to change their practices to reduce pollution in ways that benefit large numbers of citizens who were oblivious to the information. See *id.*

244. EPA is currently considering using its authority under the Emergency Planning and Community Right to Know Act, 42 U.S.C. §§ 11001-11050 (1994), the Pollution Prevention

laws should be cross-linked and integrated so that the information will be more meaningful and accessible to the public.²⁴⁵ In order to increase access

Act, 42 U.S.C. §§ 13101-13109 (1994), the Toxic Substances Control Act, 15 U.S.C. §§ 2601-2692 (1994), or other environmental laws to require businesses that file a TRI report to include, in the report, information about the way that the business uses chemicals at their facility. See Advance Notice, 61 Fed. Reg. 51,322 (1997) (advanced notice of proposed rulemaking issued Oct. 1, 1996). In the advanced notice of proposed rulemaking for this "TRI Phase III expansion," EPA indicated that it might require businesses to report "mass balance" (chemical throughput) information. *Id.* at 51,324; see Semiannual Regulatory Agenda, 63 Fed. Reg. 22,601, 22,704 (1998) (same proposal included in EPA's semiannual regulatory agenda of April 27, 1998). Federal legislators have introduced bills that would require businesses to report some of this information as part of their TRI report. See H.R. 1636, 105th Cong. (1997); S. 769, 105th Cong. (1997).

EPA argues that TRI expansion will increase businesses' ability to use toxics efficiently, increase businesses' ability to reduce toxics use, and will provide more complete and useful information to citizens, which will "better position . . . the public . . . to participate on an equal footing in environmental decisionmaking." See 61 Fed. Reg. at 51,323. However, the agency stresses that the purpose of the expansion is not to promote toxics use reduction as a federal policy. See Office of Pollution Prevention and Toxics, Environmental Protection Agency, *Issue Paper # 3: TRI-Phase 3: Expansion of the EPA Community Right-to-Know Program* (visited Aug. 8, 1998) <<http://www.epa.gov/opptintr/tri/trip3v6.htm>>.

New Jersey and Massachusetts already require businesses to provide chemical use data under state toxics use reduction laws. See 61 Fed. Reg. at 51,324. Since the Massachusetts Toxics Use Reduction Act took effect in 1990, the use of toxic chemicals in the state has fallen by 17% and the volume of toxic chemicals in waste has fallen by 25%. See *Massachusetts Chemical Use Law Lauded; Industry Groups Oppose Proposed EPA Program*, 27 Env't Rep. (BNA) 1346, 1346-47 (Oct. 18, 1996).

Businesses have generally opposed EPA's efforts to expand the TRI to include "chemical use" information because businesses are concerned (a) that much of the information that EPA seeks to make public is confidential business information and publicizing the information would encourage industrial espionage and theft of confidential information, see 61 Fed. Reg. at 51,324; (b) that the reporting requirements would be extraordinarily expensive and time-consuming, see *Industry Opposes Adding Use Data to Expanded Toxic Release Inventory*, 25 Env't Rep. (BNA) 1158, 1158 (Oct. 7, 1994); and (c) that the reporting requirement is based on a false premise that any type of chemical use is harmful and should be eliminated. See 61 Fed. Reg. at 51,326.

245. See OFFICE OF REINVENTION, ENVIRONMENTAL PROTECTION AGENCY, *THE CHANGING NATURE OF ENVIRONMENTAL AND PUBLIC HEALTH PROTECTION: AN ANNUAL REPORT ON REINVENTION 22-23* (EPA100-R-98-003) (Mar. 1998) (visited Aug. 8, 1998) <<http://www.epa.gov/reinvent/annual97/report97.pdf>> [hereinafter EPA REINVENTION REPORT]. EPA has launched many initiatives that integrate the data collected by the agency. For instance, EPA has created an "Envirofacts" database that is accessible over the Internet and includes permitting, compliance, and enforcement data under CERCLA, RCRA, the Clean Air Act, the Clean Water Act, the TRI, and other environmental laws. See Environmental Protection Agency, *Envirofacts Warehouse: Overview* (visited Aug. 8, 1998) <http://www.epa.gov/enviro/html/ef_overview.html>.

