HAZARDOUS WASTE FACILITIES AND ENVIRONMENTAL EQUITY:

A PROPOSED SITING MODEL

by

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ABSTRACT

Hazardous wastes are generated by many industries in the United States. Because of the dangerous nature of these substances, facilities are needed to treat, store and dispose of them. Before a hazardous waste facility can be constructed, however, a suitable site needs to be found. Locating appropriate sites for hazardous waste facilities is not an easy task because of risks associated with the facilities. For this reason, most communities do not want to host a facility. Still, facilities have been sited in the past and are still in operation.

There is convincing evidence to support the claim that hazardous waste facilities are found in disproportionate numbers in minority and low-income communities across the United States. To the extent that this is true, this thesis explores some reasons that may be responsible for the trend. Specifically, existing state siting schemes may be ill-suited to address issues of environmental equity. Thus, the disparity in where facilities are located may be addressed through improved siting mechanisms.

This thesis proposes a state siting scheme to site hazardous waste facilities in an equitable manner, with respect to race and income. The proposal advances several guidelines applicable to hazardous waste facility siting models. These include factoring considerations of race, income, geographic fairness, and history of past siting decisions into siting processes.

Thesis Supervisor: Paul F. Levy
Title: Visiting Lecturer
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I. INTRODUCTION

The benefits of living in a modern society are many. Products and services, provided and produced by industries in the United States, enhance living standards. Industries ranging from services to manufacturing have an impact on most every aspect of modern life. Industries, however, generate, consume, and release tons of toxic chemicals annually in the United States. In 1990 alone, about 19,600 industrial plants released over 3.5 billion pounds of toxic substances.\(^1\)

Many manufacturing processes generate hazardous wastes, in addition to a finished product or service. Specifically, hazardous wastes are wastes either that can cause or significantly contribute to death or serious irreversible or incapacitating illness on account of quantity, concentration, or physical, chemical, or infectious characteristics, or that represent a substantial or potential danger to human health or the environment when mismanaged.\(^2\) Because of the dangerous nature of hazardous wastes, facilities are needed to treat, store, or permanently dispose of them.

There are six major types of hazardous waste facilities: 1) waste transfer centers where wastes are examined, identified, and differentiated for further processing or transport to other facilities; 2) liquid organics recovery facilities where liquid organic wastes are examined for the existence of possible recyclable components; 3) solidification, stabilization, and other specialized treatment facilities that change liquids into solids, make wastes less threatening to ground water, and destroy the wastes' harmful ingredients; 4) water treatment facilities that convert otherwise contaminated water to drinkable water; 5) incineration facilities where non-reclaimable, combustible organic liquids and solids are

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\(^{1}\)S. 1161, 103d Cong., 1st Sess. § 2 (1) (1993).
broken down into their basic elements; and 6) impregnable landfills where only wastes that cannot be recoverable are permanently stored. In short, hazardous waste facilities render hazardous wastes non-hazardous through some neutralizing process or contain the wastes, either temporarily or for many years. Taken together, these facilities are referred to as hazardous waste facilities throughout this thesis.

To maintain living standards and to continue disposing, treating, and storing hazardous wastes safely and efficiently in the United States, more hazardous waste facilities are needed. Consequently, there will always be a demand for suitable sites where additional facilities can be located. Finding such sites, however, is both complex and controversial.

Siting hazardous waste facilities is complex because a potential site must meet many criteria. For instance, for certain types of facilities, a potential site must rest on geologically stable land and must not be near sources of water used by persons and for agriculture. Transportation routes to and from the site are also important considerations, as are population densities surrounding both the site and transportation routes. These are only a small sample of many requirements and considerations associated with finding an appropriate site for a hazardous waste facility.

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3a Beyond the need to treat, dispose, or store new wastes, wastes taken from or lying in old disposal sites also need suitable facilities. As David Morell and Christopher Magorian indicate, "[t]he United States also needs new sites and new facilities in which to place those wastes which still remain to be removed from the terrible legacies of past improper disposal ...." DAVID MORELL & CHRISTOPHER MAGORIAN, STING HAZARDOUS WASTE FACILITIES: LOCAL OPPOSITION AND THE MYTH OF PREEMPTION 5 (1982).

Siting hazardous waste facilities also is a controversial endeavor because of risks associated with the wastes contained in such facilities. For example, explosions or accidents while hazardous wastes are being transported can result in dangerous exposures to surrounding communities. Mishandling of hazardous wastes in facilities can have dire consequences on host communities and agricultural lands if wastes are released into the environment. Other related risks include the uncertain effects hazardous wastes have on human and biological health in general. In 1991, for example, the National Research Council reported that exposure to hazardous waste is related to "a variety of symptoms of ill health in exposed persons, including low birth weight, cardiac anomalies, headache, fatigue, and a constellation of neurobehavioral problems." Moreover, the same report indicated that "some studies have detected excesses of cancer in residents exposed to compounds, such as those that occur at hazardous-waste sites."

Beyond risks associated with physical contamination by hazardous wastes, there are other risks that make siting hazardous waste facilities contentious. For example, the facility can have adverse economic ramifications.
on neighboring communities. Noise and traffic generated by such facilities may have a negative impact on nearby communities thereby making the facility a locally unwanted land use. As such, hazardous waste facilities may have a detrimental effect on the value of surrounding property: because most people would not want knowingly to live near or adjacent to a hazardous waste facility, there may be a reduced demand for the property that translates to lower property values.

In short, health and economic risks associated with hazardous waste facilities make siting these facilities a complicated enterprise. Although a full discussion of risks associated with hazardous waste facilities is beyond the scope of this discussion, the thesis assumes that such risks will always be affiliated with the facilities. Indeed, many residents have opposed proposals to site facilities in their communities largely due to these risks. Opposition to the siting of hazardous waste facilities can be seen as a logical response to the imposition of localized risks on a small population when a greater number of persons not living near the site benefit from the facility yet face fewer risks.

Given the risks associated with hazardous waste facilities and the fact that most people would not want a facility sited near their homes or in their communities, siting these facilities involves balancing a number of factors. First, there is the societal need for the facilities, and for efficient and cost effective

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8These facilities, however, do have some benefits. For example, they frequently provide employment opportunities and enhance the tax base for the communities in which they are located. They provide much needed safe disposal space for otherwise dangerous materials and substances, which might instead be disposed of in highly dangerous and illegal ways.


[R]egionally necessary facilities [such as hazardous waste facilities] offer only modest benefits to very large numbers of people while imposing rather substantial costs (or at least potential risks) on relatively small numbers of abutters. While the full set of "gains" to all the "gainers" may far outweigh the actual or potential "losses" to the losers, the losers are more inclined to fight to stop such projects than the gainers are to see that they are built."
provision of services provided by them. At the same time, the effects the facilities can have on host communities, such as economic stability and public health, are also important considerations.10

In spite of public opposition to the siting of hazardous waste facilities, many have been sited and are in operation. Recent studies on the demographics of communities in which hazardous waste facilities are located, however, suggest that the facilities are found disproportionately in minority11 and poor communities.12 This phenomenon is responsible for the coining of various terms descriptive of the unequal distribution of environmental risks associated with hazardous waste facilities. These terms include "environmental justice", "environmental poverty", and "environmental racism."13 Furthermore, the apparent unequal distribution of environmental risks also has given rise to a concept known as "environmental equity", or the equal distribution of environmental risks across minority and income groups.14 This thesis is

10 NEW YORK CITY PLANNING COMMISSION, CRITERIA FOR THE LOCATION OF CITY FACILITIES 2 (1990). For the purposes of this thesis, a host community is a community in which a hazardous waste facility is located.

11 For the purposes of this thesis, minority and ethnic persons refers to Blacks, Hispanics, Asian/Pacific Islanders, American Indians and other non-white persons. The term Blacks, and not African Americans, is used throughout because of the broad range of persons of that race who originate from countries not in Africa.

12 See, infra, Part III.A for more discussion of these studies. For the purposes of this thesis, the poor are persons living in households below poverty levels as defined by the United States Bureau of the Census. Also, for the purposes of this thesis, minority and poor communities are communities in which live high percentages of poor and minorities, relative to national averages, or where minorities and poor persons comprise a majority of the community's population, unless otherwise indicated. Further, for the purposes of this thesis, a community is defined as residential 5-digit ZIP code areas, unless otherwise indicated.


14 See EPA EQUITY REPORT, supra note 13, at 2.
concerned in particular with the equal distribution of hazardous waste facilities across race and income groups.

The thesis investigates some of the reasons why hazardous waste facilities are located disproportionately in minority and poor communities. One possible cause is the manner in which the facilities are sited. I suggest that state siting processes are ill-suited to produce environmentally equitable results. Accordingly, I propose a state siting scheme that addresses environmental equity, with the goal of distributing hazardous waste facilities in a more equitable manner so that poor and minority communities do not host disproportionate numbers of these facilities.

The thesis begins with a general discussion of the philosophical and moral underpinnings for environmental equity. Part II concludes that in a constitutional democracy such as the United States, basic ideals of equality and democracy inherent in the Declaration of Independence and the Constitution support the proposition that no one minority group should carry an unequal burden of environmental risks associated with hazardous waste facilities. Part III presents evidence showing a disproportionate incidence of hazardous waste facilities in minority and poor communities. Part III also discusses public opposition to the siting of hazardous waste facilities and the claims of some commentators that the opposition may contribute to the higher numbers of facilities in minority and poor communities, and concludes with a critique of

\[15\] Although the thesis includes income groups in its discussion for the need for environmental equity, the U.S. Supreme Court has indicated that wealth classifications do not warrant strict scrutiny under equal protection analysis. E.g., James v. Valtierra, 402 U.S. 137 (1971) (in an equal protection challenge to a California constitutional bar of the state from developing low income housing, Supreme Court held wealth classifications alone do not trigger strict scrutiny). A lower degree of judicial scrutiny -- rational relationship -- is all that the Equal Protection Clause of the Fourteenth Amendment provides for poverty and wealth classifications. See GERALD GUNThER, CONSTITUTIONAL LAW 685-87 (11th ed. 1985). The thesis suggests only that siting policies should include considerations of income when deciding where to locate facilities, notwithstanding the Supreme Court's refusal to grant poverty and wealth the same status as race in equal protection jurisprudence.
studies documenting the unequal placement of hazardous waste facilities in poor and minority communities and provides suggestions for further research. Part IV discusses the Resource Conservation and Recovery Act and outlines various state siting strategies, including ways by which states engage the public in siting processes, and concludes with a critique of existing state siting models, arguing both that these schemes may contribute to the disproportionate placement of hazardous waste facilities in minority and poor communities and that the siting models do not promote environmental equity. Part V presents recommendations made by commentators to rectify environmental inequities and provides a critique of these suggestions. Part VI discusses a proposed model siting scheme that addresses environmental equity issues. The proposal utilizes some of the recommendations discussed in Part V, and closes with a critique of the proposed siting scheme. Finally, Part VII concludes that hazardous waste facilities can be sited in a more equitable manner and that environmental equity is a worthy and achievable goal.
II. PHILOSOPHICAL AND MORAL BASIS FOR ENVIRONMENTAL EQUITY

Part II discusses the philosophical and moral bases for environmental equity. It begins with a general overview of three basic conceptions of equality: equality of status or respect, equality of opportunity, and equality of result or outcome. It then reviews the historical foundations of equality and morality in a constitutional democracy and ends with a brief discussion of laws in the United States that promote equality in various areas of society. I argue that the idea of environmental equity is consistent with the spirit of these laws and that the concept can be the basis for future policies on siting hazardous waste facilities.

A. Equality

Equality is the idea that alike things should be treated similarly. Aristotle once said that "equality consists in the same treatment of similar persons." Human equality, therefore, is the similar treatment of alike individuals. Equality, however, may refer to equality of status or respect, equality of opportunity, or equality of final result or outcome.

Equality of status or respect "has more to do with symbolic gestures than material allocations." It presumes the total absence of discrimination or arbitrary and unreasonable differentiation: equal treatment alone assures equality. As a basic concept of equality, however, equality of status or respect is premised on the fiction that discrimination based on race and income does not exist, consciously or subconsciously.

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18 Id.
Equality of opportunity provides that all persons are subject to the same standards and criteria in maximizing full use of their talents in life pursuits. It is "what exists not only in the absence of discrimination but also in the absence of any kind of disadvantage for which the government or society is responsible." Equality of opportunity does not account for those who need more resources than others in order to be equal. Those who are disadvantaged initially might remain so throughout their lives, unable to compete with others more fortunate. For example, physically disabled persons might require more resources than individuals without such disabilities in order to compete equally.

Finally, equality of result or outcome requires taking shortcomings and prejudices into account to effect equality in result or outcome. This third equality acknowledges that some persons endure disadvantages for which they are not responsible. For instance, they may have been "born into an economically and culturally deprived home." Thus, in order to effect equality, "government (or 'society') must do what it can to make up for the disadvantages for which the individual is not responsible." Equality of result tips the balance at some point to compensate for inadequacies, thereby producing equal results.

Because no two individuals are alike, the concept of human equality necessarily requires that differences in persons be accommodated, minimized, or ignored altogether. Otherwise, differences in race, ethnicity, and sex, for instance, could justify unequal treatment. In the United States there is a tendency to disregard or compensate for immutable human characteristics, such as sex, race, and physical disability. This tendency is based on principles of democracy.

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20 Id.
21 DICTIONARY OF IDEAS, supra note 16, at 146.
22 VAN DYKE, supra note 19, at 36.
23 DICTIONARY OF IDEAS at 139.
and equality inherent in the Declaration of Independence, the U.S. Constitution, and concern for the public good.

B. Equality and Morality in a Constitutional Democracy

The Declaration of Independence indicates that the idea that "all men are created equal" is a self-evident truth. The Preamble to the United States Constitution outlines in general terms the purpose for the Constitution itself. The Constitution begins with a mandate to "establish Justice," to "promote the General Welfare," and to "secure the Blessings of Liberty" for present and future generations. Because the Constitution embodies the ideals of the American Revolution, which were expressed in the Declaration of Independence, the Preamble may be seen as descriptive of the moral norm that "all men are created equal."\(^{24}\)

The Declaration of Independence and the Constitution, however, were not written in a vacuum; the moral claim that "all men are created equal" has origins that predate events leading to the founding of the United States. Hence, the moral foundations of these documents come from several ideas of universal equality, and not simply from capitalism, majority-rule democracy, or freedom.\(^{25}\) In the Western tradition, these origins include Canon Law, Roman Law, English common law, and the social contract theory.\(^{26}\)

Briefly, Canon Law was based on the authority of God and a "duty to love God with all thy heart, and with all thy soul, and with all thy strength, and

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\(^{24}\)See JAMES H. RUTHERFORD, THE MORAL FOUNDATIONS OF THE UNITED STATES CONSTITUTIONAL DEMOCRACY: AN ANALYTICAL AND HISTORICAL INQUIRY INTO THE PRIMARY MORAL CONCEPT OF EQUALITY 2 (1992) ("Federalists 39 also makes it clear that the Constitution was meant to be compatible with 'the fundamental principles of the Revolution.'" (citations omitted)).

\(^{25}\)Id. at 1.

\(^{26}\)Id. at 8.
will all thy mind, and thy neighbor as thyself." 27 Equality among all persons stemmed from the belief that man and woman were created by a single God and in His image. 28 Thus, all were equally God's creatures. 29 In contrast, Roman Law was premised on an apparent natural moral order in the universe in which humans were equal. 30 This moral order was understood by all because humans had the ability to distinguish between right and wrong, or at least had the potential to learn the differences. 31

Common law of the English feudal society retained its moral authority from social custom and tradition. 32 It is best described as a "communitarian ethical system" where the governed common people themselves establish ethical concepts and responsibilities over time. 33 Social contract theory posits that an individual in a "natural" and ungoverned state is concerned primarily with his or her own well-being. The underlying assumption is that in an environment where all are free and equal, there exist "natural rights" which may be defended. 34

The unifying moral concept of equality in United States democracy "integrates and balances these four ethical systems." 35 The U.S. constitutional democracy "accommodates and moderates" government rule by restricting the powers of government and employing a system of checks and balances among the three branches of government. 36 Significantly, the Constitution is "not a

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27 Id. at 8-9 (quoting Lev. 19:18; Deut 6:5; Lk 10:27; Mk 12:29-31).
28 Id. at 8-9 (citing Gen. 1:27).
29 DICTIONARY OF IDEAS, supra note 16, at 138.
30 RUTHERFORD, supra note 24, at 9; DICTIONARY OF IDEAS, supra note 16, at 140.
31 RUTHERFORD, supra note 24, at 9.
32 Id. at 9.
33 Id. at 10.
34 Id.
35 Id.
36 Id. at 22; see generally U.S. CONST. art. I-IV.
blueprint for a hierarchical government based on intelligence, race, class, power, tradition, or paternalism." Instead, the Constitution protects all citizens alike. In view of these ideals, federal legislatures have enacted laws providing for "the common good" of all citizens in several arenas, including housing and employment, during the history of the United States. In general, these laws have served to promote equality of outcome or result in the respective areas they cover, on behalf of groups that have endured a history of discrimination.

C. Federal Legislation and Equality of Outcome

The United States legislature has acted on behalf of minorities to eradicate discrimination. These groups include Blacks and other racial minorities, women, and disabled persons. Three examples of laws created to advance their rights are the Fair Housing Act, Title VII of the Civil Rights Act of 1964 (employment discrimination), and the Americans With Disabilities Act (ADA). These laws generally were enacted to eliminate discrimination and to provide standards of enforcement. Moreover, as discussed below, they operate to produce equality of outcome or result.

Through the Fair Housing Act, Congress believed that it could "eliminate 'racially discriminatory housing practices [and] ultimately [produce] residential integration'. ... Thus, Congress saw the antidiscrimination policy as the means to

37RUTHERFORD, supra note 24, at 22.
38This view was shared by distinguished proponents of democracy: "All, too will bear in mind ... that though the will of the majority is in all cases to prevail, that will to be rightful must be reasonable; that the minority posse their equal rights, which equal law must protect, and to violate would be oppression." Thomas Jefferson, First inaugural Address, March 4, 1801, reprinted in SOURCES OF DEMOCRACY: VOICES OF FREEDOM, HOPE, AND JUSTICE 29 (Saul K. Padover ed., 1973) [hereinafter SOURCES OF DEMOCRACY]; "The foundation of the law, the glory of the law, is that the weakest is equal to the strongest in matter of right and privilege, and the goal to which we are constantly ... striving to go forward is the goal of actual equality, of actual justice, upon the basis of equality of rights." Woodrow Wilson, From Address at San Diego, California, Sept. 19, 1919, reprinted in SOURCES OF DEMOCRACY, supra, at 78.
effect the antisegregation-integration policy." 42 The Fair Housing Act prohibits discrimination because of race, color, or national origin in the sale or rental of housing. 43 A housing practice is unlawful not only if a violator acts with a motive to discriminate, but also if the violator's discriminatory actions have a disproportionate affect on a member of the protected class. 44 In this manner, the law promotes equality of result or outcome.

The Civil Rights Act of 1964, which included Title VII, was enacted at the height of the civil rights movement of the 1960s. Title VII was the first extensive campaign against employment discrimination on a nation-wide basis. 45 The law prohibits employment discrimination on the basis of race, color, religion, sex, and national origin. 46 It similarly establishes an equality of outcome in the workplace through disparate impact analysis. Pursuant to disparate impact theory, a violation occurs when employment policies, regardless of intent, weigh more heavily on one protected group than on another non-protected group and have no demonstrable business relation. 47

The Americans with Disabilities Act (ADA) similarly was enacted out of concern for equal treatment of disabled persons. The purpose of the act is to provide a national dictate for the eradication of discrimination against disabled persons. Like the Fair Housing Act and Title VII before it, the ADA defined discrimination to include "employing standards, criteria or methods of administration that have the effect of discrimination. ... A disparate impact standard is incorporated to ensure that the legislative mandate to end

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44 Starrett City Associates, 840 F.2d 1100.
discrimination does not ring hollow." It addresses several areas: employment, public services, public accommodations and services operated by private entities, and telecommunications.

These laws were enacted to eliminate discrimination in housing and the workplace. They operate by promoting equality even if there is no evidence of motive to discriminate: it is enough to show a disparate impact. The concept of environmental equity -- or the equal distribution of environmental risks across race, ethnicity and income -- promotes the same kind of results-oriented equal treatment in the distribution of environmental risks, especially those associated with hazardous waste facilities. To this end, environmental equity is consistent with the spirit of laws enacted to bring about equality in outcome in other areas. As the Environmental Protection Agency (EPA) has indicated, "environmental equity is an important goal in a democratic society. It involves ensuring that the benefits of environmental protection are available to all communities and an environmental policy-making process that allows the concerns of all communities to be heard, understood, and addressed." If, for example, employment and housing in the U.S. can be influenced by policies to eliminate unequal treatment, the same may be true for the distribution of hazardous waste facilities.

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48a Americans With Disabilities Act titles I through IV.

49 EPA EQUITY REPORT, supra note 13, at 2. Equity and equality, however, are different concepts. Whereas "equality has to do with sameness of results, ... equity, or fairness, concerns the relationship between one person's work or other effort and the reward for that effort, and another person's effort and reward." HERBERT J. GANS, MORE EQUALITY 73-74 (1973). In the context of environmental equity, however, equity carries the meaning of equality as noted by Gans.
Interest over the distribution of environmental risks associated with hazardous waste facilities has been fueled by studies documenting the disproportionate occurrence of these facilities in minority and poor communities across the United States. These studies are discussed in Part III.
III. RACE, INCOME, AND UNEQUAL DISTRIBUTION OF HAZARDOUS WASTE FACILITIES

This part presents evidence showing a disproportionate incidence of hazardous waste facilities in minority and poor communities. Two notable studies on the unequal distribution of hazardous waste facilities are discussed and a critique is set forth. This part also provides a discussion of public opposition to the siting of hazardous waste facilities because some commentators argue that the opposition has contributed to disparate siting practices. The conclusion of this part is that there is convincing evidence to support the claim that hazardous waste facilities are located disproportionately in minority and poor communities.

A. The Evidence

In 1983, the United States General Accounting Office conducted a study (GAO Report) of racial and economic characteristics of communities surrounding off-site landfills (those not part of an industrial facility) in EPA's Region IV. The objective of the study was to determine the correlation between the location of hazardous waste landfills and the racial and economic status of surrounding communities.

The GAO reviewed EPA files to determine the location of the off-site landfills. Four hazardous waste landfills were identified, along with their operators. The GAO gathered information about the communities around

\footnotesize{\textsuperscript{50}}GENERAL ACCOUNTING OFFICE, SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES I (1983) [hereinafter GAO REPORT]. Region IV is comprised of the following eight states: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

\footnotesize{\textsuperscript{51}}GAO REPORT, supra note 50, at 2.