EPA has also created a "Surf Your Watershed" web site that allows users to locate a watershed on a map, to obtain information about the demographics of the population in the watershed and the land characteristics of the watershed, and to link to EPA databases that

to information, data collected by agencies should be made available in electronic formats whenever possible, preferably over the Internet.²⁴⁶ Steps should

provide information about TRI releases, Superfund sites, Clean Water Act or Clean Air Act permittees, hazardous waste generators or treatment, storage or disposal facilities, and water use in the watershed. See Environmental Protection Agency, *Surf Your Watershed* (visited Aug. 8, 1998) <<http://www.epa.gov/surf/>>. The web site also ranks the health of the watershed, using an index of watershed indicators. *Id.*

The "Sector Facility Indexing Project" is another major EPA information integration initiative. The project integrates permitting, compliance, enforcement, demographic, and health and environmental quality data from several government databases to create individual profiles for facilities in the petroleum refining, iron and steel, primary nonferrous metals, pulp mills, and automobile assembly industrial sectors. See Environmental Protection Agency, *Sector Facility Indexing Project Home Page* (visited Aug. 8, 1998) <<http://es.epa.gov/oeca/sfi/>>. EPA initially planned to launch the database in January 1998, and to include "toxicity weighing factors" in the database to identify the degree of harm that particular chemicals may cause to human health or the environment, so that citizens could understand which chemicals are more hazardous than others. See *Proposed Database on Industrial Releases Would Exaggerate Risks, Officials Tell EPA*, 28 Env't Rep. (BNA) 440, 440 (July 4, 1997). In order to verify the accuracy of the data, EPA asked facilities in the five industrial sectors to review the data before the agency launched the web site. See Environmental Protection Agency, *Sector Facility Indexing Project: Comment and Data Review Process* (visited Aug. 8, 1998) <<http://es.epa.gov/oeca/sfi/review.htm>>. However, the American Automobile Manufacturers Association asked its members to boycott reviewing the information, 19 states urged EPA to scrap the project, see *Release of Facility-Specific Data Delayed; Internet Access Planned for 1998, EPA Says*, 28 Env't Rep. (BNA) 1260, 1260 (Oct. 24, 1997), and opponents filed a lawsuit to delay the release of the information. See *Lawsuit Seeks Delay of EPA Database That Would Put Modified TRI Data on Web*, 28 Env't Rep. (BNA) 2030, 2030-31 (Feb. 6, 1998) (discussing *Tozzi v. EPA*, No. 1:98CV00169 (D.D.C. filed Jan. 23, 1998)). Critics suggested that the toxicity weighing factors could mislead the public, see *Information on Local Facilities Delayed; Internet Data Ready Soon, Official Says*, 28 Env't Rep. (BNA) 1725, 1725 (Jan. 9, 1998), and the agency eventually decided to remove the weighing factors from the database. See *Facility-Specific Database Set for Release, Will Put Compliance Records in One Place*, 28 Env't Rep. (BNA) 2527, 2527 (Apr. 3, 1998). The web site was eventually launched in May 1998. See Notice of Availability, 63 Fed. Reg. 27,281, 27,281 (1998) (noting availability of data on Internet announced May 18, 1998).

EPA also unveiled a "Center for Environmental Information and Statistics" in August 1998 to provide citizens with integrated analyses of environmental data and report on environmental quality, status and trends. See EPA REINVENTION REPORT, *supra*, at 24; see also Environmental Protection Agency, *Center for Environmental Information and Statistics Home Page* (visited Aug. 21, 1998) <<http://www.epa.gov/ceis/>>.

Public interest organizations are also trying to integrate environmental information in order to make it more comprehensible and accessible. See, e.g., The Environmental Defense Fund, *The Chemical Scorecard* (visited Aug. 8, 1998) <<http://www.scorecard.org>>.

246. The Internet holds great promise as a tool to increase public access to information and public participation in government decisionmaking. See generally Stephen M. Johnson, *The Internet Changes Everything: Revolutionizing Public Participation and Access to Government Information Through the Internet*, 50 ADMIN. L. REV. 277, 277-337 (1998) [hereinafter Johnson III].

EPCRA was the first statute to require an agency to provide information to the public

be taken to educate the public about the availability of information and about the meaning of the information. Although agencies should lead this effort,²⁴⁷ law schools could play an important role as community educators by holding seminars or workshops, providing "Street Law" courses in local schools,²⁴⁸ or developing web pages or community handbooks that explain the information.²⁴⁹ Finally, the citizen suit and penalty provisions of information disclosure laws should be strengthened to encourage businesses to provide complete and timely information.

These changes would increase the possibility that accurate and complete environmental and health information will be available to citizens and that citizens will (a) know that the information is available; (b) access the information; (c) understand the information; and (d) act on the information in a manner that protects their health and the environment. In short, the improvements should compensate for some of the market failures that occur because communities lack information about the health and environmental impacts of polluters' actions.

B. Grants, Loans, and Economic Assistance for Market Participation

Low-income communities may also fail to participate in the market for health and environmental benefits because the communities do not have sufficient financial resources to bargain for those benefits or even to participate in the decisionmaking process. In a market-based system, low-income communities may never have sufficient resources to bargain successfully for environmental or health benefits.²⁵⁰ However, technical assistance grants and

through a computerized, online database. See Bass & MacLean, *supra* note 223, at 288. The Toxic Release Inventory information is now available over the Internet, and EPA is aggressively increasing the volume of environmental information, collected or prepared under any of the environmental laws, that it makes available over the Internet. EPA's web pages are visited over 27 million times each month. See EPA REINVENTION REPORT, *supra* note 245, at 25.

However, as agencies make more information accessible over the Internet, the agencies must take steps to ensure that low-income communities have equal access to that information. See Bass & MacLean, *supra* note 223, at 316; Johnson III, *supra*, at 305-10.

247. Agencies could make presentations at town meetings, sponsor information booths at state or county fairs, or provide funding to community or environmental groups to educate the public about the type and the meaning of information that is available.

248. Many law schools have established "Street Law" clinical programs, in which law students or professors teach courses on law and democracy to local high school students. See Street Law, Inc., *Street Law: Who We Are* (visited Aug. 8, 1998) <<http://www.streetlaw.org/who.html>>.

249. See, e.g., Stephen M. Johnson, *Toxics in Your Community* (visited Aug. 8, 1998) <<http://168.17.208.15/elaw/toxics.html>> (representing handbook on public information about toxic substances, hazardous waste, and hazardous substances in Georgia).

250. See Kaswan, *supra* note 95, at 236-37, 271-72.

loans could be made available to communities that would, at the very least, enable communities to participate in the decisionmaking process. Without such assistance, communities may be unable to retain experts to evaluate the environmental and health impacts of pollution trades, to evaluate waivers or modifications of environmental regulations for Project XL projects or brownfields redevelopment, or to evaluate other market-based actions.²⁵¹ Consequently, communities would be unable to determine the impacts of the proposed action and would be seriously disadvantaged in the environmental bargaining (decisionmaking) process.

While there are some grants available to communities to assist in reviewing Project XL pilot programs and brownfields redevelopment proposals,²⁵² public interest advocates argue that the funding is inadequate, that the process for obtaining the funds is difficult, and that there are unnecessary limits on the use of funds.²⁵³ In addition, there are no programs that provide funds to communities to evaluate the impacts of pollutant trades on the community.

Legislators and regulators could take several steps to facilitate the participation of low-income communities in the market-based decisionmaking process. First, technical assistance grants to review trades, waivers, and other market-based actions could be expanded and simplified and targeted at low-income communities or communities that have been disparately impacted by pollution. Technical assistance grants for traditional command and control programs should also be expanded and simplified to enable low-income communities to participate in those decisionmaking processes.²⁵⁴ After all,

251. See *id.* at 273 (noting that low-income communities already lack resources to hire experts to evaluate impacts of decisions made under traditional command and control laws).

252. For instance, EPA's Guidelines for Brownfields Assessment Demonstration Grant proposals state that

[b]rownfields pilot funds may be used for outreach activities that educate the public about assessment, identification, characterization, or remedial planning activities at a site or set of sites. However, the outreach should be directed toward obtaining more effective public involvement and/or environmental assessment and cleanup of hazardous substances, pollutants, or contaminants at affected sites. These funds may not be used for general education activities (e.g., grants to schools for development of curriculum).

Environmental Protection Agency, *The Brownfields Economic Redevelopment Initiative: Proposal Guidelines for Brownfields Assessment Demonstration Pilots 5* (EPA 500-F-97-156) (Oct. 1997) <<http://www.epa.gov/swerosps/bf/html-doc/appbook.htm>>; see Steinzor, *supra* note 95, at 145-46 (discussing EPA funding for community review of Project XL pilot proposals).

253. See Steinzor, *supra* note 95, at 145-46.

254. While technical assistance grants are available under the Superfund law and many state solid waste, water, and air pollution programs, critics argue that these grant programs are complicated, underfunded, and otherwise inadequate. See John S. Applegate, *Beyond the Usual Suspects: The Use of Citizens Advisory Boards in Environmental Decisionmaking*, 73 IND. L.J. 903, 922-23 (1998).

many of the environmental and health problems in low-income communities are caused by the cumulative effects of actions under the traditional command and control programs. Finally, legislators and regulators should provide more funding to encourage pollution prevention because pollution prevention reduces the amount of pollution in the environment and, consequently, reduces the amount of pollution that can be dumped in low-income or minority communities.²⁵⁵

255. See *supra* note 186 and accompanying text. EPA has already implemented several pollution prevention grant programs, and the agency should provide more funding for those programs, simplify the application process, and take further steps to promote the programs and pollution prevention in general.