\footnotesize{\textsuperscript{52}}These were: 1) Chemical Waste Management, Sumter County, Alabama; 2) Industrial Chemical Company, Chester County, South Carolina; 3) SCA Services, Sumter County, South Carolina; and 4) the Warren County PCB landfill, North Carolina.
these facilities using 1980 census data provided by the Bureau of the Census. The GAO studied racial and economic data for census areas in which the landfills are located and other census areas with borders within four miles of the facilities. The Bureau of the Census also provided similar data for the county and state in which the landfills are located.\textsuperscript{53}

The Report found that of the four off-site hazardous waste landfills in Region IV, three were located in communities where Blacks made up the majority of the population.\textsuperscript{54} The Report also found that in all four sites, Blacks in surrounding census areas had lower mean incomes than the mean income for all races combined and represented the majority of persons below poverty level in those areas as well.\textsuperscript{55} These findings are summarized in Table A.

Four years after the GAO reported its findings, the United Church of Christs' Commission for Racial Justice published a study with outcomes consistent with the GAO Report. The study, "Toxic Wastes and Race in the United States: A National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Waste Sites" (Commission Report) presented findings from two studies on demographic characteristics related with commercial hazardous waste facilities and uncontrolled toxic waste sites.\textsuperscript{56} For the purposes of this thesis, only the first study on commercial hazardous waste facilities will be discussed.

\begin{flushleft}
\textsuperscript{53}GAO REPORT, \textit{supra} note 50, at 2-3.
\textsuperscript{54}Id. at 1.
\textsuperscript{55}Id. at 3. The poverty level was $7,412 for a family of four in the 1980 census.
\textsuperscript{56}The Commission Report identifies a "commercial hazardous waste facility" as any facility, public or private, which accepts hazardous wastes from a third party for a fee. 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 xii (1987) [hereinafter COMMISSION REPORT].
\end{flushleft}
The study was conducted to determine whether variables of race and socio-economic status were major factors in the location of commercial hazardous waste facilities. Its objective was to determine whether there was a relationship between the racial characteristics of populations and the location of commercial hazardous waste facilities in the United States. One question examined by the Commission was whether the racial composition of the population was significantly different in communities with commercial hazardous waste facilities than those without them.\(^{57}\)

The Commission identified 415 operating commercial hazardous waste facilities in the contiguous United States, as of May 1986.\(^{58}\) Because the Commission also wanted to test the theory that there may be a significant relationship between the size of commercial hazardous waste landfills and the racial characteristics of populations living in the communities in which the facilities are located, capacities of landfills were measured in terms of acre-feet.

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\(^{57}\)Id. at 9.

\(^{58}\)The source of the information was the EPA's Hazardous Waste Data Management System, which was verified with commercial hazardous waste directories. Id. at 10, (citing ENVIRONMENTAL INFORMATION LTD., INDUSTRIAL AND HAZARDOUS WASTE MANAGEMENT FIRMS. (1986)).
The methodology of the study was a comparison of characteristics of small geographic areas which may be "relevant to the location of commercial facilities." The study contrasted five major variables in all areas of the United States: "minority percentage of the population", "mean household income", "mean value of owner-occupied homes", "number of uncontrolled toxic waste sites per 1000 persons", and "pounds of hazardous waste generated per person". Minority percentage of the population was used to gauge racial composition of communities. Mean household income and mean value of owner-occupied homes were used to determine whether socio-economic considerations are more important than race in the location of commercial hazardous waste facilities. Home values were used to determine the role of land values. The presence of uncontrolled waste sites was considered to learn whether historic or geographic factors are related to the location of commercial hazardous waste facilities in ways unreported by other variables in the analysis, such as by land use, zoning, and transportation access, or physical traits of the sites such as groundwater, soil permeability and topography. The hazardous waste generation variable was considered in order to see if there is a relationship between the location of facilities and closeness of possible customers.59

Residential ZIP code areas were separated into four (I through IV) mutually exclusive groups. The first was created to distinguish communities without commercial hazardous waste facilities from those with facilities. Communities with one facility were divided into two categories: those with a landfill and those with another type of hazardous waste facility. The fourth group was created on the basis of an estimated measure of "greater commercial

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59 Id. at 10.
hazardous waste activity", that is, communities with several facilities or with one of the United State's five largest landfills.\textsuperscript{60} Table B summarizes these groups.

Table B: Commission Report Residential Groups

<table>
<thead>
<tr>
<th>GROUP</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>5-digit ZIP code areas without operating commercial hazardous waste treatment, storage and disposal facilities</td>
</tr>
<tr>
<td>II</td>
<td>5-digit ZIP code areas with one operating commercial hazardous waste treatment, storage and disposal facility that is not a landfill</td>
</tr>
<tr>
<td>III</td>
<td>5-digit ZIP code areas with one operating commercial hazardous waste landfill that is not one of the five largest</td>
</tr>
<tr>
<td>IV</td>
<td>5-digit ZIP code areas with one operating commercial hazardous waste landfills or more than one treatment, storage and disposal facility</td>
</tr>
</tbody>
</table>


The Commission used five different statistical tests to reach findings "independent of any single analytic technique." These tests were: discriminant analysis, difference of means test, matched-pairs test, and non-parametric versions of the difference of means and matched-pairs tests. Using these statistical analysis, the Commission tested the following hypotheses:

1. The mean minority percentage of the population was a more significant discriminator than the other variables for differentiating communities with greater number of commercial hazardous waste facilities and the largest landfills.
2. The mean minority percentage of the population was significantly greater in communities with facilities than in those without.\textsuperscript{61}

\textsuperscript{60}Id. at 10-11.
\textsuperscript{61}Id. at 11.
The Commission tested these hypothesis "by comparing all communities and by comparing communities with facilities to those without in the surrounding county."\textsuperscript{62}

The Commission found that areas with the highest number of commercial hazardous waste facilities had the highest mean percentage of residents who are members of a minority group. On the other hand, those areas with no waste facilities had a lower proportion of minority residents.\textsuperscript{63} Figure A illustrates the mean minority percentage of the populace in communities with the four groups tested.

Figure A: Minority Percentage of the Population in U.S. Communities with Operating Commercial Hazardous Waste Facilities

![Bar chart](chart.png)

Note: Minority populations include: Blacks, Hispanics, Asian/Pacific Islanders, American Indians and other "non-White" persons.


\textsuperscript{62} ld.
\textsuperscript{63} ld. at 13.
Figure A also shows that in communities with one operating commercial hazardous waste facility the mean minority percentage of the population was about 24% whereas in communities without such facilities the minority percentage was about half that, or 12%. In communities with two or more operating commercial hazardous waste facilities or one of the five largest landfills in the United States, the mean minority percentage of the population (38%) was more than three times greater than the percentage of minorities in communities without such facilities (12%).

Moreover, the analysis also showed that mean household income and the mean value of owner-occupied homes were not as significant as the mean minority percentage of the population in distinguishing residential ZIP codes with lesser numbers of hazardous waste facilities compared to those with greater numbers and the largest landfills (see Tables C and D). According to the Commission Report and as indicated in Table C, the mean value of owner-occupied homes in communities, though a significant discriminator (12.265), was less so than the minority percentage of the population (51.393), even "[a]fter controlling for regional differences and urbanization." 64

On the whole, the discriminant analysis tests showed that the minority percentage of the population in relation to the existence of commercial hazardous waste facilities was "statistically very significant." The percentage of minorities in a community was a stronger predictor of the degree of commercial hazardous waste "activity" than was household income, the value of homes, the number of uncontrolled toxic waste sites or the estimated amount of hazardous

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64 id.
wastes generated by industry. These results are summarized in Tables C and D.

Table C: Racial and Socio-Economic Variables Associated with the Location of Commercial Hazardous Waste Facilities in the United States
(National Discriminant Analysis Statistics)

<table>
<thead>
<tr>
<th>Variable</th>
<th>COMPARISON OF ALL RESIDENTIAL ZIP CODE AREAS (Degrees of Freedom = 3, 35,400)</th>
<th>COMPARISON OF RESIDENTIAL ZIP CODE AREAS WITH COMMERCIAL FACILITIES WITH THEIR SURROUNDING COUNTIES (Degrees of Freedom = 3, 6516)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F Statistic</td>
<td>Prob. &gt; F</td>
</tr>
<tr>
<td>Minority Percentage of the Population</td>
<td>51.393</td>
<td>0.0001</td>
</tr>
<tr>
<td>Mean Household Income</td>
<td>12.265</td>
<td>0.0001</td>
</tr>
<tr>
<td>Uncontrolled Toxic Waste Sites per 1000 Persons</td>
<td>3.966</td>
<td>0.0079</td>
</tr>
<tr>
<td>Mean Value Owner-Occupied Home</td>
<td>insignificant</td>
<td></td>
</tr>
<tr>
<td>Pounds of Hazardous Waste Generated per Person</td>
<td>insignificant</td>
<td></td>
</tr>
</tbody>
</table>

### Table D: Operating Commercial Hazardous Waste Facilities Summary of National Statistics

<table>
<thead>
<tr>
<th>Variable†</th>
<th>Significance</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
<th>Difference of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority Percentage of Population</td>
<td><strong>•</strong></td>
<td>12.3</td>
<td>23.7**•**</td>
<td>22.0</td>
<td>37.6**•**</td>
<td>5.0**•**</td>
</tr>
<tr>
<td>Mean Household Inc.</td>
<td><strong>•</strong></td>
<td>$23,718</td>
<td>$25,711**•**</td>
<td>$24,302</td>
<td>$23,749</td>
<td>-$2,745**•**</td>
</tr>
<tr>
<td>Uncontrolled Tox. Wst. Sites/1000 Persons</td>
<td><strong>•</strong></td>
<td>0.269</td>
<td>0.980**•**</td>
<td>0.725**•**</td>
<td>0.432**•**</td>
<td>0.828*</td>
</tr>
<tr>
<td>Mean Value Owner-Occupied Home</td>
<td>NS</td>
<td>$71,812</td>
<td>$81,436**•**</td>
<td>$76,34</td>
<td>$75,891</td>
<td>-$17,301**•**</td>
</tr>
<tr>
<td>Lbs of Haz. Waste Generated/Person</td>
<td>NS</td>
<td>3,379</td>
<td>8,001**•**</td>
<td>198**•**</td>
<td>7,022**•**</td>
<td>6,585*</td>
</tr>
</tbody>
</table>

†Variables are listed in order of discriminant analysis significance.

<table>
<thead>
<tr>
<th>Frequency of 5-Digit ZIP Code Areas and Facilities in Each Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Number of Residential ZIP Code Areas (Total = 35,406)</td>
</tr>
<tr>
<td>Number of Operating Commercial Facilities (Total = 415)</td>
</tr>
</tbody>
</table>

Legend

- **•** Significant with greater than 99 percent confidence. For the difference of means test, this refers to the significance of the difference between the mean of a given Group and Group I.
- • Significant with greater than 90 percent confidence.
- NS Insignificant in the discriminant analysis, that is, less than 90 percent confidence.

Group I 5-digit ZIP code areas without operating commercial hazardous waste treatment, storage and disposal facilities.

Group II 5-digit ZIP code areas with one operating commercial hazardous waste treatment, storage and disposal facility that is not a landfill.

Group III 5-digit ZIP code areas with one operating commercial hazardous waste landfill that is not one of the five largest.

Group IV 5-digit ZIP code areas with one operating commercial hazardous waste landfills or more than one treatment, storage and disposal facility.

According to the Commission Report, these findings "represented a consistent national problem."66

Based on these findings, the Commission concluded that race has been a consideration in the siting of commercial hazardous waste facilities in the United States.67 The Commission also claimed that patterns of high incidences of commercial hazardous waste facilities located in communities with greater percentages of minorities is most likely not attributable to chance.68

In the face of rising concerns over the unequal distribution of hazardous waste facilities, as documented by the GAO and Commission Reports, EPA Administrator William K. Reilly created the EPA Environmental Equity Workgroup in July of 1990.69 The objective of the Workgroup was "to assess the evidence that racial minority and poor communities bear a higher environmental risk burden than the general population [and to consider what the EPA might do about any identified disparities]." The final report, published in June of 1992, was "intended to contribute to the national dialogue on environmental equity and to suggest further steps for the EPA."70 The Report noted six findings, of which one indicated that minority populations experienced "higher than average exposures" to pollutants in the air, hazardous waste facilities, contaminated fish, and agricultural pesticides in the workplace.71

Although the EPA Equity Report stated that exposure to pollutants and other environmental risks does not always have a detrimental impact on human

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66 Id. at xiii.
67 Id. at xv.
68 Id. at xc. The Commission Report noted that the findings were statistically significant with 99.99% confidence. Id. at xv. The Commission further concluded that because the issue of race is an important aspect of the problem of uncontrolled toxic waste sites, cleanup in Hispanic and Black communities should be given highest priority.
69 EPA EQUITY REPORT, supra note 13, at 2.
70 Id. at 3.
71 Id. at 3. Only the findings regarding hazardous waste facilities will be discussed.
health, it indicated that high exposures do present "a clear cause for health concerns." The Report explained that low income and minority communities have a greater than average potential for exposure to pollutants because they are inclined to live in areas with high levels of air pollution or are more likely to live near a hazardous waste facility. 72

The EPA Equity Report described the findings of the GAO Report and the Commission Report as testimony that minorities are more likely to live near commercial hazardous waste facilities or uncontrolled hazardous waste sites than the general population in the United States. 73 Although the Equity Report used these two reports to support its findings that poor and minority communities experience unequal exposure to hazardous waste facilities, the EPA indicated that "[t]he is clear that more study of this issue is required to fully understand the association of race, income, and facility location." 74

72 Id. at 12. Air pollution is mainly an urban phenomenon. For this reason, a higher percentage of racial and ethnic persons are exposed to higher levels of air pollutants because they live in metropolitan areas. Over 86% of Blacks and over 91% of Hispanics live in urban areas. By comparison, only about 70% of Whites live in urban areas. Moreover, higher percentages of Blacks and Hispanics live in areas deemed out of compliance with the Clean Air Act (air non-attainment areas) by the EPA. The Report published findings of exposures to four types of air pollutants. Over 14% of Whites were exposed to particulate matter, whereas over 16% and 34% of Blacks and Hispanics, respectively, were exposed to the same pollutant. Where 46% of Blacks and over 57% of Hispanics were exposed to carbon monoxide, only about 33% of Whites were exposed. The same disparities exist in exposures to ozone, sulfur dioxide and lead. Only over 14% of Whites were exposed to ozone in non-attainment areas, whereas over 62% of Blacks and over 71% of Hispanics were exposed. As to sulfur dioxide, only 7% of Whites were exposed, whereas over 12% of Blacks were exposed. EPA EQUITY REPORT, supra note 13, at 14, The disparity between Hispanics and Whites in the sulfur dioxide category, however, showed that Whites were at a disadvantage: only 5.7% of Hispanics live in such areas. Id. at 14. Finally, over 9% of Blacks and over 18% of Hispanics live in non-attainment areas for lead, compared to only 6% of Whites. According to the EPA Equity Report, efforts by the EPA to improve air quality in non-attainment areas pursuant to the Clean Air Act of 1990 "should bring significant benefits to racial minority groups." Id. at 12-14.

In spite of the need for hazardous waste facilities, residents in potential and actual host areas have responded negatively to attempts to site facilities in their communities. Public opposition to the siting of unwanted land uses such as hazardous waste facilities is known by many as the NIMBY (not-in-my-backyard) syndrome. Political pressures created by communities opposed to

-- of the communities surrounding the waste sites." At sites having the greatest White population, penalties were 500% higher than penalties at sites with the greatest minority population. Moreover, this disparity occurs by race alone and not income. The average penalty in areas with the lowest median incomes is only three percent more than the average penalty in areas with the highest income. Journal Study at S2.

The significance of the Journal Study is that the findings represent a financial aspect of environmental risks borne disproportionately by racial and ethnic communities. Under federal laws, financial penalties are imposed on violators to discourage them from polluting beyond what is legally allowable. If the disincentive is removed, or comparatively less in a minority or poor community, racial and ethnic communities are that much more at risk than their White counterparts.

Indirect evidence of unequal distribution of risks, across racial and socio-economic lines, ranges from dramatic differences in health between Whites and minorities to discrepancies in the enforcement of federal environmental laws. As the Commission Report indicates, there are many studies documenting what it called "the social crisis occurring in Black and other racial and ethnic communities" in the United States. COMMISSION REPORT, supra note 56, at 15.

A study published by the Children’s Defense Fund, for example, found that Black infant mortality rates were twice as high as those for White children during the first year of life. Children’s Defense Fund, A CHILDREN’S DEFENSE FUND BUDGET: AN ANALYSIS OF THE FY 1987 FEDERAL BUDGET AND CHILDREN 319 (1986). In the U.S. Department of Health’s Report on Black and Minority Health, the report showed that there was a wide health gap between minority and non-minority persons in the United States. U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, BLACK AND MINORITY HEALTH 4-5 (1985). The ratio of excess deaths to total deaths in Blacks in the United States was 47.6% for males and females cumulative to age 45, and 42.5% for males and females cumulative to age 70. Id. at 5. These figures come from the following six causes of death: heart disease and stroke, homicide and accidents, cancer, infant mortality, cirrhosis, and diabetes. Id. "Excess deaths" represents the difference between the number of deaths actually observed in a minority group (Blacks for the previous example) and the number of deaths that would have occurred if that group had experienced the same death rates for each age and sex as the White population. Id. at 63. When minority death rates are higher than those of Whites, excess deaths will be a positive number; zero when they are equal; and negative when the rates for minorities are lower than for Whites. Id. Thus the 47.2% and 42.5% figures show the dramatic differences in health of Blacks relative to that of Whites. In summarizing these various reports, the Commission Report concluded that the disproportionate negative effect of toxic waste on minorities was, in fact, part of a pattern consistent with the findings of these other studies. See COMMISSION REPORT, supra note 56, at 15.

hosting facilities frequently has proven great enough to stop projects and may have contributed to the results seen in the above reports.\textsuperscript{76}

\textbf{B. Public Opposition}

Some commentators have argued that public opposition to hazardous waste facilities has contributed to siting inequities.\textsuperscript{77} They argue that because the search for a suitable facility site follows a "path of least resistance", communities with little or no political initiative are especially vulnerable targets.\textsuperscript{78} Without the technical or political sophistication and without financial resources, some have argued, poor and minority communities are more attractive as sites than white and affluent communities. For example, Robert D. Bullard alleges that "[m]ore often than not [locally unwanted land uses] end[ ] up in poor, powerless, Black communities rather than in affluent suburbs [(as a result of NIMBY)]. This pattern has proven to be the rule .... Public officials and private industry have in many cases responded to the NIMBY phenomenon using the place-in-blacks' backyard (PIBBY) principle."\textsuperscript{79}

In general, local opposition is facilitated by three primary factors. The first is the high amount of risk associated with hazardous waste facilities imposed on host communities.\textsuperscript{80} Because hazardous waste facilities provide most benefits to parties remote to the communities in which they are sited, residents in host

\textsuperscript{76}According to the general counsel of CECOS International, Inc. (the hazardous waste subsidiary of Browning-Ferris Industries), "[t]he NIMBY syndrome is in large measure responsible for the waste disposal crisis in this country." Kolar, \textit{supra} note 75, at 11.

\textsuperscript{77}E.g., 2 ENVIRONMENTAL PROTECTION AGENCY, \textit{ENVIRONMENTAL EQUITY: REDUCING RISK FOR ALL COMMUNITIES} 18 (1992); \textit{Bullard, supra note 75}, at 4-5; Robert D. Bullard, \textit{Environmental Blackmail in Minority Communities, in ENVIRONMENTAL HAZARDS, supra note 13}, at 85; Rachel D. Godsil, \textit{Remedying Environmental Racism, 90 MICH. L. REV.} 394, 396 (1991). \textit{See also Tsao, supra note 6, at 373 n.40.}

\textsuperscript{78}BULLARD, \textit{supra note 75}, at xiv.

\textsuperscript{79}Id. at 5.

communities see themselves as bearing an unfair amount of the burdens
associated with the facility. 81 The risks can appear as being imposed unfairly on
the community without their consent. 82 On the other hand, poor residents may
see a proposed siting facility as a means to gain employment. Thus, they may
find the risks outweighed by economic gains.

The second factor is the low cost of protesting. The siting controversy is
easily identifiable and protesters similarly are readily contacted because of the
local nature of a siting dispute. 83 Also, public participation procedures in siting
processes present opportunities for opponents to stage protests and attract
media attention. For protestors, individual costs include time and money spent
on activities such as recruitment, fund raising, and organizing, on top of actual
protesting and writing letters. Moreover, "the time commitments necessary for
a successful protest movement are lumpy; only a relatively small number of
activists need to commit substantial amounts of time to the effort." 84 Thus, for
most collaborators, participation is minimal. At the same time, however,
residents of a poor community may not necessarily have adequate time free to
participate even minimally.

Finally, the prospect of a successful protest campaign contributes to the
movement. Committed activists may find promoting their causes a fulfilling
endeavor, especially if they are able to gain wide-spread support and attract the
attention of the media and local elected officials. 85 Additionally, opponents often
win: 86 even if a project is not stopped at the local level, opponents attack siting

81 See, e.g., Laws & Susskind, supra note 75, at 35.
82 Mitchell & Carson, supra note 77, at 287; see Susskind, supra note 75, at 1-2.
83 Mitchell & Carson, supra note 77, at 287; see Michael O'Hare et al., Facility Siting
84 Mitchell & Carson, supra note 77, at 287-88.
85 Id. at 288.
86 O'Hare, supra note 80, at 6.
processes at the state level or challenge siting decisions in the courts. For poor persons, however, expenses associated with extended protests and litigation are cost prohibitive. For them, the chances for an effective drive against a siting decision may be, or perceived to be, quite small.

Through NIMBY, residents have spared their communities from assuming environmental risks associated with hazardous waste facilities. In the process they have imposed costs on the disposal of hazardous wastes, encouraging waste-producing industries to change pollution management from control to reduction. On the other hand, NIMBY also has created a deficit in safe disposal sites in some areas of the country and, some argue, has encouraged the siting of facilities in areas with low or no NIMBY-type resistance.

NIMBY may be one factor contributing to inequities seen in the above reports. Further research must be done, however, to verify the findings of the reports, in view of limitations of each.