EPA provides pollution prevention grants in several forms. First, the agency established a "Pollution Prevention Incentives for States" (PPIS) grant program in 1989 to provide money to states to develop and implement pollution prevention programs. See OFFICE OF POLLUTION PREVENTION AND TOXICS, ENVIRONMENTAL PROTECTION AGENCY, POLLUTION PREVENTION INCENTIVES FOR STATES ASSESSMENT STUDY 6 (EPA742-R96-006) (1996) [hereinafter PPIS ASSESSMENT STUDY]. EPA awarded \$49 million to grantees in the first nine years of the program. See OFFICE OF POLLUTION PREVENTION AND TOXICS, ENVIRONMENTAL PROTECTION AGENCY, POLLUTION PREVENTION INCENTIVES FOR STATES FY 1998 GRANT GUIDANCE 1 (1998) [hereinafter PPIS GRANT GUIDANCE]. Grantees used the funds to publicize pollution prevention opportunities and successes, to provide technical assistance to industries through pollution prevention assessments, site visits, information clearinghouses, case studies, and other guidance materials, and to hire and train regulatory employees to administer and promote pollution prevention programs. See PPIS ASSESSMENT STUDY, *supra*, at 12-13, 18, 21, 23. While many of the past grants targeted pollution prevention by industries, EPA is encouraging states to use funds for pollution prevention programs in the agriculture, energy, and health and transportation sectors and to promote environmental justice. *Id.* at 6. The goal of the program is to create seed money for self-sustaining state programs. See *id.* at 7-12.

EPA also provides pollution prevention grants that directly promote environmental justice through an "Environmental Justice Through Pollution Prevention" (EJP2) grant program. See Environmental Protection Agency, *Environmental Justice Through Pollution Prevention Grant Program* (visited Aug. 8, 1998) <<http://www.epa.gov/opptintr/ejp2>> [hereinafter *Environmental Justice Through Pollution Prevention Grant Program*]. Through the program, EPA provides "financial assistance to help low income and minority communities address environmental problems through pollution prevention instead of traditional pollution control techniques." *Id.* EPA anticipated up to \$4 million in EJP2 grants in 1998. See Notice of Availability, 63 Fed. Reg. 3563, 3563 (1998) (notice of availability of grant funds issued Jan. 23, 1998). Private businesses, federal agencies, and individuals are not eligible for the grants. *Id.* at 3564. The grants can be used for projects such as "information access" projects that provide easier access to environmental information or education about that information to a community, "small business assistance" projects that implement pollution prevention, and brownfields projects that assist communities in participating in cleanup and redevelopment decisions and encourage pollution prevention in the project. See *Environmental Justice Through Pollution Prevention Grant Program*, *supra*.

EPA also provides grants for pollution prevention through its Risk Reduction Through Pollution Prevention, Agriculture in Concert with the Environment, and National Industrial Competitiveness Through Efficiency: Energy, Environment and Economics grant programs. See PPIS ASSESSMENT STUDY, *supra*, at 8.

In 1997, EPA anticipated that it would provide almost \$1 million in grants through a "Pollution Prevention Information Network" grant competition to create new centers for the

C. Public Participation

While technical assistance grants and loans may increase the likelihood that a community can *afford* to participate in environmental decisionmaking in market-based programs, other obstacles have limited public participation by low-income and minority communities in environmental decisionmaking in the past.²⁵⁶ Traditionally, in many command and control programs, communities have not been provided with information or an opportunity to provide input in the process until the government has, for all intents and purposes, selected a course of action.²⁵⁷ Additionally, public meetings and hearings have been scheduled at times, locations, and in formats that limit opportunities for public participation.²⁵⁸

Procedures that limit public participation increase the likelihood that individual citizens will forego participation in government decisionmaking because citizens may decide that they will not be able to influence the ultimate decision or that they will not be sufficiently impacted by the government's proposed action to justify devoting their time and energy. As a result, although a community may be cumulatively severely impacted by the government's decision to waive regulatory requirements or to allow companies to trade pollution rights, limited participation procedures may prevent individual citizens from actively participating in the decisionmaking process. While limited public participation clearly harms communities, it also harms the government, which makes decisions based on incomplete information.²⁵⁹ When governments make decisions based on incomplete information, it is more likely that their decisions will not allocate resources efficiently.

Accordingly, broad and flexible public participation procedures should be included in all pollutant trading, regulatory waiver or variance programs,

collection, synthesis, and dissemination of pollution prevention information and to coordinate pollution prevention information management efforts. See Notice of Availability, 62 Fed. Reg. 5393, 5393 (1997) (notice of availability of 1997 grant funds issued in Feb. 5, 1997).

256. See Applegate, *supra* note 254, at 906-18; Stephen M. Johnson, *NEPA and SEPA's in the Quest for Environmental Justice*, 30 LOY. L.A. L. REV. 565, 603 (1997) [hereinafter Johnson IV].

257. See Applegate, *supra* note 254, at 906-08.

258. See Johnson IV, *supra* note 256, at 603.

259. See Johnson III, *supra* note 246, at 300. In a recent Federal Register announcement regarding Project XL, EPA stressed that

[s]takeholder involvement is critical to the success of each XL project. Stakeholders provide information about the preferences of the community. They may identify issues that have escaped the notice of project sponsors and regulators. . . . An effective process for stakeholder involvement is an acknowledgment that today's regulators and regulated community do not have a monopoly on the best ideas for tomorrow's system of environmental protection.

Notice of Modifications, 62 Fed. Reg. 19,872, 19,877 (1997) (notice of modifications to Project XL issued Apr. 23, 1997).

and other market-based environmental protection programs that enable low-income communities, and all citizens, to participate in the market for health and environmental amenities. In addition, broad and flexible public participation procedures should be incorporated into traditional command and control programs to ensure that baseline pollution levels in low-income communities are not disproportionately high before trading or other market-based programs are implemented.

The National Environmental Justice Advisory Council's Model Plan for Public Participation identifies several "core values" for public participation programs²⁶⁰ and establishes a model public participation strategy, which includes, among other recommendations, identifying key individuals who can represent various stakeholder interests, soliciting stakeholder involvement early in the policy-making process, developing relationships with community organizations and providing resources for their needs, regionalizing materials to ensure cultural sensitivity and relevance, establishing site-specific community advisory boards where there is sufficient and sustained interest, and scheduling meetings and/or hearings to make them accessible and user friendly for stakeholders.²⁶¹

Environmental justice advocates have frequently emphasized the central role of public participation in achieving environmental justice in traditional command and control programs.²⁶² In market-based programs, it is even more important to provide opportunities for public participation because market-based programs reduce the role of the government as a decisionmaker and, consequently, reduce the protections afforded to minority interests.²⁶³

The federal government and state governments are already making efforts to improve public participation procedures under traditional environmental laws. The Resource Conservation and Recovery Act (RCRA), the National Environmental Policy Act (NEPA), and many other laws already allow, but do not require, agencies to provide broader, more flexible public

260. See National Environmental Justice Advisory Council, *The Model Plan for Public Participation* 5 (visited Aug. 8, 1998) <<http://www.prcemi.com/nejac/pdf/modelbk.pdf>> [hereinafter *NEJAC Public Participation Plan*].

261. *Id.* at 6-9. For an interesting article regarding the use and evolution of citizen advisory boards, see generally Applegate, *supra* note 254.

262. See *NEJAC Public Participation Plan*, *supra* note 260, at i; Johnson IV, *supra* note 256, at 572; Kaswan, *supra* note 95, at 251; Michael B. Gerard, *Demons and Angels in Hazardous Waste Regulation: Are Justice, Efficiency and Democracy Reconcilable?*, 92 NW. U. L. REV. 706, 735-36 (1998) (book review).

263. Theoretically, in command and control programs, the government protects the interests of minority voices and makes environmental decisions in the public interest. See Applegate, *supra* note 254, at 903-04. Pollutant trading programs and many other market-based programs provide individuals with the decisionmaking authority and limit the government's power to intervene to protect minority interests that are not protected by the market.

participation procedures, and President Clinton's environmental justice executive order encourages federal agencies to take advantage of those authorities.²⁶⁴

EPA also is including broad public participation provisions in some of its recent market-based programs, such as Project XL.²⁶⁵ While public participation requirements could increase the administrative hurdles for market-based programs and, thereby, reduce the incentive to participate in those programs, broad and flexible participation procedures are vital to ensure that affected communities will have the opportunity to participate in the decision-making process and that decisionmakers will have complete information for their decisions.

264. See Exec. Order No. 12,898, 3 C.F.R. 859, §§ 1-103(a), 5-5 (1995) (requiring that agencies provide mechanisms necessary for minority or low-income groups to participate effectively in government decisions).