C. Critique and Suggestions for Further Research

The GAO Report is deficient in several respects. First, its findings are limited only to EPA's Region IV. As such, the data set may be skewed and may not accurately reflect regional patterns of where facilities are located. The study also did not look into the reasons behind the the selection of the sites or examine the population distributions of the area when the sites were established. The

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88 Lawrence S. Bacow and James R. Milkey note that because enhanced federal government regulations have compelled unsafe hazardous waste facilities to close and have raised the quantity of waste that must be handled by off-site facilities, "legal disposal facilities have become scarce in many regions [of the United States]." Overcoming Local Opposition to Hazardous Waste Facilities: The Massachusetts Approach, 6 HARV. ENVTL. L. REV. 265, 266 (1982). They note a shortage of environmentally suitable hazardous waste facilities and indicate that an EPA estimate in 1977 showed a need for additional capacity of up to 1.7 million tons. Id. at 266 n.8.

89 GAO REPORT, supra note 50, at 3.
findings of the GAO Report may be reflecting demographic patterns that are very different from patterns in existence at the time of the initial siting. Without insight as to why the site was chosen, or what the demographics around the site were, it is difficult to draw conclusions about how the unequal distributions came to exist. The study also does not report the population distribution around the landfills when the report was made, or how the racial and economic status of host communities compared to others in the state. Without this information it is unclear if there are disparities between racial and economic characteristics relative to non-host communities throughout the state.

The Commission Report does not account for important factors as well. For example, the study "was not designed to show cause and effect." It did not consider the demographics of hazardous waste facility locations when they were originally sited. The findings could reflect demographic changes around the facilities. That is, the disproportionate incidence of hazardous waste facilities in poor and minority communities as reported in 1987 could be the results of changes in demographics since the time when the facilities were first located. For instance, after the facilities were sited, property values around them could have fallen thereby attracting classes of persons -- the poor and perhaps poor minorities -- who could afford housing in the area. In fact, the two hypothesis examined in the study tested only incidence of commercial hazardous waste facilities at the time of the study and not when the facilities were originally sited.

90 Id.
91 COMMISSION REPORT, supra note 56, at 11.
Another weakness is that a national study such as the Commission Report may be ineffective in showing regional differences in facility location trends. Evidence showing disparities in the location of hazardous waste facilities in one region where disparities are great, relative to other areas of the country, may skew data and give a false impression that disparities are occurring in all areas of the country. For example, one study of hazardous waste facilities in Suffolk County, Massachusetts, found that they were located less often in minority areas.92a

Moreover, the Commission Report's focus on ZIP code areas may not accurately represent the spatial realities of facility siting. For instance, a majority White ZIP code area may contain a minority neighborhood in which hazardous waste facilities are located. Under a ZIP code analysis, this example would support a finding against the existence of environmental inequities in spite of the location of facilities in the poor and minority neighborhood.92b

Given the shortcomings of both studies, future research should focus on actual siting schemes and decision-making processes at the time the facilities were sited. Studies should examine demographics, specifically race and income data, of communities at the time when facilities were located. Using a methodological approach similar to the Commission Report, analysis of these data could test the following hypothesis:

1) The mean minority percentage of the population at the time the facilities were sited was a more significant discriminator than other variables for differentiating communities.
2) The mean minority percentage of the population was significantly greater in communities with facilities at the time they were sited than in those without.

92a Id. at 68.
92b See id. at 22-23.
"These hypotheses may be tested by comparing all communities and by comparing communities with facilities [at the time the locations were chosen] to those without in the surrounding county." Tests should be conducted at national, regional (EPA regions) and state levels.

In spite of the faults of the GAO Report and the Commission Report, they provide convincing evidence that hazardous waste facilities are located disproportionately in poor and minority communities. Siting processes used by the states may contribute to the inequity. Part IV explores this possibility.

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93 See COMMISSION REPORT, supra note 56, at 11.

93a Another possible measure of environmental inequities is the allocation of resources to address environmental equity issues. Michael Terner claims that a study of facility inspections can be an appropriate test for environmental equity. He argues that geographic information systems (GIS) and relational data base management systems (RDBMS) are effective and appropriate devices for determining the degree of environmental equity or inequities. He proposes a promising methodology using GIS and RDBMS to examine census tract and blockgroup data aggregations as a way to explore environmental equity issues. See generally Terner, supra note 92.
IV. EXISTING SITING MECHANISMS

Part IV begins with a discussion and critique of the Resource Conservation and Recovery Act (RCRA). This statute is the primary federal law dealing with the treatment, storage, and disposal of hazardous waste. Part IV.B discusses various siting mechanisms created and implemented by states. Part IV concludes with a critique of existing state siting schemes, and argues that the state siting models may contribute to the disproportionate incidence of hazardous waste facilities in poor and minority communities.

A. Federal Response to Hazardous Wastes

Before the passage of RCRA in 1976, the majority of state management programs were concerned primarily with solid waste.94 There were, however, five states with comprehensive hazardous waste management laws: California, Illinois, Minnesota, New York, and Oregon.95 Yet in states that did regulate landfill use there were no provisions requiring the separation of toxic from non-toxic wastes.96 With no separate guidelines for handling toxic compounds, states relied on a "rough and sometimes incorrect" understanding of their solid waste statutes when overseeing hazardous waste management.97 This contributed to many hazardous waste management problems: "even ... inadequate standards in place were not followed. Generators either disposed of their wastes by the roadside or gave their wastes to irresponsible transporters. Transporters pocketed transportation fees and indiscriminately dumped their cargoes into the

94Duffy, supra note 3, at 762.
95Id.
96Id.
97Id.
environment." It was against this backdrop that the U.S. Congress enacted the Resource Conservation and Recovery Act.

1. RCRA

Described by many as a "cradle to grave" comprehensive program, RCRA creates a tracking system that follows the transportation and disposal of hazardous waste. The tracking system begins with hazardous waste generators who are required to keep accurate records of quantities of hazardous waste generated, and to label any containers used for the storage, transport or disposal of wastes. Generators also are to provide the chemical composition of the hazardous waste to persons transporting, treating, storing or disposing the waste.

Transporters of hazardous waste also are subject to strict standards established by RCRA. Transporters must keep accurate accounts of transported waste, including source and destination. The waste is to be transported "only if properly labeled" and "only to the hazardous waste treatment, storage, or disposal facilities which the shipper designates ... to be a facility holding a permit issued" in accordance with RCRA standards.

Finally, owners and operators of hazardous waste treatment, storage, and disposal facilities must comply with strict disposal standards. In addition to

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98  *Id.* at 763.


requirements for a wide range of disposal techniques and waste types, RCRA outlines permit requirements for treatment, storage, or disposal of hazardous waste.

Perhaps the most far-reaching component of RCRA is the definitions section. For example, "hazardous waste" is defined as "a solid waste or combination of solid wastes," which may "cause, or significantly contribute to an increase in mortality" or illness, or "pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of ...." The most comprehensive definition, however, belongs to the term "solid waste:"

any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities ...."  

By definition, much of the waste by-products from many industries is regulated by RCRA. RCRA also contains provisions allowing the EPA to undertake "corrective actions" capable of stopping or correcting problems related to the release of hazardous wastes into the environment.

In short, RCRA depicts an elaborate scheme to implement an ambitious national policy. The policy indicates that "wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible.

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104 E.g., 42 U.S.C. § 6924(b) (salt dome foundations, salt bed formation, underground mines and caverns), §6924(c) (liquids in landfills), §6924(d) (prohibitions on land disposal of specified wastes), §6924(e) (solvents and dioxins), §6924(f) (disposal into deep injection wells) (1988).
108 PLATER, supra note 99, at 252. See also 42 U.S.C. § 6912(c) (1988) ("In carrying out the provisions of this chapter, the Administrator [of the EPA], and duly designated agents ... are authorized to initiate and conduct investigations under the criminal provisions of this chapter, and to refer the results ... to the Attorney General for prosecution ....").
Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment.\textsuperscript{109}

Although RCRA is exhaustive in its coverage of hazardous waste, and attempts to identify, follow, and document the life-cycle of hazardous waste, the law is vague as to how disposal facilities are to be sited. Indeed, the law leaves this task largely to the states.\textsuperscript{110} Therefore, it is the states that must tailor their programs to provide safe waste disposal facilities, consistent with RCRA's national policy.\textsuperscript{111}

The states were left with the responsibility of siting hazardous waste facilities for several reasons. First, the federal government, it was believed, was too distant to meet sufficiently the particular needs of local communities. Similarly, local public officials were "too emotionally involved and susceptible to community pressures to accept facilities."\textsuperscript{112} Control at the state level accommodates these two concerns.

Second, because state governments have a "broad yet unbiased perspective," they could see beyond specific site areas to determine the total impact of the proposed facility.\textsuperscript{113} Third, Congress always intended for the states to be entrusted with the duty of implementing the national hazardous waste management program.\textsuperscript{114} Finally, the states' traditional police power and

\begin{footnotesize}
\textsuperscript{110}Canter, supra note 99, at 430; Tsao, supra note 6, at 368; Godsil, supra note 77, at 401. See Duffy, supra note 3, at 763.
\textsuperscript{112}Duffy, supra note 3, at 766-67.
\textsuperscript{113}Id. at 767.
\textsuperscript{114}See Canter, supra note 99, at 433.
\end{footnotesize}
Part IV: Existing Siting Mechanisms

land use control authority provide them with the wherewithal to develop and enforce a site selection program.\textsuperscript{115}

Still, the EPA provided states with three basic principles around which to base siting programs. First, states should execute a technical evaluation of all proposed sites before any single site is selected.\textsuperscript{116} Second, site selection should be conducted with public participation. Finally, states should ensure that site selection processes are not encumbered by blanket local vetoes.\textsuperscript{117}

Furthermore, the EPA recommended five management alternatives for state hazardous waste management programs. The first, and most favorable option, is the reduction of hazardous waste generation. Next in order of preference is the separation and concentration of hazardous wastes. The third option is the use of wastes in other manufacturing processes. The fourth alternative is the destruction of hazardous wastes in special incinerators or detoxification and neutralization. The fifth, and least favorable option, is the disposal of hazardous wastes in secured landfills.\textsuperscript{118}

In spite of RCRA's ambitious goals, the law may contribute to environmental inequities in several ways, as outlined below.

2. Critique of RCRA

Although the law has been criticized both for being under-\textsuperscript{119} and over-regulative, its over-regulative aspects are especially problematic to poor and

\textsuperscript{115}ld.

\textsuperscript{116}ld. (quoting U.S. ENVIRONMENTAL PROTECTION AGENCY, HAZARDOUS WASTE FACILITY SITING: A CRITICAL PROBLEM 7 (SW-86) (1980)).

\textsuperscript{117}ld. A blanket local veto refers to the authority of a local government to outlaw the siting of any unwanted facility within its jurisdiction.

\textsuperscript{118}ld. (quoting OFFICE OF WATER AND WASTEWATER MANAGEMENT, U.S. ENVIRONMENTAL PROTECTING AGENCY, SOLID WASTE FACTS: A STATISTICAL HANDBOOK 8 (SW-694) (1978)).

\textsuperscript{119}More than half of the country's hazardous waste lies beyond the law's regulatory system, in spite of RCRA's broad definitions. PLATER, supra note 99, at 937. For example, domestic sewage is not considered solid waste even though the sewage may contain other waste material from publicly owned treatment works, legal point source discharges, irrigation return flows,
minority communities near hazardous waste facilities because of "unintended results." For instance, Dr. Robert Powitz, Director of Environmental Health and Safety at Wayne State University, stated that:

> waste acids can often be combined in a chemical reaction with waste bases to form salt and water. If performed, this reaction would eliminate the need for transport of two hazardous substances, having changed them to non-hazardous materials. To do so, however, is to perform treatment under RCRA which requires the treater to obtain a [treatment, storage, and disposal (TSD)] license that the University cannot afford to obtain.... The alternative is to ship the hazardous material 80 miles through several heavily populated areas to a licensed TSD facility. A major chemical facility in the suburbs of Detroit, Michigan produces isocyanate (of Bhopal infamy) as a by-product of plastics production. Isocyanates react readily with water to produce non-toxic by-products. Again, however, to combine them with the water is to engage in treatment and requires a TSD license that the chemical company does not want to obtain (...). The lawful disposal requires shipment of isocyanate through residential areas in the vicinity of the plant and highway travel to a facility some 60 miles away."
These examples demonstrate how RCRA can over-regulate, thereby defeating its purpose of increasing safety and reducing waste. Moreover, the examples show how such over-regulation puts at greater risk those communities surrounding hazardous waste facilities. To the extent that there are disproportionate numbers of such facilities in minority and poor communities, the dangers described by Dr. Powitz only exacerbate environmental inequities.

Perhaps the greatest drawback to RCRA is its "mind-numbing" complexity. Determining whether a certain substance is controlled by RCRA often is difficult because of the "definitional nightmares" inherent in the complex law. To make matters worse, the EPA rules that track the wastes as they progress through the different phases of generator, treatment, storage, and disposal, are similarly as involved. The elaborate mechanism leaves much room for error, possibly exposing many host communities to dangers posed by uncontrolled or improperly handled hazardous wastes.

Although the reasons why Congress preferred to leave siting decisions up to states are valid, the downside is that the policy's success rests on the efforts of fifty individual states. Whereas some states may have the financial, technical, and political resources to create effective siting programs others may not. The result may be reflected in the relative elaborateness -- or lack thereof -- of different siting programs. Also, not all states may share the same concern for environmental equity.

122 Id. at 928 (quoting American Mining Congress v. EPA, 824 F.2d 1177, 1189 (D.C. Cir. 1987) (Stan, J., writing for the majority)).
123 Id. at 939.
124 Canter, supra note 99, at 433.
125 For example, Florida's siting program occupies just over one page in the state's law books. By comparison, Colorado's State Hazardous Waste Siting Act covers about 16 pages of similarly-sized text.
Part IV: Existing Siting Mechanisms

Though there is some benefit in allowing the individual states to serve as laboratories for siting programs, thus far the results may be partially responsible for the unequal distribution of hazardous waste facilities. Various states siting models will be discussed next.

B. Generic State Siting Mechanisms

In general, states approach the siting of hazardous waste facilities from one of three approaches: super review, site designation, and local control. Additionally, some states require that developers compensate host communities for accepting the facilities. Either way, the statutes assume the facilities are necessary to society and must be sited "with as little social cost (including environmental cost) and disruption as possible."\(^{126}\) Table D summarized the basic concepts behind the different models to be described.

Table E: Summary of Basic Concepts of Existing State Siting Models

<table>
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<tr>
<th>SUPER REVIEW MODEL</th>
<th>SITE DESIGNATION MODEL</th>
<th>LOCAL CONTROL</th>
<th>COMPENSATION</th>
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<tr>
<td>State regulatory agencies await the filing of a permit application by a developer before considering viability of sites.</td>
<td>State creates an inventory of preferred sites instead of responding to developer's selections. States have a greater ability to influence geographic distribution of sites.</td>
<td>Local land use regulations are not preempted by state hazardous waste management plan. Thus, local community can ratify strict land use controls to keep out facilities.</td>
<td>State or developer offers inducements to host communities to offset costs associated with facility. Intention is to eliminate local opposition by making community better off</td>
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1. Super Review Model

The super review approach is the most common.\(^{127}\) It calls for regulatory agencies to await the filing of permit applications before determining

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127 See Canter, *supra* note 99, at 438-43 for a full discussion of super review model. Other examples of the super review approach include the following state statutes: CONN. GEN. STAT.
whether a particular site is qualified for the intended use. The petition for permit is evaluated according to a set of rules and either satisfied as filed, satisfied with conditions, or denied. Under the super review scheme, if a permitting agency denies a permit on grounds that the site is unsuitable, the developer is compelled to give up or re-attempt with another site. 128 Michigan is one state that follows the super review siting model, and will be used to explain how this kind of process is envisioned.

The Michigan siting scheme contains typical characteristics of the super review approach. The program calls for an initial review of the permit application by the state environmental protection agency. If the application clears this initial hurdle, it is then reviewed for final determination by a specially created site review board. Public participation is expanded during the time the permit application is under review by the board. The program also provides for the reconciliation of state and local interests in instances where concerns are raised by interested parties.

In Michigan, the site permitting process begins when the director of the State Department of Natural Resources (director) refers a construction permit application to a site review board. 129 The site review board consists of nine voting members and a non-voting chairperson. 130 Seven members of the board, who are appointed by the governor, include a geologist, a chemical engineer, and a toxicologist, a representative from a "manufacturing industry", two

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128 Canter, supra note 99, at 438.
129 MICH. COMP. LAWS ANN. § 299.517(1) (West 1984 & Supp. 1993). If more than one construction permit application for interrelated facilities in a single site within the same municipality are submitted, only a single siting board is established to review the site applications concurrently. Final approval, however, is made or denied for each application individually. Id.
130 § 299.517(2).
"representatives of the public", and a representative of a municipality in which the proposed facility is to be constructed upon approval.\(^\text{131}\) The remaining two positions are filled by a person appointed by the municipality in which the proposed facility is to be sited. The other member is assigned by the county board of commissioners in which the facility is to be constructed. Finally, an attorney appointed by the governor serves as the non-voting chairperson.\(^\text{132}\)

By statute, a treatment, storage, or disposal facility cannot be built in Michigan without a construction permit. The person proposing to construct such a facility is responsible for making the permit application. The application itself is to contain information including the location of the proposed facility.\(^\text{133}\) The application also is required to contain a disclosure statement with information about the owners and operators of the facility.\(^\text{134}\) Finally, the application is to include a copy of a newspaper notice published at least thirty days before the application's submission.\(^\text{135}\)

After the director receives an application for a construction permit, and after the director notifies the board, reviews the proposed plans, and holds a

\(^{131}\)§ 229.517(2)(a).

\(^{132}\)§ 229.517(2)(b).

\(^{133}\)§ 229.518(3). There is also a required application fee. It is determined by a fee schedule, included in the statute. Additionally, there is a $25,000 "revolving fund" fee, intended to cover the expenses associated with the site review board. § 229.518(8).

\(^{134}\)Such information would include the full name and address of the applicant; five persons holding the largest shares of the proposed facility; the operator and three employees of the operator "who will have the most responsibility for the day-to-day operation of the facility"; and any business entity with more than a 25% share of the facility; all convictions for criminal violations of any federal, state, Canadian, or provincial environmental law for each person listed in the disclosure statement; an accounting of all environmental permits or licenses issued by a federal, state, Canadian, or provincial agency held by each person listed in the disclosure statement; and a listing of activities at property owned or operated by each person noted in the disclosure statement "if the incident resulted in a threat or potential threat to the environment ...." § 299.518(4)(a)-(d).

\(^{135}\)The published notice is supposed to contain a map noting the location of the proposed facility, along with basic facts about the facility's characteristics and size. § 299.518(9). The notice also is to contain a description of the review process, the location where the application can be studies, and how one can obtain copies of the application. § 299.518(9)(a)-(c).
public hearing, the director refers the application to the site review board. If the director chooses to deny the application prior to the board's review, the director must subject the application to a "public participation process." After the public participation process, the director either can deny the permit or refer the application to the review board for further consideration.

If the director decides to refer the application to the board, the board is to meet to establish a date for a public hearing. The date, along with pertinent information such as a map noting the location of the proposed facility, are published in a local newspaper. At the scheduled public meeting and for fifteen days thereafter, written or oral comments are accepted. Once the public hearing comment period has ended, however, the board is to list "issues that are to be addressed through a negotiation process and list the issues to be evaluated by the board through its deliberations." Mediation between the applicant and affected parties identified by the board also is an option.

If negotiations between the applicant and affected parties identified by the board are conducted, the statute provides guidelines. First, the negotiation process is to occur at the same time as the board's hearing process. Second, the negotiations are to address both the issues referred by the board and those issues selected by the applicant and all affected parties. Finally, the law stipulates that negotiations are to be completed within 150 days after the first meeting of

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136 § 299.519(1)-(2).
137 § 299.519(5).
138 § 299.520(3)(a).
139 § 299.520(5). "A negotiation process shall take place between the applicant and the affected parties who shall be identified by the board. A representative of the municipality and a representative of the county in which the facility is proposed to be located shall each be considered an affected party. If requested by any affected party or the applicant, the board shall appoint a mediator to assist during negotiations." § 299.520(6).
140 "If requested by any affected party or the applicant, the board shall appoint a mediator to assist during negotiations." § 299.520(6).
the board. If the parties cannot reach a negotiated settlement on any of the issues, the board can select among the final best offers.

Issues that are in dispute but not under negotiation are subject to formal or informal hearings. At these hearings evidence may be presented by any affected party. The board, however, determines which affected parties can participate in the formal hearings. An affected party denied permission to participate must receive notice of the board's decision along with reason why the request was denied. The formal hearing process itself is to receive sworn testimony, allow for the cross-examination of witnesses, allow representatives of affected parties to cross-examine witnesses, and request participation "as needed." Statements delivered at informal hearings, however, are not done so under oath, nor are cross-examinations allowed.

Finally, the board is to consider the impact of the proposed facility on the municipality in which it is to be sited, and reach a final decision on the construction permit application. The board is to focus on several factors, including the risk and impact of mishap during the shipment of hazardous waste and the impact on the municipality where the planned facility is to be sited, with respected to "health, safety, cost, and consistency with local planning and existing development." Additionally, the board is to take into account the "concerns

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141 § 299.520(6)(a)-(c). The applicant may, however, request an extension of not more than 60 days.

142 § 299.520(8)-(9).

143 § 299.520(9)(a)-(d).

144 § 299.520(12)(d). Other considerations include the risk and impact of contamination of ground and surface water by way of leaching and runoff; the risk of fires or explosions resulting from incorrect treatment, storage, or disposal techniques. Toward this end, the board is to consider local ordinances, permits, or other requirements and their possible relationship to the potential facility. Another consideration is the characteristic of the possible environmental impact, "including the specification of the predictable adverse effects on the following:" the natural environment and ecology; public health and safety; scenic, historic, cultural, and recreational value; water and air quality; and wild life. §299.520(12)(e)(i)-(iv). Another factor is a determination of a means to allay harmful effects. The last is the consideration of information in the construction permit application disclosure statement. § 299.520(12)(a)-(g).
and objections" presented by the public. The board is allowed to change the construction permit application to reflect its findings and is required "to the fullest extent practicable integrate by stipulation the provision of the local ordinances, permits, or requirements." 145

If the board approves the permit, the final decision is released in the form of a draft construction permit. The draft permit, in turn, is subjected to a process of public participation. Upon completion of the participation process, the director is to review the comments and revise and issue the permit. 146

2. Site Designation Model

The site designation approach is characterized by the selection of preferred sites around the state in advance of project proposals. In this manner, an inventory of sites is maintained even during periods when no project proposals are submitted by developers. An example of the site designation model is the Minnesota siting program. 147

Under the Minnesota siting scheme, potential sites are selected in one of two ways. First, a developer may propose a candidate site with approval from the owners of the site and the municipal government in which it lies. 148 Second, the state may select potential sites, although it may designate no more than one site per county. 149

Any county containing a potential site may negotiate a contract with the state's office of waste management once it files a resolution of interest (to host a

145 § 299.520(13).
146 § 299.520(16). The director also may reconvene the board to consider issues raised during the public participation process. If, however, the board rejected the application, the reasons for rejection are to be stated in writing, along with changes necessary to make the application acceptable if a new application is made. § 229.520(17)(a).
147 Another example of the site designation approach is Maryland. MD. NAT. RES. CODE ANN. § 3-710 (Supp. 1991).
149 § 115A.21(1).
facility) with the state's waste management board. The county, however, can withdraw the resolution of interest at any time prior to executing a final contract.\textsuperscript{150} Contracts are subject to several negotiable terms, as noted in the statute. For example, the state and county can negotiate the procedures pertaining to the evaluation and selection of the site, and the construction, operation, and maintenance of a proposed facility. The parties can negotiate guidelines for safe operation of the facility and a compensation package. Finally, the county can negotiate provisions for amending the contract and for resolving disputes.\textsuperscript{151}

While the board and county are negotiating an agreement, the board simultaneously seeks a private developer to build and operate a facility on the site.\textsuperscript{152} Also, before a contract between the state and county can be executed, the state office of waste management must prepare a report on the development of the proposed facility. The report must include information such as a conceptual plan describing and evaluating the proposed design and an assessment of available technologies that can reduce the threat of hazardous waste releases.\textsuperscript{153}

In determining which site is suitable for a proposed facility, Minnesota law calls for the consideration of at least several specific factors. First, the office is to consider the "economic feasibility" of the sites, including the proximity of generators of hazardous waste. The second consideration is the "intrinsic suitability" of the site. Third, the office must take account of federal and state pollution control and environmental protection rules. Fourth, the office must

\textsuperscript{150}§ 115A191(2).
\textsuperscript{151}§ 115A.191(5)(a)-(e).
\textsuperscript{152}PLATER, supra note 99, at 955.
\textsuperscript{153}Other information includes "procedures and standards" for running the facility that require recycling and reduction of hazardous waste; an analysis of preferred physical characteristics of an ideal site; a determination of the "feasibility of an interstate, regional approach to the management of hazardous waste"; and an economic analysis of the development and operation of the facility. § 115A.193(a)-(h).
weigh the risk and impact for local residents, government, and public health, safety, and welfare.\footnote{154} The office also is to consider the extent to which the facility conforms with existing local land use laws and development, and adverse effects on agriculture and natural resources. Additionally, the statute indicates that so long as real property is intrinsically suitable to be used as a site, it may not be excluded from consideration.

Finally, the board makes the decision on which site to construct a facility. All sites not selected are no longer considered candidate sites.\footnote{155}

3. Local Control Model

Under local control siting schemes, local land use regulations are not preempted by state siting programs. Thus, a local government can employ tough land use regulations to restrict siting of facilities within its jurisdiction. Colorado is one state with a siting scheme that follows the local control model.\footnote{156}

The Colorado siting scheme, known as the "State Hazardous Waste Siting Act," was enacted to provide "safe sites with adequate capacity for the disposal of hazardous waste."\footnote{157} The Act stipulates that any person wishing to operate a hazardous waste disposal facility must first obtain a "certificate of designation" from the county in which the proposed facility is to be sited.\footnote{158} Once a county is informed of such a proposal, it must notify other counties or municipalities within twenty miles of the proposed site.

\footnote{154}{This includes threats of accidental releases during transportation, fire, and explosion.}
\footnote{155}{\textsection 115A.28(1).}
\footnote{156}{Florida also operates a siting program that follows the local control model. Local control, however, is not absolute in Florida because the governor and state cabinet can grant a variance from local ordinances or regulations thereby allowing a facility to be sited. \textsection 403.723 (West 1993).}
\footnote{157}{\textsection 25-15-200.1 (short title); \textsection 25-15-200.2(1) (West 1990).}
\footnote{158}{\textsection 25-15-201(1).}
The proposed site is then subjected to a geological survey to determine whether it is suitable, based on the "geological, hydrological, climatological, geochemical and geomorphological" traits of the site. The application itself is deliberated by the county or municipal government at a public hearing after the state makes a recommendation as to whether the site should be approved.

Consistent with the local control siting model, the county or municipality has the final authority to approve or deny the application. Approval, however, is granted only after several factors are met. First, the state must recommend that the application be ratified. Also, the county or municipality must find that the site will not threaten public safety. Toward this end, the density of the population in communities surrounding the site and next to delivery roads within fifty miles of the proposed site and the risk of accidents during transport are taken into consideration. In addition, the applicant must show a need for the facility and demonstrate the financial capability to operate the facility. Furthermore, the applicant must establish "sufficient reliability, expertise, and competency to operate and manage the proposed facility." Finally, the site must comply with land use regulations. If these factors are met, the county or municipality may approve the application.

4. Compensation and Incentives Model

In an effort to eliminate local opposition to hazardous waste facility sitings, some states have incorporated compensation mechanisms into siting laws. Under such mechanisms, a package of inducements would accompany a proposed facility. The rationale behind the compensation approach is that if

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161 § 25-15-203(e).
162 § 25-15-203(a)-(f).
incentives to accept the facility outweigh local costs, such as health and environmental risks, a community more likely would accept the siting of a facility in its neighborhoods.\footnote{163}

Compensation usually is determined in one of three ways. First, it can be a function of the facility's gross receipts or amount of wastes processed. Alternatively, compensation can be based on a standard tax or fee. Finally, a compensation package can contain a number of inducements agreed upon through negotiations between developers and host communities.

The state of Connecticut, for example, employs a compensation mechanism in which the amount of compensation is based either on a certain monetary value per standard unit of waste,\footnote{164} in accordance with predetermined values provided by the statute, or on negotiated incentives.\footnote{165} These negotiated incentives may include payment to adjoining landowners for a drop in property values; the purchase of a "green belt buffer" around the proposed facility; provision of open space or recreational facilities for the municipality; purchase of public safety equipment; payment of road repair costs (produced by increased use of local roads); creation of access routes to the proposed facility; or direct financial payments.\footnote{166} In any event, the negotiated incentives may not exceed the amount established by the per unit or predetermined values described earlier.\footnote{167}

Colorado law similarly provides for fees as reimbursement for costs associated with a proposed facility:

\footnote{163}Bacow \& Milkey, supra note 88, at 27; Bingham \& Miller, supra note 80, at 478-79 ("Direct compensation ... to offset the concentrated local costs of hazardous waste facilities appears to be a promising approach .... The rationale for compensation is threefold: pragmatic, equitable, and efficient.").
\footnote{164}CONN. GEN. STAT. ANN. § 22a-128(b)(1) (West 1985).
\footnote{165}§ 22a-128(a), (c).
\footnote{166}§ 22a-128(c).
\footnote{167}§ 22a-128(a).
[a]ny hazardous waste disposal site which is issued a certificate of designation ... shall be required ... to pay to the county or municipality in which it is located an annual fee for the purpose of offsetting the estimated direct costs of increased state, county, and municipal services created by the hazardous waste disposal site, including ... the improvement and maintenance of roads and bridges, fire protection, law enforcement, monitoring by county and municipal health officials, and emergency preparation and response.\(^{168}\)

Colorado calls for the amount to be based on a percentage of the facility's annual estimated gross revenue.

Minnesota also provides for compensation. Under Minnesota law, negotiated terms of a contract (required for siting a facility) involve services or benefits. Such benefits may include items such as those indicated in the Colorado and Connecticut statutes. Minnesota law also contains a clause indicating that compensation may fall into a broad category promoting the "health, safety, comfort, and economic development and well-being of the county and its citizens."\(^{169}\)


Part of most state siting schemes are devices to promote public participation. As discussed next, participation by residents of potential host communities may promote consensus and trust, and may add legitimacy to siting processes.

C. Public Participation and State Siting Schemes

As a way to inform better residents of host communities of hazardous waste facility proposals to reduce local opposition and build consensus, many state siting programs use public participation mechanisms. These mechanisms, discussed below, are implemented to engage mainly local residents and not the state-wide public.\(^\text{170}\) Public participation also is used to "legitimize" the site selection process in the eyes of the public and to reduce public opposition by giving local residents a chance to partake in the process.\(^\text{171}\)

One technique states use to enhance public participation is the appointment of temporary members from the host communities to a state siting board.\(^\text{172}\) Such local membership advances the fairness of the siting process and mitigate local opposition by giving local communities a voice on the state siting board. Siting programs also engage the public by using administrative hearings open to the public and to interested persons. Public comments and objections received at such hearings are taken into account when making final decisions.\(^\text{173}\)

Public participation also is enhanced through the creation of local siting


\(^{171}\)Duffy, supra note 3, at 777; see A. Dan Tarlock, Siting New or Expanded Treatment, Storage, or Disposal Facilities: The Pigs in the Parlors of the 1980s, 17 NAT. RES. LAW. 429, 452-56 (1984). Tarlock discusses six models of public participation appropriate for the siting of hazardous waste facilities. The models are 1) minimum formal public participation; 2) enhanced formal public participation; 3) enhanced formal participation in a planning process that precedes regulatory decisions; 4) formal due process; 5) direct electoral participation; and 6) interest representation in mediation and arbitration processes. \textit{Id.}


boards. Through local siting boards state siting programs engage greater numbers of local participants within a more formal review structure. Moreover, local siting boards help reduce difficulties related to regulating from greater distances. Local interests can be heard and responded to with greater efficiency and with more reliability than if the board were based at a state capital perhaps many miles away and with fewer interests in common with the local community.

Yet another way states promote public participation is by providing technical assistance grants. The purpose of these grants is to eliminate financial and technical barriers that would otherwise keep potential host communities from participating meaningfully in the siting process. These grants would supply local site review boards and other public officials and interested parties with adequate resources to study siting proposals. With greater access to technical information and expertise, it is hoped that local communities would be able to make informed decisions and actions regarding proposals to site a hazardous waste facility in their community.

In summary, states try to legitimize siting processes by giving local residents some opportunity to influence the final selection through public participation mechanisms. It is hoped that public opposition will be reduced if host communities perceive siting decisions as partly their own. Furthermore, a community that believes that its comments and concerns are both heard and factored into the site selection process may be more likely to accept risks associated with the hazardous waste facility. Even if a community lacks the

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174 E.g., CONN. GEN. STAT. ANN. § 22a-127(a) (West 1985) (local project review committee); MISS. CODE ANN. § 17-18-35 (Supp. 1993).
175 Canter, supra note 99, at 451-52.
176 E.g., CONN. GEN. STAT. ANN. § 22a-127(b) (West 1985); COLO. REV. STAT. ANN. § 25-15-103 (West 1990).
resources to partake in the siting process, many states provide technical assistance grants to ensure adequate means.

With respect to environmental equity and the siting of hazardous waste facilities, however, the state siting schemes are problematic because they do not promote the equal distribution of such facilities across race, ethnicity and income groups. Indeed, state siting programs were not designed with environmental equity in mind. Some of the drawbacks of the state siting schemes outlined are discussed below.

D. Critique of State Siting Schemes

To the extent that hazardous waste facilities are found disproportionately in minority and low income communities, state siting processes may contribute to this inequity. Each of the four approaches is problematic because it fails to consider factors that promote environmental equity.

Although the super review model employs special siting boards that are supposed to instigate informed debate over the siting process and provide for local participation, most siting statutes have preemption clauses. Thus, even if a potential host community opposes a proposed facility, the siting board can elect to ignore the opposition. Also, the fact that private developers choose sites undermines the perception of fairness: a developer with a cost incentive typically would choose a site with lower land values. These sites might be located in poor sections of a community, where minority and poor persons tend to live. Even if local land use laws are preempted by state siting statutes, opponents to a facility can defeat the proposal using other methods, such as litigation, political pressure, or civil disobedience. Hence, if developers learn

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177 Canter, supra note 99, at 450. See also Godsil, supra note 77, at 406.
178 Godsil, supra note 77, at 405. See infra Part V discussing these techniques.
that the super review siting model is prone to failure under local opposition, they might be encouraged to find communities less willing or able to oppose a facility. The path of least resistance could lead to a poor or minority community.

Like the super review approach, the site designation model is also susceptible to local opposition. Communities still may be able to keep their sites off candidate site lists during preliminary site selection processes. Where counties can volunteer sites, communities may submit those sites they believe either are unsuitable or are within politically powerless communities. In this manner, counties either could lower their chances of hosting a facility or could control where within its borders a facility would be located, perhaps in a politically powerless community. Additionally, although state officials act on behalf of the public in serving their roles in the state government, they must also respect economic factors. Just as private developers in the super review model are attracted to inexpensive property, states similarly may prefer to minimize siting costs by siting facilities on low-cost land.\textsuperscript{179} Although state governments are public institutions with access to public funds, these resources are limited. Therefore states have the same incentive to maximize financial resources by siting facilities on inexpensive land.

The local control siting model is especially vulnerable to local opposition. Like the super review and site designation approaches, local officials similarly would be inclined to site facilities on inexpensive land. By definition, this siting model acts on the wishes of a local community: if the community does not want to host a facility or has local land use laws incompatible with a facility, the state must look elsewhere for a site. Economic cost considerations, once again, would

\textsuperscript{179}Cole, \textit{supra} note 13, at 1993. Cole states that "[i]n this era of government insolvency, states will certainly be considering land values of potential hazardous waste sites. 'Profit' will, in fact, motivate - cost conscious states will replace 'cost conscious developers'". \textit{Id.} (quoting Godsil, \textit{supra} note 77, at 426).
encourage the siting of facilities in areas with property values that also attract the poor and poor minorities. In such a situation, a state desperate to site a facility may have to try other ways to "coax a community to accept the facility."\textsuperscript{180}

Typically, it is through compensation or incentives that states attempt to locate unwanted facilities. According to some commentators, however, minority and poor communities are vulnerable targets to the compensation approach because they would find the economic inducements especially attractive than would other more affluent communities.\textsuperscript{181}

The compensation or incentives approach is problematic for several reasons. First, this approach is based on the assumption that a community can be compensated for all costs associated with a facility. Not all costs, however, are compensable. For instance, communities negotiating compensation do not always bargain rationally, often neglecting to consider the cost of living in a less polluted neighborhood.\textsuperscript{182} Also, many persons are uncomfortable with placing a price on health or environmental amenities.\textsuperscript{183} Thus, offers for compensation by developers often are viewed as bribes by individuals who may value environmental amenities for their own sake.\textsuperscript{184} Additionally, while costs may be compensable at the individual level, the same may not be true at a community scale. The price for assuming environmental risks may vary across the same community because persons place different values on environmental amenities.\textsuperscript{185} Moreover, developers may not want to negotiate to determine a compensation package unless the compensation will check local opposition.

\textsuperscript{180}Godsil, \textit{supra} note 77, at 407.
\textsuperscript{181}See, e.g., Bullard \textit{in} ENVIRONMENTAL HAZARDS, \textit{supra} note 13, at 85-86; Godsil, \textit{supra} note 77, at 408; COMMISSION REPORT, \textit{supra} note 56, at 7; Charles Lee, Address at the \textit{Boston College Diversity Month Environmental Racism Speaker Series} (Mar. 3, 1992).
\textsuperscript{182}Bacow and Milkey, \textit{supra} note 88, at 277.
\textsuperscript{183}Id.
\textsuperscript{184}Id.
\textsuperscript{185}Id.
Even though a community representative may sign a negotiated contract, not all residents may abide by the agreement.\textsuperscript{186} For this reason, a developer may not be willing to negotiate.

Additionally, state siting schemes in general lack mechanisms to promote the equal distribution of hazardous waste facilities. Most, if not all, state siting programs were not designed with environmental equity in mind: the legislative purpose and intent of most, perhaps all, state siting programs do not indicate environmental equity as a priority. Moreover, where states list important siting criteria, considerations of race, ethnicity, income, and history and trends of past siting practices are absent.

Most every state siting statute and program begins with a statement of legislative intent or purpose, generally indicating concern for the environment, public health and safety, and reduction of hazardous waste. For example, Colorado's legislative declaration in the State Hazardous Waste Siting Act indicates that because

"adverse public health and environmental impacts can result from the improper land disposal of hazardous waste and that the need for establishing safe sites with adequate capacity for the disposal of hazardous waste is a matter of state-wide concern, ... it is the intent of the general assembly that generators of hazardous waste be encouraged to use on-site and off-site alternative treatment methods to reduce the amount of hazardous waste that must be discharged into the environment and the associated hazards to the health and welfare of the citizens of the state."\textsuperscript{187}

Similarly, the purpose of Indiana's siting program is to "[p]rovide for effective public participation in the siting process ..., [to] ensure that impacts of hazardous waste facilities ... on communities are addressed and weighed against the public

\textsuperscript{186}Id. at 277-78.
\textsuperscript{187}IND. CODE ANN. §13-7-8.6-1(1)-(3) (Burns 1990 & Supp. 1993).
need for such a facility in the state ..., and [to] encourage ... alternatives to
permanent entombment of hazardous waste [and reduction] of the volume or
degree of hazard of those wastes ...."188 Connecticut's policy is to "assure the
siting of hazardous waste disposal facilities so that the health and safety of
Connecticut's citizens and the environmental and economic interests of the state
are protected. The purpose ... is to establish a process for the siting of hazardous
waste facilities that will protect the health and safety of Connecticut citizens and
assure responsible economic development ...."189 As these examples illustrate,
cconcerns for environmental equity, at most, may be inferred from general
statements about the importance of health and economic considerations. But
without a direct statement demonstrating a commitment to equity in the
distribution of environmental risks, any progress toward that end would be
coincidental.

In addition to intent and purpose, siting criteria are silent about
environmental equity.189a Most state siting schemes mention risk of accident
during transport of hazardous waste; impact on the community where the
proposed facility is to be located in terms of health, safety, cost, and consistency
with local planning and development; impact on natural environment; and the
impact on the scenic, historical, cultural, and recreational value of the site.190 The
statutes, however, make no mention of the minority composition of potential
host communities or the historic placement of facilities in these communities.191

188 Id.
189 CONN. GEN. STAT. ANN. §22a-114 (West 1985).
189a Although some state statutes may have been enacted before the GAO Report and
Commission Report were published, others were created when information about disparities in
the location of hazardous waste facilities were known. For example, the Mississippi Hazardous
Waste Facility Siting Act of 1990 was ratified after both studies were available. Yet, the Act's
legislative intent and site criteria do not mention race, income, or equal distribution of
191 Some state statutes indicate that no more than one facility may be sited in a county. E.g.,
Consideration of factors other than those typically listed in state siting schemes most likely would have to come about through the initiative of public participants in the siting process. Not listing socio-economic factors, race and ethnicity, and historic placement of facilities only increases the chance that such factors will *not* be part of the siting equation.

Insofar as disproportionate number of hazardous waste facilities are sited in minority and poor communities, many commentators have made proposals to advance environmental equity. Section V will discuss some of these.
V. SOLUTIONS PROPOSED BY COMMENTATORS

Proposed solutions fall roughly into one of five categories. The first category is to challenge siting decisions in federal and state courts based on legal theories such as common law and equal protection. The next category is to address the issue legislatively. The third category is to organize at the grass-roots level and make siting facilities in minority communities politically impossible, or to encourage local participation to make the siting process fair. Another category is to resolve the problem in a comprehensive manner using the first three methods and others simultaneously. The last category is to distribute hazardous waste facilities equally across geographic areas.

Part V outlines proposals made by various commentators that fall into each of these categories. It then provides a critique of proposals. The proposals are reviewed only to show the range of solutions proposed and their weaknesses and to provide context for a siting model presented in Part VI.

A. Challenging Siting Decisions in the Courts

A community that believes it was targeted to host a hazardous waste facility because of the minority composition of its residents may have a cause of action pursuant to the Equal Protection Clause of the Fourteenth Amendment. Under federal equal protection doctrine, a plaintiff must show that a state actor behaved with a motivation to discriminate. The burden of

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192 The Fourteenth Amendment states that "[n]o state shall ... deny to any person within its jurisdiction the equal protection of the laws."

193 In the context of the siting of a hazardous waste facility, the standards by which a court would weigh an equal protection challenge were enunciated by the Supreme Court in Arlington Heights v. Metropolitan Housing Corporation, 429 U.S. 252 (1977). In Arlington Heights, the plaintiff sued the town of Arlington Heights for refusing to rezone property from single family to multifamily use. Id. at 254. A non-profit developer wanted to build low income housing, which would have attracted underrepresented persons, in a predominantly White neighborhood. In an opinion written by Justice Powell, the Court held that, although the ultimate effect of the town's decision not to rezone the property would prove more harmful to
establishing intent is extremely difficult to do because federal equal protection jurisprudence requires a degree of proof beyond what is realistically attainable by most plaintiffs, especially those alleging discrimination in the siting of a hazardous waste facility. For this reason, Naikang Tsao has argued that state law is perhaps a more promising avenue. Statutory law, common law, and constitutional law, three possible sources of state judicial relief, are discussed below.

According to Tsao, the first source of possible state judicial relief is statutory law. Because state statutes codifying siting procedures contain many provisions, particular provisions may have been deliberately or accidentally overlooked by developers attempting to site a facility in a minority community. For example, most siting statutes require that developers apply for permits from various state regulatory agencies and conduct environmental impact studies to determine potential environmental, social, and economic effects of the proposed project. Litigants challenging the siting decision could attempt

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195 Tsao, supra note 6, at 379-405. Tsao was a law student at New York University at the time the article was written.

196 See id. at 380.
to show that the statutory language was disregarded, or that there were flaws in the review of the potential impacts of the project. If successful, the state judiciary may block or delay the siting of the facility.

The second possible source of state judicial relief is state common law. Common law is the body of principles and rules of action deriving authority solely from custom and usage across time, or from the decisions and opinions of the courts "recognizing, affirming and enforcing such usages and customs." In particular, siting practices may be challenged under two common law theories.

The first theory is anticipatory nuisance. In general, a "nuisance comprehends interference with an owner's reasonable use and enjoyment of his property by means of smoke, odors, noise, or vibration, ...." A nuisance claim may be brought against a developer even if the project conforms with zoning laws or has a permit to operate. In one example, a group of residents attempted to enjoin the siting of a proposed hazardous waste facility on the defendant's property. The plaintiffs provided expert testimony about the

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197 To show that a state agency disregarded statutory language in granting a developer a permit to build a facility, a plaintiff could argue that the community is already overly burdened with such facilities. Id. at 381. By showing statistically the disproportionate number of facilities in the community, the commentator argues that it may be possible for the litigants to prove that an increase in such facilities would constitute a nuisance. In some states, statutes do not allow the siting of a facility if it would constitute a nuisance. Id. at 382. Thus, this commentator argues, a failure to follow statutory law in this respect could stop the proposed project.