EPA's Environmental Appeals Board has noted that the agency has "significant discretion . . . to implement the mandates" of the executive order to ensure that there is adequate public participation in RCRA permitting, and the Board encouraged the agency to offer "early and ongoing" opportunities for public participation beyond those required by regulation when the agency "has a basis to believe that the [permitting decision] . . . may have a disproportionate impact on a minority or low-income segment of the affected community." See *In re Chemical Waste Mgt. of Ind., Inc.*, INO 078911046, 1995 EPA App. LEXIS 25, at *17 (June 25, 1995). EPA recently amended its hazardous waste permitting regulations to provide for increased public participation, and the agency plans to issue guidance on ways to advance "equitable public participation." See RCRA Expanded Public Participation, 60 Fed. Reg. 63,417, 63,420 (1995) (to be codified at 40 C.F.R. pts. 9, 124, 270).

Similarly, the Council on Environmental Quality (CEQ) recently drafted guidance regarding the executive order that encourages federal agencies to develop innovative methods to involve low-income and minority communities in review of documents prepared under the National Environmental Policy Act. See Johnson IV, *supra* note 256, at 575.

265. Recent Project XL guidance indicates that "the extent to which project proponents have sought and achieved the support of parties that have a stake in the environmental impacts of the project" is "an important factor" in EPA's approval of projects. See Notice of Modifications, 62 Fed. Reg. 19,872, 19,877 (notice issued Apr. 23, 1997). The agency's guidance establishes a procedure that project sponsors should follow to negotiate with the community and other stakeholders to develop a project before formally applying to the agency for approval of the project. *Id.* at 19,878-79. Most of the important documents in the development of a Project XL project are posted on the Internet to increase public access to the information. *Id.* at 19,880. While the Project XL negotiation process is initiated by the project developers, rather than the agency, and the developer can apply to the agency for approval of the project even though the negotiation participants have not reached consensus on the project, EPA has indicated that projects that receive significant dissent from public interest participants will be more likely to be disapproved. *Id.* Cynics may argue that the government is more willing to require broad public participation procedures for Project XL than for traditional command and control programs because the agency may lack the statutory authority to approve certain Project XL projects and that broad public participation may reduce the likelihood that opponents will challenge the projects in court.

D. Command and Control Safety Net

As noted above, market-based environmental reforms and traditional environmental laws could be modified to address some of the market failures that prevent "efficient" distribution of environmental and public health resources in a free market. However, while the modifications might enable low-income communities to play a more active role in market-based environmental decisionmaking, existing disparities in the distribution of wealth in society may ultimately prevent low-income communities from avoiding disproportionate exposure to pollution. Consequently, command and control "safety nets" may be necessary to protect low-income communities in a market-based environmental protection system.

While the inequitable distribution of pollution in low-income communities has been blamed on many factors, commentators agree that one of the major contributing factors is the failure of the environmental laws to require government regulators to consider the distributional impacts of their regulatory, permitting, or enforcement decisions.²⁶⁶ Accordingly, in order to ensure that market-based reforms do not exacerbate environmental injustice, those reforms could be modified to prohibit trades, waivers of environmental laws or regulations, or other actions that disparately impact low-income communities. At a minimum, regulators could be required to examine the impacts of those actions on low-income communities. More broadly, perhaps market-based *and* command and control environmental laws could be modified to require governments to consider the distributional impacts of their decision-making. The laws could even prohibit actions under those laws that have disparate impacts on low-income communities.

However, both approaches might be difficult to implement, politically and administratively. The narrow approach increases the government's role in reviewing and overseeing private actions in a market-based system and seems antithetical to the rationale for the reforms. To the extent that the government prohibits certain trades or regulatory waivers that disparately impact low-income communities or reviews the distributional impacts of trades, waivers, and other actions in a market-based system, businesses and the regulated community may be less likely to take advantage of those tools, which are often quite time-consuming.

In addition, in order to determine whether trades, waivers, and other actions in market-based programs disparately impact low-income communities, government regulators must collect and examine large amounts of data

266. See Kaswan, *supra* note 95, at 223, 260, 268-69, 273; Lazarus, *supra* note 40, at 816-18, 842-44. To the extent that environmental laws address distributional issues, the laws include exemptions and waivers to reduce economic burdens on specific businesses or industries, rather than to protect public health or the environment. See *id.* at 814.

regarding the cumulative and synergistic impacts of pollution on the community and the demographics of the community.²⁶⁷ Like previous efforts to "fine-tune" environmental regulation, this information collection effort will be time-consuming and expensive for regulators.²⁶⁸ Data gaps will be inevitable, and decisions that agencies make in light of those data gaps will be prone to legal challenge.²⁶⁹ Important legal terms, such as "low-income community" or "inequitable distribution" will have to be defined. These implementation problems have stalled previous efforts to "fine-tune" environmental regulation to focus more specifically on site-specific environmental impacts and case-by-case decisionmaking.²⁷⁰