198 Id. at 381. If a litigant were successful in showing that the environmental impact study was inadequate, a developer would be forced to redo the study.


200 Tsao, supra note 6, at 383.

201 BLACK'S LAW DICTIONARY, supra note 199, at 961. Nuisances fall into one of three categories. A public nuisance affects an indefinite number of persons within a particular locality, even though the annoyance may affect individuals unequally. A private nuisance is "an invasion of a person's interest in the private use and enjoyment of land by any type of liability forming conduct." Id. A mixed nuisance may at the same time be both a private and public nuisance. Id.

202 Tsao, supra note 6, at 385 (citing Ronald J. Rychlak, Common-Law Remedies for Environmental Wrongs: The Role of Private Nuisance, 59 MISS. L.J. 657, 662 (1989)).

203 Id. at 387 (discussing Salter v. B.W.S. Corp., 290 So. 2d 821 (La. 1974)).
possibility that buried chemicals could contaminate drinking wells in the area. The defendant's expert witnesses countered that the site could be managed safely. Although the court indicated that an injunction is proper only when "the proposed operations will occasion irreparable injury" the court issued a qualified injunction because "the consequences of failure to exercise great care to prevent the escape of poisonous materials are so serious...."204 Tsao concludes that "anticipatory nuisance is a promising approach because the legal theory on which it rests evolved to address resident's health and safety concerns, and to protect property from devaluation and irreparable harm."205

The second common law theory is the duty to serve doctrine. The duty to serve doctrine posits that where "a state's decision to allow a monopoly (the right to operate a ferry, bakery or grain mill, for example) was a privilege bestowed upon the private party receiving monopoly rights," the party is required by the courts "to provide 'full use (access for all)' and an 'absence of abuse (rendition of a service of reasonable quality and price)' to the community."206 Various state courts have extended this doctrine to include private utilities serving the public.207 Tsao, however, indicates that the duty to serve doctrine, at best, "has strong implications for a party seeking to challenge the siting of a hazardous waste facility."208 The concept, the commentator argues, perhaps could apply to the distribution of risks, as in the siting of hazardous waste facilities. Under this theory, a plaintiff would argue that their community was not afforded equal treatment as that of other more affluent or

204 ld. (citing 290 So. 2d 824-325).
205 ld.
207 ld. at 389.
208 ld. at 390 (emphasis added).
White communities in the distribution of public burdens, such as hazardous waste facilities. The appeal of this common law theory is that it avoids the use of federal constitutional law and, therefore, does not required proof of discriminatory intent.

State constitutions may provide another source of judicial relief. In general, there are two state constitutional law theories. The first is a claim based on a state's constitutional equality clause, if it exists, that has been interpreted more broadly than the federal equal protection doctrine.209 Although most state constitutions do not contain an equal protection clause like that of the U.S. Constitution, many do have language that calls for equality of treatment.210 Because judges in some states are elected, they may be highly susceptible to the will of voters and other elected officials.211 As such, Tsao argues that some state court systems have been more flexible in expanding the boundaries of equal protection jurisprudence than the federal court system. In short, where a litigant may be unsuccessful with a claim premised on the Fourteenth Amendment, the same claim may win in a state court on a theory based on state equal protection.

The second state constitutional law theory is a cause of action based on a particular provision of a state constitution, which address environmental protection, exclusionary zoning, health, poverty or any other germane category.212 For example, plaintiffs could argue that a siting proposal is inconsistent with a state's constitutional proviso providing for environmental protection. Similar arguments could be made based on other constitutional provisions.213

209 Id. at 398.
210 Id. at 396.
211 See id. at 395-96.
212 Id. at 398.
213 For a full discussion of this theory see id. at 399-401.
B. Legislative Approaches

Legislation addressing the distribution of environmental risks is currently under consideration in both the United States Senate and House of Representatives. The bill, introduced to the Senate by Democratic Senator Max Bakus of Montana and known as the Environmental Justice Act of 1993 (Bill), is intended to create and maintain information "which provides an objective basis for assessment of health effects by income and race"; to identify areas of the country with the largest releases of toxic chemicals into the environment; to determine the effects possibly caused by emissions in areas of highest environmental impact; to make certain that groups or persons living in "Environmental High Impact Areas" (EHIA) have both the opportunity and resources to partake in the procedures "which will determine the possible existence of adverse health impacts"; to "identify those activities in [EHIAs] found to have significant adverse impacts on human health"; and " to incorporate environmental equity considerations into planning and implementation of all Federal environmental programs and statutes."214

The Bill uses the terms "toxic chemicals" and "toxic chemical facility" in a broad manner, encompassing the definitions of all major federal environmental laws.215 Limited to federal facilities,216 the Bill outlines in broad strokes a

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214S. 1161, 103d Cong., 1st Sess. § 3 (1)-(6) (1993). A comparison with the House version, H.R. 2105 § 3 (6), which states that a purpose of the Bill is "to ensure that significant adverse health impacts that may be associated with environmental pollution in the United States are not distributed inequitably." (emphasis added) shows that the House version offers a more direct call for equal distribution of environmental risks.

According to Paul Mohai, Associate Professor at the School of Natural Resources and Environment at the University of Michigan, there are about six bills in Congress advancing "environmental justice" or containing an environmental component. Moreover, several state legislatures also are proposing environmental justice bills. Paul Mohai, Overview: Environmental Equity 35 ENVIRONMENT 2, 2 (Sept. 1993).

program designed "to ensure nondiscriminatory compliance with environmental, health, and safety laws and to ensure equal protection of the public health."  

Section five of the Bill deals with the identification of environmental high impact areas and remedial and preventative measures. This section defines EHIAs as the top 100 counties ("or other appropriate geographic unit") with the highest toxic chemical releases (during the most recent five-year period). The list would be compiled by the Administrator of the Environmental Protection Agency (Administrator), with help from the Agency for Toxic Substances and Disease Registry, the National Institute for Environmental Health Sciences, the National Center for Health Statistics, and the Bureau of the Census. Moreover, the Bill calls for the Administrator to calculate and create a data base with information for each county or geographic unit, about categories such as the total weight of toxic chemicals released into the environment, the total weight of toxic materials released into the "air, water, land and workplace," and the total weight of each toxic chemical "released into the ambient environment and into each environmental media." The Administrator also would be required to "review the methodology used to compile and summarize information collected under ... the Emergency Planning and Community Right-
to-Know Act", and to put any proposed changes in methodology before the public for comment.\footnote{221\textit{S. 1161 § 5(C)(3).}} Once EHIA are determined, the Administrator and the Secretary of Labor could inspect hazardous waste facilities in these areas to ensure they are operating in compliance with all applicable environmental health and safety standards.\footnote{222\textit{S. 1161 § 5(d)(2)(A).}}

Additionally, the Secretary of Health and Human Services would issue a report identifying the nature and degree of "acute and chronic" effects on human health in EHIA\textsuperscript{s} from exposure to toxic chemicals. The effects to which this provision refers include incidence of cancer, birth defects, infant mortality rates, and respiratory diseases. The report would contain comparisons of health impacts in EHIA\textsuperscript{s} with other counties in the United States, and would be used to isolate the impacts of environmental pollution; to separate the effects of other factors such as health care availability or substance abuse; to rank the relative risks caused by the different sources of toxic chemicals "both individually and cumulatively"; to "take into account the need to remedy the impacts of such toxic chemicals in high population density areas"; to determine the level below which releases of toxic chemicals must be reduced to avoid detrimental impacts on human health; and to evaluate the impacts of keeping toxic chemical release at present levels.\footnote{223\textit{S. 1161 § 5(d)(3)(A)-(F).}}

The Bill establishes that, if the report determines there are "significant adverse impacts" from exposure to toxic chemicals on human health in EHIA\textsuperscript{\textdagger}, the President of the United States would make proposals to Congress for administrative and legislative changes to rectify and prevent the adverse impacts. The recommendations may include adding facilities or chemicals to the
reporting requirements of the Emergency Planning and Community Right-to-
Know Act of 1986, or reducing threshold quantities of chemicals that precipitates
reporting requirements under the Right-to-Know Act; regulating toxic chemicals
not subject to federal law because of statutory or administrative exemption; and
imposing more regulatory standards for hazardous waste facilities in an EHIA,
such as emissions fees, source reduction requirements, or restrictions on toxic
chemical releases. 224

Section six of the Bill serves as an enforcement mechanism. If the report,
issued by the Secretary of Health and Human Services identifies significant
adverse impacts on human health from exposure to toxic chemicals in EHIA,
"the Administrator [of the EPA] shall promulgate regulations applicable to any
Federal permit" for the building or modifying of facilities in that area. These
regulations are to call for a net reduction in the release of any toxic chemicals
responsible for the "significant adverse impacts on human health in that area." 225

The House version of the Bill contains more direct measures to rectify
negative health impacts in EHIA than the Senate draft. The House bill indicates
that if there is a finding of "significant adverse impacts of environmental
pollution on human health in EHIA, there shall be a moratorium on the siting or
permitting of any new toxic chemical facility in any EHIA." 226 Only those
proposed facilities shown to release toxic chemicals in amounts found to cause
significant adverse impacts on human health are subject to the moratorium.

There are, however, provisions providing for exceptions to the
moratorium. A new toxic chemical facility may be sited if "the need for the
activity is shown to the Secretary [of the United States Department of Health and

224S. 1161 § 5(d)(4)(A)-(C).
225S. 1161 § 6.
version makes no mention of a moratorium.
The owner or operator of the facility, however, must demonstrate that the proposed facility would operate in accordance with a "plan" and "will maintain a comprehensive pollution prevention program." Additionally, the facility must establish "that it will minimize uncontrolled releases into the environment." Only if these three conditions are met will an exception to the moratorium be made. In any event, the moratorium would remain effective in the given EHIA "until the Administrator determines, upon petition of any interested party, that the health-based levels [of toxic chemicals are attained]."

Finally, both the Senate and the House versions of the proposed Bill provide for technical assistance grants. Generally, the Secretary of Health and Human Services may award a grant to any person or group possibly affected by a release or threatened release of a toxic chemical from any toxic chemical facility in an EHIA. The grants are intended to assist representatives of EHIA in becoming active public participants under the Bill and "other related laws." The grant also may be used to get technical assistance "relating to the inspection and review authorities ... and the study described [earlier in the Act]."

In summary, the proposed Bill affects facility siting tangentially. To the extent that regulations reduce net releases of toxic chemicals by influencing siting decisions, the Senate version probably would not have a direct effect. Although the House draft provides for a moratorium, the ban is subject to an exception. The proposed Bill has the greatest potential to effect environmental equity by observing, categorizing, and rectifying inequitable risk burdens in general.

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227 H.R. 2105 tit. IV § 403(1).
228 H.R. 2105 tit. IV § 403(2), (3).
229 S. 1161 § 7(a) through (b)(1)(A) and (B). Grants are subject to appropriations and limited to $50,000. Id. § 7(b)(1)(C).
Another piece of federal legislation also has been proposed to address environmental inequities; it seeks to overcome the nearly impossible task of proving a violation of the Equal Protection Clause of the Fourteenth Amendment. Rachel Godsil proposes a "federal equity mandate," modeled on Title VII. Essentially, the mandate would remove the burden of proving discriminatory purpose by establishing that a showing of disparate impact would be sufficient to prove a violation. Under disparate impact theory, the law would address the "consequences of site selection rather than the motivations."

Under the proposed federal equity mandate, two elements would constitute a cause of action: disparate impact and "environmental necessity." Under this model, plaintiffs would bear the initial burden of showing that the siting decision would impose a disparate burden on a minority community relative to white communities. Communities affected financially or physically by the sites would be considered the "relevant population affected." The object of the proposed legislation is to give minority communities a tool to keep their communities "from being overburdened by environmental hazards." Thus, showing disparate impact would require demonstrating the greater burden imposed by the facility on the minority community than on a white community because of the presence of other pollutants. Once impact is established, the defendant-state agency would have to show that the decision was an "environmental necessity." A showing that the site was environmentally suitable meets this burden. The plaintiff then would have to provide evidence revealing the availability of alternative sites. If the plaintiff demonstrates that alternative

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231Godsil, supra note 77, at 421-27. At the time this article was written, Godsil was a law student at University of Michigan Law School.
sites exist, the defendant would have to prove that the site chosen was necessary to dispose of toxic chemical waste in a safe manner. If the defendant is able to show environmental necessity, the facility would be sited in spite of the disparate impact.\textsuperscript{232}

Another proposal by Godsil addresses the rationale behind the Resource Conservation and Recovery Act. The proposal calls for Congress to amend its national policy declared in RCRA from reducing the generation of toxic chemical wastes to "the amelioration of the disparate burden of toxic chemical waste facilities on minority communities." Presently, the EPA approves only state programs created to protect health and the environment.\textsuperscript{233} The proposal, therefore, adds the further requirement that state programs be "designed to resolve the disproportionate effects of toxic chemical waste on minority communities."\textsuperscript{234}

Other recommendations by Godsil are directed toward state governments and state siting mechanisms. States are urged to "declare as an objective the eradication of race-based inequalities" in the distribution of the negative burdens of hazardous waste facilities. Toward this end, the site designation approach, coupled with the super review approach,\textsuperscript{235} the author argues, offers the best method to site facilities. Godsil explains that the site designation and super review approach would allow the relevant state agency (and not the developer) to appraise the existing distribution of hazardous waste facilities and ascertain whether minority communities are overly impacted. If minority communities

\textsuperscript{232}Godsil, \textit{supra} note 77, at 422-23.
\textsuperscript{233}Id. at 424 (citing 42 U.S.C. § 6902 (b) (1988) (authorizing state programs)).
\textsuperscript{234}Id.
\textsuperscript{235}See, \textit{supra}, Part IV.B.1 and 2 for a discussion of these approaches.
are particularly affected, race and socio-economics could be used as a criterion when generating a list of potential sites.\textsuperscript{236}

Under Godsil’s recommendation, the task for drawing a list of potential sites is relegated to a state agency pursuant to the super review approach, instead of allowing a developer to designate sites. In this manner, the proposal eliminates a frequent criticism that developers select sites on cost considerations. To further legitimate the proposed hybrid siting process, the author recommends the creation of a siting board responsible for facilitating communication and information between the state and potential host sites. The purpose of the board would be to minimize local opposition.

The state agency responsible for compiling a list of potential sites would take into consideration the site’s "environmental suitability, economic feasibility, impacts on local residents (including risks), detrimental effects on agriculture and natural resources, and whether the community is already host to noxious facilities or exposed to environmental hazards."\textsuperscript{237} If several sites meet the criteria, the board would scrutinize the racial and socio-economic characteristics of the potential sites. If minority communities contain a disproportionate number of facilities, the board would remove from the list of potential sites areas containing a majority minority population.\textsuperscript{238} Thus, the proposed process would address the issue of disproportionate placement of facilities in minority communities and environmental factors as well.

Whereas legal and legislative channels to environmental equity rely on the actions and initiative of professionals and politicians, grass-roots activism can instigate court action, lead to changes in the law, and produce fairer siting

\textsuperscript{236} Godsil, \textit{supra} note 77, at 425.
\textsuperscript{237} \textit{Id.} at 426.
\textsuperscript{238} \textit{Id.}
decisions. For this reason, several commentators believe that grass-root activism and local participation in siting processes is an effective measure against unfair distribution of hazardous waste facilities.

C. Grass-Roots Activism and Local Participation

The relatively high incidence of toxic facilities in minority communities, as documented by the Commission and the GAO Reports, does not violate applicable environmental laws. This contributes to concerns over environmental equity. Luke W. Cole, staff attorney for the California Rural Legal Assistance Foundation, argues that because the siting of such facilities is a "political process from which people of color have been historically excluded and in which people of color are grossly underrepresented today ... the outcome -- more facilities in people of color's communities -- is neither surprising nor unpredictable." As such, any reliance on the law to effect changes in the way hazardous waste facilities are distributed is bound to fail. Instead, "the real answer to environmental racism ... [is] grass-roots activism." 239

Cole argues that, for four reasons, the only way to achieve more equitable distribution of environmental risks is through political activism at the grass-roots level. First, Cole asserts, by challenging siting decisions perceived as discriminatory, grass-roots activists have compelled industries to change their approach to waste disposal, from controlling pollution to preventing pollution. Cole argues that with fewer waste disposal sites, the cost of disposal has risen to such an extent that manufacturing processes are changing to eliminate toxic waste products. "By forcing a permanent solution to toxic waste disposal

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239 Cole, supra note 13, at 1995-96. Another commentator maintains that, along with legislative acting, grass-roots involvement is necessary to "raise the political capital of minorities." Godsil, supra note 77, at 426. Although legislation potentially may proscribe environmental inequity, politicians may not subscribe to siting policies unpopular with influential constituents.
problems, grass roots activists have done what hundred of federal laws and regulations on pollution control have failed to do: they have reduced toxic waste.\textsuperscript{240} A reduction in waste corresponds to a reduction in the need to site new facilities.

Second, Cole argues that because the decision to site a facility is a "political and economic" one, a political mechanism is what is needed to change the decision, not a legal one. As Cole states, "legal tools are blunt and slow."\textsuperscript{241}

Third, Cole posits that challenging siting decisions in the courts "plays right into the polluter's hands." Polluters generally can afford to hire lawyers, scientists, and other professionals necessary to wage a formidable legal battle. Activists, on the other hand, most often do not have the necessary financial resources. Activists, however, do have "the power of people" in their favor. In effect, taking the dispute out of court and "into the streets" is a tactical advantage for grass-roots activists.\textsuperscript{242}

Finally, Cole argues that the failure of civil rights laws to fight racism is testimony to the inadequacy of these laws to address "environmental racism."\textsuperscript{243} Cole asserts that the change brought by the civil rights movement of the 1950s and 1960s through the "hundreds of thousands of activists taking to the streets across the country -- has been sapped away by increasingly conservative courts." Rather than trying to expand civil rights theories in unsympathetic courts, Cole insists that "[l]ike the civil rights activists of yesterday, we must return to the streets with our demands."\textsuperscript{244}

\textsuperscript{241} Id.
\textsuperscript{242} Id.
\textsuperscript{243} Id. 1996-97.
\textsuperscript{244} Id. 1997.
Whereas Cole sees grass-roots activism as a way to effect environmental equity by defeating siting proposals and encouraging industry to generate less waste, Lawrence S. Bacow, Professor of Law and Environmental Policy at the Massachusetts Institute of Technology's Department of Urban Studies and Planning, sees local participation as an important part of a fair siting process, not necessarily as a means to defeat siting proposals.

Professor Bacow implicates economic considerations for the selection of hazardous waste sites by facility developers. Because land and labor costs are most frequently lower in poor communities, both construction and operating expenses will probably be less in these areas as well. Moreover, "social costs", such as potential air and water contamination, possible risks to human health from exposure to dangerous chemicals or industrial accidents, noise and congestion resulting from increased traffic, and the "stigma" of living near an undesirable facility, are also probably less in poorer communities. Thus, Professor Bacow argues that efficiency in social and economic costs "will almost always favor locations in poor, disadvantaged neighborhoods."

Bacow explains that health and amenity are "normal goods" in that persons are likely to spend more to maintain their health and amenities as income and wealth increase. As such, the wealthy will spend more than the poor to preserve these normal goods. Bacow concludes that "[a]s long as the poor are driven by economic circumstances to accept less than the rich for compensation for a lost amenity and exposure to health risk, it will always be

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245 Lawrence S. Bacow, Waste and Fairness: No Easy Answers, FORUM FOR APPLIED RES. & PUB. POL'Y 43, 43 (Spring 1993). See also PLATER, supra note 99, at 41: "Corporations ... are resolutely driven by self-interest, responding to the equations of profit maximization with, understandably, no inherent charitable impulse to take on costs when not required to do so."

246 Bacow, supra note 245, at 43-44.

247 Id. at 44.
less expensive for developers and more efficient for society ... to site waste facilities in poor areas.”

As to considerations of fairness, however, Professor Bacow readily acknowledges the difficulties posed by the moral question of whether health or environmental amenities should be "rationed" by price. Similarly, Bacow recognizes an alternative explanation for the location of facilities: the "lack [of] legal means and political power to thwart construction" of these facilities in poor neighborhoods. Nevertheless, Professor Bacow argues that as long as the poor value social costs less than the rich, these facilities "will be drawn to poor areas.”

As an example, Bacow posed a hypothetical bid for a facility. Two communities -- one rich and the other poor -- bid for a proposed facility. A bid would represent the amount of compensation required in order for the community to accept the facility. The lower bidding community would retain the facility. In this scenario, the poor community would enter the lower bid because the wealthy community would not be as willing to exchange the loss of amenities and possible environmental dangers for economic compensation.

As Bacow points out, however, in reality a pure auction with fully informed participants does not exist. Instead, access to political power and legal resources are used as proxies for bids. Because poor communities lack the resources to garner political clout and legal assistance, they host the facility and are under-compensated as well.

Bacow posits that the most unfair aspect of the waste facility siting process "is that the poor have no choices, informed or otherwise.” Without legal or

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248 *Id.* at 45.
249 *Id.*
250 *Id.* at 46.
251 *See id.*
political resources, the poor cannot challenge a proposed facility; nor can they accurately determine the environmental risks because they do not have the technical sophistication. Moreover, Bacow states, even if they understand the risks, they would tend to accept any economic benefits accompanying the facility. Finally, the poor, unlike the rich, do not have the resources to move if the unwanted facility is ultimately sited in their community. Given that there will always be poor people, Bacow poses the issue as one of reforming the siting process so that the risks associated with facilities do not have a disproportionate impact on the poor.\footnote{252} He then critiques several possible reforms.

The first reform Professor Bacow discusses and criticizes is the de-emphasizing of economic considerations in selecting sites. This would address the problem of minimizing the social and economic costs imposed on the poor. Bacow finds this reform problematic, however. He argues that in de-emphasizing economic costs, facilities would be sited in higher social-cost locations.\footnote{253} Moreover, Professor Bacow argues that if economic considerations are minimized, it is unclear what criteria would be used instead. Basing siting criteria only on environmental concerns ignores the political influences inherent in siting regulations. The only way pure environmental criteria would work is if the entire siting process were removed from public scrutiny and judicial review.\footnote{254} This is highly unlikely.