The broader "safety net" approach shares all of the problems presented by the narrow approach because the broader approach encompasses the narrow approach. Under the broad approach, Congress would amend the existing environmental laws *and* market-based reforms to prohibit actions that disparately impact low-income communities or to require regulators to consider the distributional impacts of their actions under those laws. It is unlikely that Congress will adopt this approach because Congress has recently considered, and rejected, several bills that would have modified some of the current laws to require consideration of distributional impacts.²⁷¹ Although Congress is unlikely to enact new legislation that requires government regulators to consider the distributional impacts of decisions under market-based environmental reform programs or under command and control environmental laws, existing laws, coupled with the environmental justice executive order,²⁷² may

267. The narrow approach seems to be a variant of the "fine-tuning" of environmental regulation discussed by Professor Howard Latin in his seminal article, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reforms*. See Latin, *supra* note 4, at 1267-1332.

268. See *id.* at 1279.

269. See *id.* at 1281. Latin astutely observed that "theoretically 'efficient' regulatory strategies require more data, more sophisticated scientific and economic analyses, more agency expertise and resources, and more cooperation from regulated parties." *Id.* at 1304.

270. While the Clean Water Act authorizes EPA and states to impose limits on water pollution discharges that are more stringent than technology-based limits if it is necessary to meet water quality standards for the body of water where the discharge occurs, the agencies have been reluctant to impose those more stringent limits. *Id.* at 1305. Similarly, EPA and states have been reluctant to regulate toxic water pollutants under Section 307(a) of the Clean Water Act, or hazardous air pollutants under Section 112 of the Clean Air Act. *Id.* at 1307-09. Professor Latin argues that these failures are due to the problems previously identified regarding "fine-tuning" of environmental regulations. *Id.* at 1309.

271. See, e.g., S. 1161, 103d Cong. (1993); H.R. 5326, 102d Cong. (1992); S. 2806, 102d Cong. (1992).

272. See Exec. Order No. 12,898, *supra* note 264. The Executive Order does not impose new legal requirements on federal agencies, but it implements requirements of NEPA and Title VI of the Civil Rights Act of 1964. *Id.* Although citizens cannot obtain judicial review of the

already require or authorize regulators to examine those issues to some extent.²⁷³

For instance, EPA's Environmental Appeals Board recently concluded that the executive order requires EPA to examine the environmental and public health impacts of RCRA permitting decisions on low-income communities and that the omnibus clause of RCRA²⁷⁴ requires EPA or states to include conditions in permits to ensure that the permits protect health or the environment of low-income communities (or any communities) and to deny permits when it is not possible to include conditions in the permit that protect the communities.²⁷⁵ Other command and control environmental laws contain similar omnibus clauses.²⁷⁶

executive order or agency compliance with the executive order, *id.* § 6-609, EPA's Environmental Appeals Board has held that administrative review of an agency's compliance with the order is available. *See In re Chemical Waste Mgt. of Ind., Inc.*, INO 078911146, 1995 EPA App. LEXIS 25, at *14-*15 (June 25, 1995).

273. *See* Richard J. Lazarus, *Fairness in Environmental Law*, ENVTL. L. 705, 717 (1997). Professor Richard Lazarus identifies several Clean Air Act provisions that require, or authorize, governments to consider distributional factors. *See id.* at 718-19. He notes that sections of the Clean Air Act require agencies to consider distributional factors when setting national ambient air quality standards, *id.* (citing 42 U.S.C. § 7408), redesignating nonattainment areas, *id.* (citing 42 U.S.C. § 7470), waiving certain requirements for new sources of air pollution, *id.* at 719 (citing 42 U.S.C. § 7411), and siting solid waste incinerators, *id.* at 720 (citing 42 U.S.C. § 7429).

274. *See* 42 U.S.C. § 6925(c)(3) (1994) (noting RCRA permits must include "such terms and conditions as the Administrator (or the state) determines may be necessary to protect human health and the environment").

275. *See In re Chemical Waste Mgt. of Ind., Inc.*, INO 078911046, 1995 EPA App. LEXIS 25, at *17 (June 25, 1995). RCRA does not require the government to treat low-income communities differently than other communities. Instead, the Environmental Appeals Board held that the executive order requires EPA or states to examine the health and environmental impacts of a proposed permitting decision on a community more closely when a commenter submits a "superficially plausible claim" that the decision will have a disproportionate impact on minority or low-income residents and to include conditions in the permit, under the omnibus clause, to protect the health and environment of those communities. *Id.* at *20-*24. The Board noted:

It is certainly conceivable that, although analysis of a broad cross-section of the community may not suggest a threat to human health and the environment from the operation of a facility, such a broad analysis might mask the effects of the facility on a disparately affected minority or low-income segment of the community. (Moreover, such an analysis might have been based on assumptions that, though true for a broad cross-section of the community, are not true for the smaller minority or low-income segment of the community.)

Id. at *19-*20.

276. *See, e.g.*, 33 U.S.C. §§ 1312(a), 1342(a)(1)(B) (outlining Clean Water Act permitting provisions); *see also* Lazarus, *supra* note 273, at 721 (citing 42 U.S.C. § 7661c(a)) (describing Clean Air Act permitting provision). Professor Lazarus suggests that the omnibus clause could

Similarly, the National Environmental Policy Act (NEPA) and many state environmental policy acts require governments to consider distributional impacts and other socioeconomic impacts of proposed actions that impact the environment.²⁷⁷ The Nuclear Regulatory Commission's (NRC) Atomic Safety and Licensing Board recently denied a license for a uranium enrichment plant when the NRC failed to examine the distributional impacts of issuing the license, as required by NEPA and the environmental justice executive order.²⁷⁸

Finally, the environmental laws provide EPA and states with a great amount of discretion in the enforcement of the laws,²⁷⁹ and courts are reluctant to strike down an agency's decision to exercise its enforcement discretion in a particular manner as arbitrary and capricious.²⁸⁰ Accordingly, regulators could use their existing enforcement authorities more aggressively to reduce the disparate impacts of pollution on low-income communities.²⁸¹ Traditional command and control laws could provide a partial safety net for low-income communities in the absence of new legislative protections.

V. Conclusion

In the current era of antiregulatory sentiment, it is clear that market-based environmental reforms will continue to proliferate and flourish. However, in a free market, low-income communities will never have sufficient financial resources to buy clean air, clean water, and similar environmental and public health resources from wealthy communities or polluters. In addition, barriers to collective organization or public participation, imperfect information, or other market failures will often prevent low-income communities from even participating in the market for those resources. Consequently, market-based

even be read to authorize permitting agencies to require permittees to provide access to information necessary to oversee the facility's operation or to "enhance the resources" of citizen groups that are charged with overseeing the operation of the facility. *Id.*

277. See Johnson IV, *supra* note 256, at 566, 579. However, NEPA and SEPA only require governments to *consider* those impacts. The laws do not prohibit government actions that disproportionately impact low-income or minority communities. *Id.* at 588.

278. See *In re Louisiana Energy Servs., L.P.*, LBP-97-8 (May 1, 1997) (visited Aug. 8, 1998) <<http://www.nrc.gov/NRC/ASLBP/lcsj9.html>>.

279. The laws give government regulators considerable discretion in choosing the targets of enforcement actions, *see, e.g.*, 42 U.S.C. § 7413 (Clean Air Act); 42 U.S.C. § 6928 (RCRA); 33 U.S.C. § 1319 (Clean Water Act), and in choosing the amount or type of penalties in enforcement actions, *see, e.g.*, 33 U.S.C. § 1319(d) (Clean Water Act); 42 U.S.C. § 7413(b)-(e) (Clean Air Act).

280. See *Heckler v. Chaney*, 470 U.S. 821, 831-35 (1985) (holding that agency's decision not to bring enforcement action is not subject to judicial review).

281. See Lazarus, *supra* note 273, at 720.

environmental reforms could exacerbate the inequitable distribution of pollution in low-income communities.

In the future, market-based reforms should address these market failures and include measures to prevent environmental injustice. The preceding Part describes many ways that the reforms should be amended to enable low-income communities to bargain for environmental and health benefits on a more level playing field. Market-based programs should ensure that communities receive information about health and environmental benefits of proposed actions under the programs in an inexpensive, timely, and accessible manner. The programs should make grants, loans, and other economic assistance available to communities to enable the communities to evaluate the impacts of proposed actions and to participate in the decisionmaking processes under the programs. The programs should include broad and flexible public participation provisions to facilitate public access to the decision-making processes.

While these reforms will make it easier for low-income communities to understand the impacts of proposed actions and to participate in the bargaining for environmental and health resources in the market, low-income communities will still lack the necessary financial resources to purchase the environmental and health resources because of the existing disparities in wealth distribution. Accordingly, some command and control safety nets, such as limits on trades or waivers in particular communities, may be necessary to prevent market-based actions that would disparately impact those communities.

If governments adopt these modifications to market-based reforms, the programs could ultimately achieve both economic and equity goals. If not, market-based reforms will probably exacerbate the existing problems of environmental injustice.

REVIEW ESSAY