Another possible reform is requiring each community to dispose of its own waste within its jurisdiction. From the perspective of economics and the environment, however, this reform is impractical. It is impractical because economies of scale exist in the waste disposal industry. That is, if every

\footnote{252}{\textit{id.}}
\footnote{253}{\textit{id.} at 47.}
\footnote{254}{\textit{id.}}
community were required to dispose of its own hazardous waste, disposal costs would increase to prohibitive levels. Moreover, not every community would have locations physically suitable to serve safely as a disposal site. Bacow also argues that this reform would produce the same environmental equity issues it was supposed to amend: the facilities would gravitate to poorer areas of a community.

In spite of his critical review of possible reforms, Professor Bacow concludes with some recommendations for improvement in siting processes. Bacow calls on "government" to make certain that poor communities are represented in the siting process. Specifically, poor communities should have access to technical and legal assistance. Where potential host communities lack these resources, "the siting process should provide them." Finally, Professor Bacow calls on government to try to ensure that all communities make "informed judgment[s] about potential waste-management facilit[ies]." If a community is willing to assume the risks associated with a facility, in exchange for compensation, then it should be entitled to host a facility.

Briefly, Professor Bacow's recommendations suggest that local participation is imperative to informed decision-making by communities. Only when a community is fully aware of its options can it commit itself to hosting a facility for compensation. The role of government is to insure that the process is conducive to informed local participation.

Like Professor Bacow, Kelly Michele Colquette and Elizabeth A. Henry Robertson, attorneys in Texas, argue that public participation is the key to fair siting of hazardous waste facilities. After presenting evidence showing what the

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255 See id.
256 Id.
257 Id. at 48.
authors call "environmental racism," the commentators discuss several approaches to combating such inequity in the courts. Ultimately, however, the authors concluded that the only solution is reforming the siting process itself. They find especially problematic the lack of notification of local residents by developers proposing to construct a facility.

The authors argue that the siting process "does not lend itself to agency flexibility once the application [for a new facility] reaches the public comment stage." The authors indicate that, in most states, local residents remain unaware of a developer's permit application until a draft permit is prepared for public comment. As the authors note, by the time the permit is open to public comment, the developer already has submitted a permit application and the agency already has prepared an initial draft permit, a fact sheet outlining the reasons for the draft permit, and an administrative record. The authors argue that, because of the long period of time between the initial application and public notice, developers have had a chance to promote their project. Hence, when the public finally is included in the dialogue, administrative decisions already have been made in favor of siting the facility at the location in question.

Arguing that public participation is essential from the initial stages of the siting process, the authors conclude that states should require public notice when developers present applications for a permit. The commentators note that:

[b]y allowing the residents to voice their concerns early in the process, residents will retain a sense of control over their future well-being. The residents no longer have to rely on a political process that involves the

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259 Id. at 206.
260 Id. at 205 (citing to National Primacy Drinking Water Regulations Implementation, 40 C.F.R. § 124.6-.9 (1989)).
bargaining of votes or an agency process that has little political accountability. Rather, the residents can advance their concerns and needs in a forum that is more likely to lead to change.261

In short, when residents are given the opportunity to participate meaningfully in the siting process, fair siting decisions allegedly result.

Lawrence Susskind, Professor Urban Studies and Environmental Planning at the Massachusetts Institute of Technology (MIT), and David Laws, a doctoral candidate in the Department of Urban Studies and Planning (at MIT as well), also emphasize the over-all importance of public participation in siting processes. They describe a number of guidelines, together known as the "Facility Siting Credo", for siting facilities. Most of the guidelines pertain to public participation, trust, and consensus building.262 Although the Credo was not created entirely out of concern for environmental equity, it does promote public participation which some commentators believe is essential for environmental equity.

Noting that public opposition to "regionally necessary but locally noxious facilities" has made siting them difficult, Laws and Susskind argue that "unless residents in potential 'host' communities are treated as knowledgeable individuals who can make an important contribution, and unless their concerns are treated as legitimate, most siting processes will fail."263 Accordingly, the guidelines center around improving public participation and enhancing the legitimacy of siting processes.

261Id. at 206.
262See Laws & Susskind, supra note 75, at 29. The following are the elements of the "Facility Siting Credo": 1) seek consensus; 2) work to develop trust; 3) set realistic timetables; 4) get agreement that the status quo is unacceptable; 5) choose the design that best addresses the problem; 6) guarantee that stringent safety standards will be met; 7) fully compensate all negative impacts of a facility; 8) use contingent agreements; 9) keep multiple options on the table at all times; 10) make the host community better off; 11) seek acceptable sites through a volunteer process; 12) consider a competitive siting process; 13) work for geographic fairness. 263Id. at 29.
One guideline is that siting processes should seek consensus by involving all groups who may be affected by a siting decision. By so doing, they argue, there would be fewer accusations of unfairness. They also indicate that siting procedures would work to develop trust. Specifically, they claim that any failure on the state’s part (or on part of the government entity or developer) to acknowledge uncertainty about benefits and risks associated with a proposed facility would lead to distrust, and possibly impede siting progress. Laws and Susskind also call for "geographic fairness", as discussed below.

D. Geographic Fairness

Another possible remedy to unequal distribution of hazardous waste facilities is "geographic fairness." The concept of geographic fairness holds that "[n]o single community or neighborhood should be the site for many noxious facilities."264

New York City recently adopted a set of criteria for geographic fairness, with the purpose of "furthering the fair distribution among communities of city facilities."265 The criteria, applicable to siting or expanding regional or city-wide facilities, include considering the distribution of similar facilities across the city. Similarly, criteria for transportation and waste management facilities call for considering "the number and proximity" of facilities so as to "avoid aggregate noise, odor, or air quality impacts on adjacent residential areas."266 These considerations would prevent the siting of many facilities in a given poor or minority community.

263a Id. at 36-37.
264 Id. at 39; see NEW YORK PLANNING COMMISSION, CRITERIA FOR THE LOCATION OF CITY FACILITIES art. 2(f) (purpose and goals) ("Lessen disparities among communities in the level of responsibility each bears for facilities serving city-wide or regional needs") [hereinafter NYC Criteria].
265 NYC Criteria art. 2.
266 Id. art. 6.42.
Although the proposals previously discussed fall into different categories, most of the commentators indicate that a multifaceted approach to address environmental inequities is necessary. Examples of a comprehensive approach include the recommendations provided by the Commission Report and EPA Equity Report.

E. Comprehensive Approach

After the Commission Report reaches its conclusions regarding race, income, and hazardous waste facilities, it provides a wide range of recommendations. The Commission Report directs these to federal, state, and municipal governments, churches, community organizations, and other public and private institutions.

The Commission Report specifically calls upon the President of the United States to issue an executive order instructing all executive branch agencies dealing with hazardous wastes to review the affects their policies and regulations have on minority communities, and to take these into account when creating new policies and promulgating new regulations. The Commission Report also recommends that the EPA promptly create an Office of Hazardous Wastes and Racial and Ethnic Affairs to address issues surrounding the high number of hazardous waste facilities found in minority communities. The recommendation further calls for the office to oversee the siting of new hazardous waste facilities to make certain that racial and socio-economic factors of possible host communities are considered. Finally, the Commission Report recommends that the United States Congress hold hearings to determine whether minority

\[267\text{Because the Commission Report included in these recommendations measures only tangentially related to the siting of commercial hazardous waste facilities, only those suggestions pertaining to the siting of such facilities will be discussed. Other recommendations will be mentioned in footnotes.}\]
communities are more vulnerable as potential hosts of hazardous waste facilities under existing environmental policies than their white counterparts.268

The Commission Report also provides recommendations for state governments. The report calls on state governments to examine their siting criteria to determine whether they play a role in making minority communities more vulnerable to hosting hazardous waste facilities. The report indicates that states should take into account the racial and socio-economic characteristics of potential host communities when siting facilities.269

The Commission Report makes several recommendations for municipal governments as well. The report calls for municipal governments to enact legislation protecting densely populated and other "high risk" residential areas from the siting of hazardous waste facilities.270

268 COMMISSION REPORT, supra note 56, at 24-25. The Commission Report also suggests that Congress hold hearings to ascertain the impact of hazardous wastes on the "health and well-being" of racial and ethnic communities. Id. at 25.

The Commission Report makes other recommendations for the federal government. The report calls for the establishment of a National Advisory council on Racial and Ethnic Concerns, comprised of representatives from Black American, Hispanic American, Asian American, Pacific Islander and American Indian communities. The council would provide the EPA with advice on environmental issues and assist in disseminating information to racial and ethnic communities across the United States. The report suggests that the Administrator of the Agency for Toxic Substance and Disease Registry conduct health assessments of Superfund sites, regardless of whether they are on the National Priorities List. The Commission Report calls upon the EPA to sponsor a national conference to inform racial and ethnic groups of its activities to protect communities from hazardous wastes exposure. The Report suggests that the Department of Health and Human Services conduct epidemiological studies to see if hazardous wastes are contributing to health problems in racial and ethnic communities. The report recommends that the U.S. Congress enact legislation mandating a report from the Departments of health and Human Services, Department of Transportation, the Agency for Toxic Substances and Disease Registry, and the EPA outlining their activities to protect communities from the effects of hazardous wastes. Id. at 24-25.

269 Id. at 25. There are other recommendations for state governments. The Commission Report suggests that states review their environmental policies to determine if racial and ethnic communities are being protected from hazardous wastes. The report also recommends that state governments determine the negative impact hazardous waste facilities had on the economic development of racial and ethnic communities. Finally, the report suggests that state health agencies instigate epidemiological studies of racial and ethnic communities with many active hazardous waste facilities and uncontrolled sites. Id. at 25.

270 Id. at 26. The report provides other recommendations for municipal governments. For example, the Commission Report calls on municipal governments to create and finance task forces comprised of representatives of racial and ethnic communities to address issues arising from hazardous waste sites in their communities. The report recommends that municipal
Finally, the Commission Report provides recommendations for churches and community organizations and other institutions and corporations. The report urges local congregations, community organizations, and residents to "thoroughly investigate existing toxic chemical waste sites in their communities" and to seek advice on possible problems created by hazardous wastes from environmental agencies, organizations and experts. The report calls on corporations that may operate off-site hazardous waste treatment, storage, and disposal facilities to review and amend siting policies to ensure that they do not "reflect a bias" for siting facilities in minority communities.271

Like the Commission Report, the EPA Equity Report provides several recommendations to promote environmental equity. The Equity Report also indicates that both public and private groups and institutions should share the governments urge the EPA to amend criteria used to designate hazardous waste sites on the National Priorities List to make certain that sites in racial and ethnic communities are sufficiently included for priority cleanup. Finally, the report recommends that the U.S. Conference of Mayors, the National Conference of Black Mayors, and the National League of Cities hold a national conference to address the high incidence of hazardous waste sites in racial and ethnic communities. COMMISSION REPORT at 26.

271 Id. at 26-27. The Commission Report has several other recommendations for community groups and academic institutions. The report calls on churches to sponsor "teach-ins" in racial and ethnic communities with the purpose of educating citizens on how to organize and confront hazardous wastes issues. The report suggests that civil rights and political organizations should conduct voter registration drives to "empower" racial and ethnic communities to address hazardous waste and environmental issues and to place these concerns high on state and national legislative agendas. The report also recommends that racial and ethnic residents and organizations instigate legal actions to bring the issues surrounding hazardous wastes in their communities before the courts and federal and state agencies. Similarly, the report recommends that community organizations establish legal assistance programs to assist racial and ethnic communities and individuals seek compensation for injuries believed to be caused by exposure to hazardous wastes and environmental pollutants. Id. at 26-27.

Moreover, the Commission Report makes several notable recommendations for research institutions and universities. The report calls on researchers to initiate the gathering of data and demographic research to determine whether the Commission Report findings were consistent with other environmental pollutants in racial and ethnic communities. The report calls on universities to assist racial and ethnic students look for training in fields related to environmental protection, including the establishment of a scholarship program to assist in the process. Finally, the report calls on universities to develop an "environmental sociology" curricula for the study of racial and socio-economic patterns related to environmental pollution. Id. at 27.
responsibility of distributing environmental risks in a more equitable manner. The Report provides eight broad suggestions, of which six will be discussed.\textsuperscript{272}

The first recommendation is for the EPA to make environmental equity a priority. Specifically, the Report calls on the Agency managers and staff to make themselves "aware of the issues and tools to identify and address inequities in risk." The Report indicates that an increase in resources dedicated to environmental equity would encourage the EPA staff and other private organizations to follow the Equity Report's recommendations. Toward this end, the Report suggests that top agency managers make clear statements to EPA staff about the Agency's concern for environmental equity. Similarly, Agency managers could inform outside groups that environmental equity should be given greater importance.\textsuperscript{273}

The Equity Report secondly recommends the establishment of an information base on income, race, and assessment of risks. The Report claims that more data are needed to create more objective ways to distribute environmental risks.\textsuperscript{274} Time and again, the Report itself qualified many of its findings because of the lack of information.\textsuperscript{275}

The Report provided some specific examples of how the EPA could establish the information base. Records on environmental exposures and health effects could acknowledge and deliberate race, ethnicity, and socioeconomic status "in study design and implementation." Also, essential attributes such as race, ethnicity, and class could be distinguished with the purpose of diminishing

\textsuperscript{272}The remaining two will be discussed in footnotes.
\textsuperscript{273}EPA EQUITY REPORT, supra note 13, at 25-26.
\textsuperscript{274}Id. at 26.
\textsuperscript{275}See, e.g., id. at 12-13 (discussing differences of disease and death rates between the races: 'There are also limited data to explain environmental contributions to these differences.' Id. at 17-18 (discussing environmental and health data are not collected and analyzed where health risks are posed by environmental burdens).
disproportionate impact. The EPA also could create an extensive "research plan" for gathering data and establishing new risk assessment procedures. Finally, the Report suggests that the EPA could make demographic information and support services available to all Agency offices.\textsuperscript{276}

The next recommendation produced by the Equity Report is for the EPA to integrate recognition of environmental equity into the risk assessment processes. The Report noted that the EPA should rework its assessment methods to make certain there is "better characterization of risk across populations, communities or geographic areas." The Report, however, indicates that because information on race and income is not "necessary or appropriate" for all risk assessments, the EPA should decide in what instances demographic information should be considered in risk assessments.\textsuperscript{277} Nonetheless, the Report notes that:

\begin{quote}
[while] [s]ome might observe that risk calculations are race and income neutral and that risk assessments should only include information on pollutants ... the Workgroup has concluded that in studying aggregate risks, high risk populations in some cases have been overlooked. By collecting information on race and income, the EPA can gain a more accurate picture of risks to all population groups.\textsuperscript{278}
\end{quote}

In particular, the Report indicates that the EPA could incorporate environmental equity in risk assessments by following several measures. First, the Agency could specify that quantitative risk assessments contain allocation of environmental burdens across different categories of exposed populations, using census data on age, gender, income level, and race. The EPA also could concentrate on reforming existing methods and developing newer ones for

\begin{flushleft}
\textsuperscript{276}Id. at 26.
\textsuperscript{277}Id. at 26.
\textsuperscript{278}Id. at 27.
\end{flushleft}
assessing risk from various chemicals and different sources "within and across environmental media." Thus, the Report suggests that the Agency could formulate the "Maximally Exposed Community Concept", including "cumulative exposures; multiple exposures; increased susceptibility, [and] the effects of multiple/different pathways of exposure." The EPA, "where feasible and appropriate," could identify and describe the population living in areas with environmental risk exposures. Finally, the Report suggests that national, regional, and state comparative risk studies could be extended to include aggregate data on individual population groups.279

Another recommendation is for the Agency to locate and target ways to lower high concentrations of risks on particular population groups. For example, the Report mentions that the EPA could enhance its enforcement prioritization methods to target high risk populations such that enforcement efforts would be focused on the most exposed and vulnerable groups. The EPA also could carry out "show-case urban projects" where the Agency would concentrate on "marshalling targeted prevention, remediation, education and outreach" mechanisms on minority and low income communities.280

The next recommendation is for the EPA to look over and modify its permit, grant, monitoring and enforcement schemes "to address high

279 Id. Other recommendations on how the EPA could incorporate environmental equity considerations into the risk assessment process include: continue development and refinement of data on exposure factors, especially where exposure factors affect population groups; and studying ways to assess environmental risks to native Americans. Id.

280 Id. at 28. The Report also suggests that the EPA could instigate "targeted geographic initiatives" in areas where many are exposed to various pollutants. These possible target areas include: the Mississippi River between Baton rouge, Louisiana, and New Orleans; the Mexico-U.S. border; New York City, New York; and East Los Angeles, California. Id.

The Report further recommends that the EPA should determine and weigh the allocation of anticipated risk decreases in major rulemakings and Agency actions "where appropriate." Costs and benefits analysis should include a population distribution analysis. For instance, the EPA "could conduct 3 to 4 pilot environmental equity analysis based on a set of prospective major rules for which such an analysis is feasible and will not unduly delay the rule." Id. Also, the Agency could create risk management guidelines requiring recognition and assessment of environmental equity when making regulatory decisions. Id.
concentrations of risk” in minority and poor communities. The Report notes that because state and local governments wield most of the authority over many environmental programs, the Agency should underscore its concerns about environmental equity. Nevertheless, the Report recognizes the potential pitfalls of taking environmental equity to its extreme:

In certain cases, these economic effects [such as increased costs of goods and services, and job loss, plant re-locations and plant closures resulting from environmental regulatory actions,] to selected communities may exceed the benefit of environmental controls, even though the environmental control renders net benefits the population as a whole.

For this reason the Report provides several specific suggestions that attempt to balance the need for environmental equity against costs imposed on account of environmentally equitable decisions.

First, the Report suggests that the EPA could include language in permit, grant and enforcement guidelines placing high importance on risk populations. Secondly, the Agency could also require its headquarters and regional offices to review their activities and submit to the Administrator of the EPA a plan of how they will achieve equity goals. These environmental equity goals also could be part of the strategic planning and budget process. Third, the EPA could examine the possibility of requiring a determination of cumulative impacts and risks associated with new or growing RCRA facilities. Fourth, the Agency could examine the execution of the Clean Air Act of 1990 to make certain that the adjustable provisions in the Bill do not increase pollution in poor or minority areas. Fifth, the EPA could determine the projected inequities produced by increased transportation user fees (provided by the Clean Air Act of 1990) and

\[281\text{Id.}
\[282\text{Id. at 29.} \]
seek solutions that would both diminish the likely inequities and attain the goal of traffic reduction. 283

The final recommendation the Equity Report provides is for the EPA to extend and enhance the "level and forms" it uses to communicate with minority and poor communities, and to multiply efforts to engage these groups in environmental policy-making. Toward this end, the Report provides seven suggestions.

The first suggestion is for the Agency to look for new ways to assist minority and low income communities in retaining technical support in order to comprehend and partake in decisions about environmental issues at the local level. 284 The EPA also could help fund university-based groups conducting research and education activities related to environmental equity. Third, the Agency could enhance the distribution of environmental education literature and other communications for minority and poor communities. Fourth, each EPA regional office could create "two-way communication programs." 285 Fifth, the Report suggests that the EPA provide guidance for its staff in communicating with racial, ethnic, and poor communities. Sixth, the EPA could appoint "outreach representatives" for racial, ethnic, and poor communities in each of its regional offices.

283 Id.
284 Id. at 30.
285 Id. at 30. An example of such a communication program is Region I's Urban Environmental Initiative and Region III's Outreach program in ethnic communities. The Urban Environmental Initiative is an endeavor to create a two-way communication strategy. The goal of this project is to establish an "environmental agenda" for the Boston area "which includes the concerns of racial minority communities" EPA EQUITY REPORT, supra note 77, at 54.

The Outreach Program (listed as the "Multi-Cultural Participation in the Chesapeake Bay Program" in the Equity Report) is an attempt to "broaden public participation and involvement in the restoration of the [Chesapeake] Bay." The program focuses on creating public information materials and education programs with a broad appeal and which promote public participation. Id. at 57.
offices. Finally, the EPA could provide its published materials in languages other than English.\textsuperscript{286}

Although various commentators have proposed ways to distribute environmental risks more equitably across race and income groups, they provide few details as to how this may be accomplished. There are other weaknesses as well, which are discussed below.

F. \textit{Critique}

1. Challenging Siting Decisions in the Courts

Effecting environmental equity through litigation is inefficient and unpredictable: it removes decision-making from professionals, such as land use planners, technicians, and public officials, and places it in the hands of jury members who generally are inexperienced in the siting of facilities. Jurists are forced to second-guess siting decisions and speculate motivations of state actors, especially in equal protection cases.\textsuperscript{287} Court costs alone can consume tremendous amounts of financial resources, as well as time.\textsuperscript{288} Even if a case is

\footnotesize{\textsuperscript{286}EPA EQUITY REPORT, supra note 13, at 30. The eighth broad recommendation is for the EPA to institute mechanisms to guarantee that environmental equity concerns become part of the Agency's long-term planning and operations. \textit{Id.} Some specific measures to promote this suggestion include incorporating environmental equity in strategic planning and budgeting processes. The EPA also could create a policy statement on "environmental discrimination," and could start an external "Environmental Equity Advisory Committee." Furthermore, the EPA could maintain the Equity Workgroup, complete with a staff and resources needed to execute the recommendations of the Equity Report. Finally, the EPA could allow the workgroup to carry out a complete analysis of each recommendation to determine its impact and to confirm viable goals and deadlines. \textit{Id.} at 30-31.


\textsuperscript{288}Forcing changes in the siting process through legal action would proceed in a piecemeal fashion. Because legal challenges usually occur on a site-by-site basis, it would take the efforts of many litigants across different states to have an impact on a national scale. State courts have jurisdiction over only courts within each respective state. For example, a state court decision in Texas would have an impact in the courts of surrounding states only to the extent of its persuasiveness. States are not compelled to follow legal precedents of other states.}
resolved at trial, the decision can always be appealed by either party and reversed in appellate court. The delay created by legal action compounds costs already incurred during pre-litigation activities, such as the preliminary siting procedures, environmental impacts studies, and perhaps the purchasing of real estate. The unpredictable demise of a project because of litigation has repercussions on third party beneficiaries who were expecting a facility. These third parties include industries relying on the disposal facility, construction firms and related businesses, local businesses, and state or local governments that anticipated property tax revenues.

In addition to the inefficiency of litigation is the added uncertainty of success for the plaintiff who seeks to challenge a proposed site. The theories of law on which a case is based, such as nuisance, may not be fruitful court. Obtaining an injunction under a nuisance theory, for example, would require the plaintiff to establish that a tort had been committed, that no adequate remedy at law is available, and that "the balance of social equities favors granting an injunction." Unless the state in which the cause of action is brought recognizes the anticipatory nuisance doctrine (which allows a cause of action premised on the chance of harm), the plaintiff would not be able to show a tort in fact because the facility would not yet exist.

Although the courts offer a forum for addressing compelling social problems, such as the equal distribution of hazardous waste facilities, they do so with high financial costs and great risks. Nevertheless, the benefits of challenging siting decisions in court include raising public awareness of discreet social problems, and, in some instances, establishing legal precedents for future

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289 The doctrine to serve theory, though compelling, only "has strong implications for a party seeking to challenge the siting of a hazardous waste facility." Tsao, supra note 6, at 390 (emphasis added). It is unclear if the doctrine would withstand a test in court.
290 Id. at 384 (citing Olsen v. City of Baton Rouge, 247 So. 2d 889, 894 (La. Ct. Ap. 1971)).
plaintiffs. A court of law is both a convenient and proper forum where citizens can seek equal protection of federal, state, and local laws. Still, the use of the judiciary to promote environmental equity is inefficient, because of case-by-case resolution of problems, and not very effective in supporting equal protection claims.291

2. Legislative Approaches

The proposed Environmental Justice Act of 1993292 and the federal equity mandate293 are notable models for legislation concerning environmental equity. Each proposes to address environmental equity at the federal level by making equal distribution of environmental risks a national priority and objective. The proposals, however, have several weaknesses.

The proposed Bill's strength also is its main drawback: it is broad enough to cover most every aspect of the distribution of environmental risks, but provides few details as to how its policies are to be implemented. The Bill provides for the collection of information with respect to race, income, and toxic chemicals, for the purpose of determining the effects of chemical releases on human health and the demographics of high environmental impact areas. Without such information, the current limited body of data on race, income, and environmental risks will continue to impede progress toward environmental equity.

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292 See supra notes 214-29 and accompanying text.
293 Supra notes 230-32 and accompanying text.
The Bill also is ambitious in its proposal to engage many federal agencies in the effort to distribute environmental risks more equally. In addition to agencies dealing directly with environmental issues, such as the EPA, the Agency for Toxic Substances and Disease Registry, the National Institute for Environmental Health Sciences, and National Center for Health Statistics, the Bill also speaks of the Bureau of the Census, the Secretary of Health and Human Services, the Secretary of Labor, the Bureau of Indian Affairs, the United States Commission on Civil Rights, as well as the U.S. President and Congress. By engaging this diverse group of agencies, institutions, and public servants, the Bill recognizes the complex nature of environmental equity. It is significant that the Commission on Civil Rights is discussed in the same section as other more environmentally oriented institutions; this juxtaposition signals a movement towards from treating environmentalism as comparable to civil rights.

The Bill, however, fails to provide specific details as to how environmental risks are to be determined or distributed more equitably. Administrative and legislative remedial and preventative measures extend only to reductions or imposition of additional regulatory requirements and restrictions on chemical releases in environmental high impact areas.294

As to the siting of facilities, the Senate version only indicates that regulations "requiring a net reduction in the release of any toxic chemical determined to cause such significant adverse impacts on human health in that area" be applicable "to any Federal permit for construction or modification of a toxic chemical facility in that area."295 Exactly what is meant by "significant adverse impact on human health" and an "acute and chronic" effect on human health is never identified. Also, it remains unclear if regulations requiring a net

\[^{294}\text{See S. 1161 § 5(d)(4)(A)-(C) and § 6.}\]
\[^{295}\text{S. 1161 § 6.}\]
reduction of toxic chemicals include laws affecting siting decisions. Even if the intent is to influence the siting of hazardous waste facilities, the Bill offers no guidance to states containing EHIAs for siting facilities in a manner consistent with the Act's purposes. Above all, the Bill would affect only federal facilities, thereby excluding all private, municipal, and state projects.

By contrast, the proposed federal equity mandate takes the issue to court: the mandate would alleviate the difficult burden of showing intent in federal equal protection suits. In so doing, plaintiffs alleging discrimination in the siting process perhaps would achieve higher success rates in litigation. The probable outcome, however, would be an increase in legal challenges of siting decisions. Although legal victories may serve to discourage the siting of facilities in minority communities, the siting decisions would be based on concerns for litigation rather than other more objective criteria such as soil permeability and transportation routes. Also, as discussed earlier, relying on the courts for remedies is inefficient and unpredictable.

Amending the national policy enunciated in RCRA to include a call for environmental equity has potential to promote environmental equity. This recommendation can have an impact on how the federal government prioritizes its environmental agenda. For example, in addition to protecting health and environment, a change in policy could translate to more attention to how certain populations are affected by toxic chemicals and hazardous waste facilities. This would represent a step toward understanding how environmental burdens impact all categories of persons.

The recommendation for states to make environmental equity a priority would also be a positive step toward more equitable distribution of

\(^{296}\text{See supra notes 233-34 and accompanying text for discussion of this proposal.}\)
environmental risks. Using the super review and site designation approaches in tandem is realistic because states already have working models of both siting strategies. The recommendation, however, does not describe how states would go about making environmental equity a priority. Implementation would be a matter of consolidating and codifying the two approaches. The next step, therefore, would be to draft a model siting statute taking these suggestions into account.

3. Grass-Roots Activism and Local Participation

The recommendation that the unequal distribution of environmental risks should be challenged by grass-roots activism and local participation is effective only to the extent that community members are willing and able to cooperate. Otherwise, the silence of a contingency may convey a false message that it is willing to assume greater environmental burdens. Unequal distribution of environmental risks because the facilities would gravitate toward easier siting targets.

An increase in local participation in the siting process may not necessarily result in "fairer" siting decisions. The perception of "fairness" may be enhanced simply because there was input from the host community. What remains unclear, however, is if the initial selection of the potential host community represents a decision based on environmental equity. Arguably, minority communities could participate more in the setting of siting policies, design of state programs, and negotiations over compensation. Additionally, the effectiveness of the participation could be improved by government-funded help from legal and technical experts. These approaches, however, do not address the issue of whether the community already is subject to hazardous waste facilities (or other environmentally risky facilities), or if there are other more equitable
siting options. Local participation perhaps only contributes to fairer compensation packages, not overall siting decisions.

Even if potential host communities were notified of the prospect of hosting a toxic chemical waste facility at the beginning of the permitting process, the final siting decision may not be environmentally fair. Early notification would give vocal communities a head start in building local opposition, and would not address the concern that other less vocal communities would emerge as more viable targets. Thus, a siting decision may be based more on whatever community raised an obstacle to siting a facility, rather than concerns for environmental equity. The net result probably would be a bid for which community could conjure the least local opposition. In the event that communities wanted the facility in exchange for a compensation package, the reverse bidding process could result in communities lowering their price in order to secure the facility. Thus, the chances for under-compensation would be greater.

4. Geographic Fairness

Although the goals of geographic fairness would produce equal distribution of hazardous waste facilities across all communities, it would not necessarily address environmental equity. Poor and minority communities still would be vulnerable even though no one community would host many facilities. For example, if a state were to site three different facilities pursuant to geographic fairness, three different hosts would get the facilities. But under the same approach, it is conceivable that all three different communities could be minority or poor areas. In this manner, the facilities still would be sited inequitably, with respect to race and income, in spite of being geographically fair.
Nevertheless, geographic fairness is a notable concept because it would promote a certain degree of equality in facility siting.

5. Comprehensive Approach

The comprehensive approach to distributing environmental risks more equitably, such as the wide range of suggestions provided in the Commission Report and EPA Equity Report, is appropriate in the sense that any move in the direction of environmental equity must involve many persons and institutions, both public and private. Although advocating environmental policies premised on the equal distribution of risks is a positive step, the mechanics on how such distribution is to be done are perhaps more challenging and problematic. Thus, it is not surprising that many of the suggestions of the Commission Report and the Equity Report are vague and sometimes unrealistic.

For example, the Commission's call for addressing issues related to the disproportionate number of hazardous waste facilities in minority and poor communities is ambiguous given the complex nature of siting processes. Also, the Commission's suggestion that health assessments of Superfund sites be taken is unrealistic given the fact that there are so many such sites. The resources that it would take to complete a project of such scale are probably not available.

The EPA Equity Report similarly is unclear and hesitant on some of its calls. For instance, the Report recommends studies to collect data on race, age, gender, and ethnicity "to the degree feasible". Also, the Report qualifies its charge for "projected risk assessment" by indicating that it should be done only "where appropriate" because, the Report claims, it "will not be necessary or
appropriate in all cases." Exactly what is considered "necessary" and "appropriate" is not clarified, however. 297

In summary, challenging siting decisions in court is inefficient and unpredictable. Legislative approaches, on the other hand, are more promising. The proposed Environmental Justice Act of 1993, although vague and perhaps unrealistic, does call for the gathering of data on the relationship between hazardous wastes, race, and income. It also holds the equal distribution of environmental risks partly as a civil rights issue. Amending the national policy enunciated in RCRA to reflect a concern for equal distribution of environmental risks across race and income can instigate changes throughout federal laws that may promote environmental equity. At the state legislative level, state siting statutes that site facilities pursuant to a hybrid of the site designation and super review models may be an effective way to site future facilities more equally across race and income groups. Similarly, grass-roots activism and improved local participation in siting processes are necessary for fairer and more legitimate siting results. Without input from local residents, views and concerns not otherwise factored into siting decisions will not be heard thereby intensifying local opposition and creating distrust of public officials, developers and the siting process itself. Finally, a comprehensive approach to furthering environmental equity is preferable, as most of the proposals discuss can contribute to eliminating disparities in the way hazardous waste facilities are sited and how associated risks are distributed.

297 Mohai, supra note 214, at 2-4.
The broad range of recommendations discussed in Part V offers few specifics on how to actually implement changes current environmental laws and policies to effect environmental equity. Nevertheless, the suggestions are helpful in articulating conceptual guidelines, discussed in Part VI, to create a siting mechanism that locates facilities in a more environmentally equitable manner.
VI. A NEW SITING PROPOSAL

By taking into account both the strengths and weaknesses of the existing state models and the recommendations of commentators, it is possible to establish basic guidelines to shape an environmentally equitable siting model. Part VI discusses and presents such guidelines in the form of a proposed siting scheme. The proposal is intended to address issues of environmental equity associated with the siting of hazardous waste facilities.

Part VI begins with a discussion of the goals of the proposal and several basic assumptions which are necessary to simplify the complex issues surrounding the siting of hazardous waste facilities with respect to environmental equity. A quick overview of the entire proposed siting scheme is then provided in order to place subsequent discussions into context. Optimal siting criteria, a proposed point system, and trade-offs inherent in promoting environmentally equitable siting practices are then discussed. Public participation in the proposed siting process is described and technical assistance aspects of the proposed siting scheme are explained. Part VI concludes with a critique of the proposed siting model and a brief discussion on how to measure the proposed model's success if it were ever to be implemented.

A. Goals and Preliminary Assumptions

Given the evidence of the disproportionate placement of hazardous waste facilities in minority and poor communities, the goal of the proposed siting model is to site hazardous waste facilities in an equitable manner with respect to race and income. In light of the many complex issues related to the siting of hazardous waste facilities, several assumptions are used as the basis for the model.
The proposal is intended to be used by a state government. The proposal assumes that any state or governmental entity under which the proposed siting model would operate already possesses the institutional infrastructure to implement the scheme. For instance, the proposal assumes that a state environmental protection agency exists. Also, the proposal presumes that technical staff are readily available. The proposed model presumes that the state has a plan to reduce hazardous waste generation, that a pre-treatment requirement exists (unless pre-treatment is unavailable), that there is a state waste management plan in effect (one that includes a provision for interstate cooperation), and that regional and integrated facilities are preferable to localized facilities.\(^{298}\) The proposal assumes that a needs assessment -- an evaluation of the amount of waste produced in the state compared to the amount of hazardous waste treatment capacity already existing in the state -- has been conducted, with a determination that a shortfall in capacity exists. It also assumes that the state already knows with certainty the type of facility needed, including design specifications and technologies to be used. Additionally, the proposal treats site selection as separate from facility permitting and assumes that a hazardous waste facility permit process already exists. Finally, the proposal assumes only one site is needed to meet the shortfall; three candidate sites is a large enough range from which to select the final site; and the entire site selection process, including nominations, is confined within certain specific dates.

**B. Procedural Guidelines**

The first basic guideline of the model is the state guarantees no community has a disproportionately high number of facilities.\(^ {299}\) Accordingly,


\(^{299}\) See Laws & Susskind, *supra* note 75, at 39 (discussing Credo element number 13: "Work for geographic fairness").
the proposed siting model utilizes the site designation scheme, previously discussed in Part IV.B.2. The site designation approach is preferred because it affords state officials the ability to determine state-wide needs, the potential to select sites from a greater range of locations, and the power to prevent communities from hosting a high number of facilities. In this manner, the state can make certain that no particular area becomes overwhelmed with facilities.

Another critical guideline for the scheme is that the state commits itself to reimbursing communities for any costs incurred because of the hazardous waste facility. Each community in which a candidate site is located is guaranteed a minimum package of compensation to make up for all financial costs potentially incurred because of a facility. The purpose of this guideline is threefold. First it mitigates against the community absorbing unfair costs when other communities (remote to the facility) enjoy the facility’s benefits yet do not pay the price as host. Second, it alleviates typical negative public perception of hazardous waste facilities by making host status a lucrative venture. Finally, it represents a measure of good faith and equal dealing on the state’s part. If the host community sees that the state readily acknowledges that hosts deserve special treatment, this could minimize resentment among residents that would otherwise occur if the state were reluctant to show a willingness to appease. The

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300 See supra notes 264-66 and discussion of geographic fairness. See also Godsil, supra note 77, at 406 (discussing the relative benefits of the site designation approach). Under the proposal, the state legislature determines what constitutes a “high” number of facilities.

301 See Laws & Susskind, supra note 75, at 37 (discussing Credo element number 7: “Fully compensate all negative impacts of a facility”; and number 10: “Make the host community better off.”).

302 A compensation package might include: state technical assistance grants; direct compensation from the developer; preference for state and federal funds to local governments; financing service extensions; emergency cleanup funds; purchase of emergency equipment, training of emergency personnel; limited local government liability; parks and buffer zones; conditionally guaranteed property values. O’HARE, supra note 83, at 71-73; Canter, supra note 99, at 453.
state and local communities are involved throughout the siting process. The scheme is outlined in Figure B.

Consistent with the site designation approach, the siting scheme generates a list of viable sites for a hazardous waste facility whether or not a proposal for a facility exists (assuming that there is a projected need for a facility and that the facility type is known with certainty). This guarantees that several sites are considered before any one final site is selected. This also allows the state more control over what sites are placed under consideration, rather than giving private developers or local communities a monopoly over site proposals. Like the site designation model, sites either are selected by a technical review board (TRB), volunteered by communities, or proposed by private developers. Proposed sites are to move through various phases, progressing only after meeting various thresholds. The first status, already mentioned, is proposed site; the second status is potential candidate site; the third status is candidate site; and, finally, the last status is final site. Each status will be discussed shortly.

The purpose of the TRB would be to ensure that technical aspect of the proposed process are competently and thoroughly examined. The TRB is composed of professionals in various fields such as chemistry, biology, city planning, public health, and law. The exact number of TRB members and composition are to determined by the given state legislature. The state legislature also is to establish how members are selected.
### Part VI: Proposed Siting Model

**Provision Site Status**
- Communities may volunteer
- State may select
- Developers may propose

What Happens?
1. LRBs are created
2. LRBs and TRB review standard criteria
3. Joint public hearings held
4. LRB and TRB compare & prepare site assessment reports

**Guidelines:**
- Race, income, and history of past siting decisions are considered (criteria)
- Cap on number of facilities in a community
- Technical assistance grants
- Early public participation through LRB and public comment

**Site Assessment Report**
1. LRB and TRB recommend potential site status
2. LRB and TRB do not recommend potential site status – STOP.
3. LRB and TRB submit different recommendations

**Potential Site Status**
- SRB contains members from potential site host

What Happens?
1. SRB reviews site assessment reports
2. SRB considers different recommendations
3. SRB conducts own review of standard criteria
4. Public hearings on SRB’s preliminary findings
5. SRB determines which sites attain candidate site status

**Guidelines:**
- Race, income, and history of past siting decisions are considered (criteria)
- Cap on number of facilities in a community
- LRB and TRB reports considered
- Technical assistance grants
- Public participation through LRB, SRB, and public comment

**Selection by SRB**
1. Selection by SRB
2. Not selected by SRB – STOP

**Final Site Status**
- LRB continues representing host community
- SRB contains members from host community

What happens?
1. Negotiations for compensation package continue
2. Binding arbitration, if necessary

**Guidelines:**
- Technical assistance grants
- Full compensation for costs and risks
- Public participation through LRB and SRB

**Candidate Site Status**
- LRBs continue representation
- SRB contains members from candidate site hosts

What Happens?
1. SRB solicits proposals from developers for facilities
2. Candidate sites are weighed against each other to determine which is best as final site
3. Candidate sites are weighed against developer proposals
4. Candidate site LRB’s begin negotiations with developer(s)
5. SRB makes final site selection

**Guidelines:**
- Inventory of sites
- LRB and TRB reports considered
- Race, income, and history considered (criteria)
- Cap on number of facilities in a community
- Technical assistance grants
- Public participation through LRB, SRB, and public comment

**Legend:**
- LRB = Local Review Board
- TRB = Technical Review Board
- SRB = State Review Board
Another guideline of the proposal is that the state provides technical assistance grants to interested parties when necessary. The grants may be used to hire scientists, lawyers, and other technical professionals needed to assist the communities in participating meaningfully in the site selection process. The grants provide resources necessary to allow parties interested in contributing to the process who otherwise would not have the means to do so.

Another important guideline is that the state institutionalize local participation and input by creating a community committee (composed of local participants) with influence and power equal to that of the TRB. Once a location is selected as a proposed site, a local review board (LRB) is created. The LRB is composed of persons and professionals from the counties and municipalities (referred to roughly as the community) in which the proposed sites are located and from those counties and municipalities which lie adjacent to the possible sites. Depending on the number of proposed sites, there may be many more than three LRBs, each representing a different potential candidate site. The purpose of the LRB is to provide direct representation of the community(ies) in which the proposed site lies during the site selection process. Like the TRB, the number of LRB members is to be determined by the given state legislature. Although the legislature also will establish how members of the LRB are selected, the selection process must place actual selection in the hands of local leaders and elected officials and its composition must reflect the racial composition of the community.

Both the TRB and LRB review siting criteria and decide whether the proposed site meets the criteria. Though there are to be standard siting

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303 The local site review committee is qualified to receive such grants. It also has the authority to share the grants with other parties interested in contributing to the siting process but do not have the resources to do so. See infra Part E for more on technical assistance grants.
criteria,\textsuperscript{304} the TRB and LRB have the authority to consider other factors they deem relevant.\textsuperscript{305} The two make independent reviews and reach independent conclusions based on their findings, and each prepare a preliminary \textit{site assessment report}. The TRB and LRB hold joint public hearings and receive public comments on the preliminary site assessment reports. After public hearings and after a public comment period, the TRB and LRB each prepare a final site assessment report taking into account comments received from the public.

The purpose for creating two potentially adversarial entities, the TRB and LRB, is to ensure that both technical aspects of facility siting and local concerns are advanced. The LRB serves as chief advocate for the potential host community while the TRB focuses on more technical considerations. The TRB and LRB may, however, work together and share their individual findings if they so choose. The intent behind their independent status is to give each the freedom of producing unrestrained contradictory reports if they so chose.

After both the TRB and LRB establish appropriate siting criteria, in addition to the standard criteria, and conduct a preliminary assessment of whether the proposed site meets the criteria, the boards meet to discuss their final site assessment reports, including differences in siting criteria and final recommendations for the proposed site, and to produce a single, joint report. If the boards emphasize different criteria and reach different conclusions about the suitability of the proposed site, they try to integrate their site assessment reports to the fullest extent possible. This may be done by the TRB and LRB reviewing the other's report to see how and why they differ. This could reveal flaws or

\textsuperscript{304} The standard criteria are categorized roughly into three groups: hard-technical criteria, soft-technical criteria, and non-technical criteria. These will be discussed in Part C.1 of this part.

\textsuperscript{305} The standard siting criteria, however, are to be determined by the given state legislature. Eventually, both boards are to make one proposal to the state siting board (SRB). It is the SRB that selects the three final candidate sites and decides which particular candidate site eventually receives the hazardous waste facility.
factors not considered by each. If they are unable to produce one consistent site assessment report or cannot agree on the suitability of a particular proposed site, the joint proposal is submitted to the *state review board* (SRB)\(^{306}\) where final judgement on suitability is made. If the TRB and LRB agree on the criteria and recommendation, and if the recommendation is that the proposed site is appropriate as a *potential candidate site*, the SRB takes that recommendation into strong consideration before selecting the final three *candidate sites*. If both the TRB and LRB recommend that a proposed site not be considered as a potential candidate site, the site is removed from the selection process.

All potential candidate sites that eventually are submitted to the SRB are subject to another review by the SRB. Again, the SRB is to place much emphasis on site assessment reports submitted by the TRB and LRB in which both agree that the potential candidate site would make a suitable candidate site. If a proposal contains inconsistent recommendations, as in the case were the TRB and LRB do not agree on siting criteria and site suitability, the SRB conducts its own analysis to determine siting criteria and suitability of the site. Still, the final decision-making process would take into consideration the TRB and LRB findings. The SRB's decision at this point is either to consider the disputed site as a potential candidate site or to eliminate the site from the selection process.

After the SRB determines which of the proposed sites are suitable as potential candidate sites, it subjects the preliminary list, along with its findings to a public hearing and comment period. At this point, the SRB receives comments

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\(^{306}\) The SRB is composed of scientists and professionals and representatives from across the state and candidate site communities. The given state legislature determines the number of SRB members as well as its composition. Regardless of the number and composition of the SRB, it still must have at least two members from communities which contain a proposed site. These members revolve in order to accommodate all the proposed site communities. The purpose of the SRB is to provide the siting process an oversight entity with authority over the entire siting process and final site selection. See Part D *infra* for more information on the SRB.
and concerns from the public before proceeding to the next step of determining which sites are to become the three candidate sites.

When determining which of the potential candidate site are to be candidate sites, the SRB takes into consideration its own findings about the criteria and suitability of the site, the final site assessment reports of the TRB and LRB, and public comments and concerns. Most importantly, however, the SRB is to consider the percentage of minority and poor persons in the proposed sites in order to avoid selecting all candidate sites with high percentages of poor and minorities. These percentages are weighed on a level comparable to other critical factors such as geologic qualities of the sites. The SRB selects the top three choices as candidate sites pursuant to a point system, discussed below.307

After candidate sites are selected, the SRB either may solicit proposals from developers for a hazardous waste facility or review proposals that already have been submitted by developers. In any event, applications for a permit to construct a hazardous waste facility are not reviewed until all three candidate sites are selected (except where a developer already has a particular site in mind, in which case the site would be considered a proposed site) in order to prevent the developer from influencing which sites attain proposed and candidate site status. Other merits of the developer's proposal, however, are not considered until after the candidate sites are selected. As mentioned earlier, the proposal assumes that appropriate technologies and facility type are known with enough certainty that standard criteria can be identified.308

Once all proposed sites either have been eliminated or are selected as candidate sites, the board reviews hazardous waste facility proposals. In case the

307 The SRB would allocate points at this stage of the process, based on its own findings and those of the TRB and LRB. This is discussed further in Part VI.C.
308 Laws and Susskind indicate that may qualities of a specific site can be evaluated only with respect to a particular technology. Laws & Susskind, supra note 75, at 32.
facility permitting process did not weigh facility-specific considerations revealed by the facility permitting process, the SRB subjects candidate sites to another analysis to determine which of the three alternative sites would serve best as the final site. At the same time, the LRBs of the candidate sites begin negotiations with the developer to determine the compensation package. Based on the SRB’s analysis and the results of community-developer negotiations, the SRB selects the final site. Negotiations between the LRB of the final site and the developer continue until they reach an agreement over a compensation package. If they are unable to agree on a compensation package, the parties engage in arbitration to facilitate the process. The results of the arbitration would become binding.

C. Siting Criteria and Point System

The procedural steps of the proposed siting scheme are in many respects similar to other siting processes that are modeled after the site designation approach. The key to ensuring environmental equity, however, is not only identifying siting criteria that screen out sites in communities with a majority population of minorities or low-income persons when the community is already burdened with other hazardous waste facilities, but also describing how such criteria are to be utilized. Further, a point system to place emphasis on critical siting criteria is one possible way to rank suitability of sites.

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309 The facility permitting process is assumed to exist already and is to be a process, to a certain extent, independent of the site selection process, up until final site selection.
310 Some state statutes require the consideration of alternative sites as part of the final site selection process. See, e.g., IOWA CODE ANN. § 455B.448(1)(k) (West 1990).
311 The process of arbitration “includes the submission of [the] dispute to a third party who renders a decision after hearing arguments and reviewing evidence. It is less formal and less complex and often can be concluded more quickly than court proceedings. In its most common form, binding arbitration, the parties select the arbitrator and are bound by the decision, either by prior agreement or by statute.” NATIONAL INSTITUTE FOR DISPUTE RESOLUTION, PATHS TO JUSTICE: MAJOR PUBLIC POLICY ISSUES OF DISPUTE RESOLUTION (1983), in ADMINISTRATIVE CONFERENCE OF THE UNITED STATES, SOURCEBOOK: FEDERAL AGENCY USE OF ALTERNATIVE DISPUTE RESOLUTION 5-47 (1987), reprinted in PLATER, supra note 99, at 982.
1. Criteria\textsuperscript{312}

As with most existing state siting schemes, there are several basic siting criteria. These are categorized into three types: hard-technical criteria, soft-technical criteria, and non-technical criteria. Hard-technical considerations are those which can be quantified or described by way of scientific analysis, or are readily discernable. Soft-technical criteria, on the other hand, are those which require more subjective analysis, though are based on statistical and historical analysis. Although soft-technical criteria have a greater potential to be discredited than hard technical factors, they are nevertheless important. Non-technical considerations are those which are not easily identifiable or quantifiable, but are real.\textsuperscript{313} Examples include stigma associated with hazardous waste facility and public fear of unforeseen, even non-existent, risks.

Hard-technical criteria include physical characteristics of the site. Obvious examples include geologic attributes. The geology of the site, such as the presence of fault zones and the risk of contamination of ground and surface waters by leaching and runoff from the facility, should be considered. Natural hazards to which the area is prone such as flooding, earthquakes, or subsidence also should be factors. Sites should not be near sources of drinking water supplies such as reservoirs, lakes, and rivers and their watersheds, aquifers and their recharge areas. Sites also should not be near fragile land areas such as wetlands and the shorelines of rivers, lakes, and streams. The presence of rare

\textsuperscript{312}See, e.g., Canter, supra note 99, at 454-55 and IOWA CODE ANN. § 455B.448 (West 1990) for a list of general siting criteria. Because "the selection of a site is ... tied closely to the choice of technology" the thesis assumes that the standard criteria are appropriate for the facility the state deems necessary. See Laws & Susskind, supra note 75, at 32.

\textsuperscript{313}See, e.g., Tarlock, supra note 171, at 451: "The hard, if not impossible, question for regulators and [treatment, storage, and disposal] facility operators is how non-technical, but keenly felt, factors can be rationally brought into the siting process."
or valuable ecosystems or geologic formations or significant wildlife habit and with unique scenic or historic areas should be deliberated as well.

Other examples of hard-technical criteria include zoning classification of proposed sites and the extent to which a proposed site is used for industrial development. Similarly, local ordinances, permits, or other requirements and their relationship to the proposed facility are important considerations.

Soft-technical criteria are those which require in-depth analysis of potential environmental impacts, and potential adverse effects on the economic development of a host community, and safety, health, and welfare of local residents. These include projections of transportation routes between a proposed facility and sources of hazardous waste, and risks associated with transporting many loads of dangerous substances. Population densities along transportation routes also would be a consideration. Land uses and the density of population in areas near the facility would be additional factors to consider. The risk and effect of possible fires or explosions from improper storage and disposal methods are also important. The impact of the facility on the operations and responsibilities of the local government in which the potential site is located and on other governments near the potential site should also be measured. Finally, impacts on the economic development of the potential candidate site community, such as property value, should be considered.

Most importantly with respect to environmental equity considerations, soft-technical criteria also should include demographic, socio-economic assessments, and history of past siting results. These assessments are critical to the screening out of potential candidate sites where minority and low-income communities are already shouldering relatively high amounts of environmental burdens and other urban pressure points, such as jails and prisons. History may
show that series of siting processes produced results that placed facilities in poor and minority communities, even though individual communities were not overly burdened with the facilities.

Demographic and socio-economic data to be considered should include any available data describing demographics at the time of previous site selection processes, to determine population densities and percentages of minorities and income groups. Census data could provide an accurate and readily viable source for this information. A two-tier system of determining minority and income group percentages should be employed: the first tier would present minority percentages of a county or municipality, while the second tier would describe the minority and low-income population percentages of the neighborhood or community immediately adjacent to potential candidate sites.313a Consideration of two tiers is necessary to avoid siting facilities in counties or municipalities with low percentages of minorities and poor persons but where the site itself is in a predominantly minority and poor community. While the county or municipality as a whole may not be dominated by a minority and poor population group, pockets of minority and low-income enclaves may still be vulnerable. The county or municipality are the appropriate geographic units because they would be the most affected by risks in terms of providing social services for communities hosting a facility. Counties or municipalities adjacent to host communities also would be included in the environmental equity considerations to account for the possibility of a host community locating the facility in remote areas bordering a minority or poor community.

313a Terner emphasizes “[t]he importance of selecting an appropriate level of aggregation” [so as to avoid] the potential [of masking] subtle spatial effects of the distribution of facilities.” Terner, supra note 92, at 22-23.
Furthermore, soft-technical criteria would include a survey of existing environmentally and analogously burdensome facilities. These would include airports, jails and prisons, drug treatment centers, parole offices, and refinery plants. Facilities that would qualify as burdensome would be determined by the given state legislature. The survey would be weighed against population density and minority and poor group percentages. This could establish whether a particular minority or income group is subject to a disproportionate amount of risks posed by environmentally hazardous and other undesirable land uses, relative to the total number of such land uses in that region of the state.

Other soft-technical criteria would include the projected impact of hazardous waste facilities on public health, especially on the health of communities immediately surrounding hazardous waste facilities, and the overall residents' health of communities near potential candidate sites. These factors could determine whether the residents of a potential host community are more susceptible to health risks posed by a hazardous waste facility, in comparison to national averages for health related standards and guides. Similarly, the availability of health care and health care facilities to meet the needs of host communities in the event that hazardous waste facilities have an adverse health impact on residents should also be considered.

Non-technical considerations include stigma associated with living near a hazardous waste facility, public fear of unknown and unforeseen risks, even when such risks do not actually exist, and public perception of the siting process' fairness or bias. Although determining how to gauge and portray non-technical criteria is difficult, these criteria nevertheless should be considered because they represent real concerns to many individuals in the community facing the possibility of hosting a hazardous waste facility. Such non-technical criteria also
may account for distrust between siting officials and boards and residents opposed to hosting a facility. It would be for the state legislature of the given state to determine precisely how such criteria would be weighed. The non-technical criteria illustrate the dilemma associated with all three classes of criteria: how should criteria be scored so as to provide a meaningful and accurate comprehensive analysis of site suitability? A point system provides one solution.

2. Point System

If a site assessment report of a proposed site were reduced to a simple formula, it would be:

\[
\text{HARD-TECHNICAL FACTORS} + \text{SOFT-TECHNICAL FACTORS} + \text{NON-TECHNICAL FACTORS} = \text{SITE ASSESSMENT REPORT.}
\]

Assigning actual figures to the criteria discussed above is problematic, notwithstanding the simplicity of this formula. It would be for the legislature of the given state to determine exactly how criteria are to be ranked and graded. Nevertheless, the following is an outline of one possible point system.

Hard-technical criteria would be grouped at least into the following categories: geologic attributes; zoning classification; and existing land uses. Soft-technical criteria also would be grouped into at least the following categories: potential environmental impacts; potential economic impacts; potential health impacts; population density; population density along transportation routes; tier one socio-economic composition; tier one minority composition; tier two socio-economic composition; tier two minority composition; and existing environmental and analogously burdensome phenomenon (geographic fairness consideration). Non-technical criteria would be grouped only into one category: non-technical considerations. The SRB, TRB, and LRB can include additional categories in the first two groups as they deem appropriate.
The site assessment reports prepared by the TRB and the LRB, both the independent reports and the joint reports, would contain scores assigned to each category. It would be up to the discretion of the TRB and LRB, both individually and jointly, to decide the score for each category. In any event, equal respect is to be paid to all three categories; that is, soft-technical criteria such as race, income, history of past siting practices, and geographic fairness should be given equal weight as hard-technical criteria. Likewise, the SRB applies the same respect to all categories when it reviews site assessment reports and, when necessary, assigns its own scores to the categories. In this manner, environmental equity considerations will always influence siting results.

Public participation is another important aspect of the siting scheme. Through public input and cooperation, the state and potential host communities can attempt to seek consensus, develop trust, and ensure that all criteria are considered equally.\footnote{\textsuperscript{314}See Laws & Susskind, supra note 75, at 36 discussing the importance of seeking consensus (Credo element number one) and developing trust (Credo element number two).}

D. Public Participation

The proposed siting scheme makes use of several mechanisms to enhance public participation throughout the process. First, the SRB and LRB contain representatives from potential and candidate site communities. The recommendations of the TRB and LRB promote consideration of pertinent issues both from a technical perspective and local point of view. The proposal also incorporates public hearings and comment periods to allow interested parties the opportunity to voice their concerns. These mechanisms will be discussed in turn below.
The SRB is a permanent state advisory board, and contains two types of positions: fixed-term members (five years) and revolving members from local communities. The fixed-term members includes scientists, lawyers, and planners. Fixed-term membership on the board maintain continuity even when other members are replaced. Positions for local representatives revolve so that all potential host communities have representation on the SRB. For example, when a given potential candidate site is under review by the SRB, the site's SRB representatives sit on the board during the deliberations. Whenever the SRB reviews another proposed candidate site, the revolving membership would change so as to allow the representatives from that proposed candidate site to participate in the SRB review, and so forth.

Most importantly, members of the local site review committee (LRB) should be from the potential host community. The LRB also should contain scientists and professionals from various disciplines. Members of the LRB also should include residents who may not necessarily be professionals, but who nonetheless would like to participate in the siting process. Furthermore, LRB membership also should include representatives from any ethnic and racial minority neighborhood or community which lies near or in the proposed site. Local leaders and elected officials would be the persons responsible for selecting LRB members.

The proposed model purposefully creates a tension between the interests of the TRB and the LRB. By its very nature the TRB (which would contain a greater number of members from the technical fields) would be more likely to weigh hard-technical criteria more heavily than the LRB. By contrast, the LRB would be composed mainly of residents of the potential host community and probably would emphasize soft-technical criteria. Unless the community as a
whole wants to host a candidate site, the community probably would not want to attain candidate site status. Therefore the LRB probably would do its best to show that criteria are not met. The two divergent views could create, to a certain degree, an adversarial relationship between the TRB and LRB, and this would be of value to the state siting board (SRB): the SRB would have the benefit of seeing two sides of the issue as presented by the TRB and LRB. The LRB also would insure some degree of meaningful public participation even if residents themselves are ambivalent or unwilling to participate in public hearings and comment periods.

The proposal also allows for public hearings and comment periods, just as many existing state siting schemes do. By opening the process to the general public, the proposal accommodates other issues and questions that could arise, in addition to those issues raised by local representatives on the SRB and LRB.

According to the proposed siting process, if a host site and a developer are unable to reach an agreement on a compensation package, they would be required to enter into a binding arbitration. The LRB would have the additional duty of serving as the potential host community representative in the event that arbitration becomes necessary. Under this scenario, there would be a degree of public participation through the LRB during arbitration.

In the event that a local community does not have adequate resources to participate meaningfully in the siting process, the siting scheme provides for technical assistance grants. Also, communities chosen to serve as hosts for a facility are guaranteed a compensation package as reimbursement for assuming the facility and associated risks. These are discussed below.
E. Technical Assistance Grants and Compensation

Finally, the proposed scheme provides for technical assistance grants to the LRB and potential host community. This aspect is perhaps the most important mechanism to promote public participation because it gives the direct representatives of potential host communities the means to partake in the siting process. Even if a potential host community was composed of technically and politically unsophisticated and poor residents, the grants would allow them to hire technicians and lawyers. With the assistance of these professionals, local communities, through the LRB, would be able to produce thorough site assessment reports and analyze the assessments of the TRB.\footnote{\textsuperscript{314a} The state is to provide the funding for technical assistance grants. In turn, the LRB is to distribute these funds to persons and other parties interested in contributing to the siting process who do not have adequate financial resources to do so.} They also would be able to make informed decisions about the nature of risks associated with a proposed facility and the amount of compensation needed to justify assumption of those risks. To the extent that minority and low income communities contain disproportionate numbers of hazardous waste facilities because of the lack of meaningful participation in the siting process, as some commentators have indicated, providing technical assistance grants would only enhance public participation. Moreover, the LRB would be able to allocate funds from the assistance grants to other parties interested (though lacking the financial resources) in contributing to the siting process.

The scheme also provides for a minimum compensation package.\footnote{\textsuperscript{315} See Laws & Susskind, supra note 75, at 37-38 discussing the need to "[f]ully compensate all negative impacts of a facility" (Credo element number seven) and to "[m]ake the host community better off" (Credo element number ten).} The compensation reimburses host communities at least for all negative impacts of the facility. Beyond this, the host community and state or developer can
negotiate for additional compensation to make final site status as beneficial as possible.

Factoring environmental equity into the any siting model involves an assessment of trade-offs. A sample of how the siting model would balance competing factors is discussed below.

F. Inherent Trade-offs

In spite of the proposed point system, the wide range of criteria creates inherent conflicts. For instance, on the one hand developers are interested in minimizing costs associated with constructing and operating a hazardous waste facility. Yet, the proposed criteria include considerations of race, ethnicity, and income -- three factors related to property values. Typically, persons in lower income brackets and minorities live on land with lower property values relative to values of property on which upper income groups live. Choosing between low construction costs and not constructing all hazardous waste facilities in poor and minority communities requires a balance: higher construction and operating costs traded for lower incidence of hazardous waste facilities in these communities. The proposal establishes that in the interest of environmental equity, this tradeoff is necessary.

Another potential conflict lies in choosing optimal safe sites relative to overall public health: in rural areas where both minority persons and poor groups tend to live and where population densities are low, the potential for noise, air, and soil contamination to affect people is low; therefore, rural areas would be particularly attractive to developers. The trade-off here is clear: the possibility of fewer sites in rural communities with majority poor and minority populations at the cost of greater public heath risks in urban areas. The siting scheme could produce results where rural minority populations are spared from
hosting a facility, while the candidate site is located in more urban areas. Again, the proposal posits that such tradeoff may occur in the interest of environmental equity.

Yet another conflict could exist where a geologically safe site lies in the middle of a community composed of minority and poor persons. Hard-technical siting criteria would support candidate site status for the location, as would the scientific community. On the other hand, soft-technical criteria would work against candidate site status. As a result, the almost geologically perfect and scientifically rational choice for a candidate site probably would not come to be. Another, less "scientifically" suitable site, one that falls more in line with the goals of environmental equity, would have to be found.

In a situation where a community wants to host a facility, perhaps because of an attractive compensation package, the scheme may have several different results depending on the circumstances. For instance, if the community is already overburdened with facilities, geographic fairness holds that the community not attain candidate site status, in spite of the community's willingness. Another situation is where the community has a high percentage of poor or minority persons but is not overburdened. The community may attain candidate site status if past siting practices have not resulted in siting facilities disproportionately in poor and minority communities. Considerations of environmental equity proscribe further siting in poor and minority communities even if the given community is not host to a facility. On the other hand, if the willing community is minority and poor, is not overburdened with facilities, and the history of siting results does not reveal disproportionate sitings in poor and minority communities, environmental equity would not be violated by granting the community candidate site or final site status.
Because the proposed scheme and guidelines draw from existing models and suggestions, it has some similar flaws. Nevertheless, the proposal would promote equitable siting results.

G. Critique

The proposed siting model advances democratic ideals of equality in the siting of hazardous waste facilities. The scheme honors the idea that public policy should ensure that all groups are afforded equality of outcome by not allowing siting results to have a disparate impact on the poor and minorities. Because the state initiates the siting process, pursuant to the site designation model, it can certify that the inventory of sites does not overwhelm particular communities, thus advancing geographic fairness. Even when a facility is sited in a community, the model calls for full compensation for assuming risks and all other negative impacts.

The siting model also guarantees and expands public participation in several ways. First, local representation is institutionalized in the form of the LRB. The LRB, as chief advocate for local residents, has equal footing with the TRB in the preparation of independent and joint site assessment reports. Local interests are represented at levels higher than just individual comments received during public hearings. Even if residents are ambivalent, the LRB still would serve as their advocate. Although the TRB and LRB are supposed to submit one report to the SRB, the structure of the model allows for unrestricted freedom in the event that both emphasize standard factors differently.

Second, the SRB contains local representation through revolving membership. Even after the TRB and LRB have submitted their report(s), local input continues at the higher level of decision-making.
Additionally, the scheme is open to the general public. Public hearings and comment periods offer ideal opportunities for interested parties not part of the more formalized structure of the model to participate and contribute to the process. In the event that interested parties (including the LRB) do not have adequate resources to participate meaningfully, the scheme provides for technical assistance grants.

Finally, the siting model considers public input before any final decisions are made about potential site status, candidate site status, and even final site status. This provides at least three opportunities for public participation during the earlier stages of the process, and on through the final decision-making.

With much public input and a high degree of institutionalized local representation, the scheme increases the chances for consensus and builds trust among all parties. Also, the ability of the LRB to reflect the sentiments of local communities at the various levels of the decision-making processes, contributes to the legitimacy and evenhandedness of the scheme, especially in the eyes of the public. Even the siting criteria, such as race and income, may contribute to the siting's legitimacy because they incorporate important factors previously ignored or downplayed in existing siting models.

Nevertheless, the proposed siting model also has some faults. The proposal probably would have the same drawbacks as those of the super review and site designation approaches.315a For example, communities unwilling to serve as potential candidate sites could avoid such status by volunteering sites they already know are unsuitable, rather than those that possibly would attain candidate site status.

315a Discussed in Part IV.D, supra.
Another potential weakness of the model is that the scheme sets the stage for conflict by calling for two separate and potentially opposing institutions, the technical advisory board (TRB) and local review committee (LRB), to provide separate assessments of the same proposed site. The LRB probably would be less inclined to find a site suitable for candidate site status than the TRB because the LRB would have the bias of being the direct representative of the proposed site. If the community is opposed to the facility, then the findings of the LRB (preliminary assessment report) would reflect this. By contrast, the TRB probably would favor sites that meet hard-technical criteria. Given the disparity between the interests of the TRB and LRB, preliminary reports submitted to the state siting board probably would contain conflicting findings and conclusions.

Another drawback is that the proposed scheme places much authority in the hands of the state siting board (SRB). If the TRB and LRB submit conflicting preliminary findings and conclusion about the suitability of a site, the SRB would have the difficult task of determining the status of the proposed site. This could create an atmosphere of distrust, and may compromise the SRB's authority and legitimacy in the eyes of local communities, especially if the SRB sides with the TRB. Nonetheless, the final authority still must be assigned to avoid indefinite perpetuation of the siting process. If the TRB and LRB cannot agree on a preliminary assessment plan, there needs to be an authority that can resolve the standoff. Even though the SRB would be endowed with great authority, it still would be obligated to consider seriously the recommendations of the TRB and LRB. As mentioned earlier, this consideration would be assured by the "revolving" community members of the SRB.

Another weakness is that the proposed siting scheme relies on criteria that may be difficult to document and study. For example, the site also could impact
areas adjacent to or perhaps further away from host communities. Deciding what geographic area is appropriate for study for potential impacts may not be easy to do. Second, demographic trends could skew data. In a matter of years, the minority composition of a community could change drastically. This could undermine efforts at producing environmentally equitable results.\textsuperscript{316}

Admittedly, some of the proposed criteria are difficult to document and study, but so are many factors listed in existing state siting statutes. For example, Kentucky calls for consideration of “psychic costs” in its siting program.\textsuperscript{317}

Nonetheless, because data on race and income are readily available from census information it is reasonable to include these in standard siting criteria.

Similarly, because facility siting is not solely a design problem, many professionals beyond engineers are part of the team of professionals and scientists needed. With so many different professions involved, there may be conflict over what criteria are appropriate. Conflict may be particularly apparent concerning the criteria of the model that are not typically found in a site assessment report, such as race and income. On the other hand, this is already a problem with existing schemes. There is nothing new about technicians and professionals disagreeing over criteria.

In summary, though some aspects may be problematic, the proposed guidelines and scheme address concerns raised by recent studies that show hazardous waste facilities exist in disproportionate numbers in poor and minority communities. The proposal serves three basic functions. First, it introduces criteria, such as race, income, geographic fairness, and history of past siting decisions into the siting decision-making process. Second, the scheme institutionalized effective and influential local representation by way of the local

\textsuperscript{316} See Bacow, \textit{supra} note 245, at 47.

review board (LRB). Finally, the proposal ensures that environmental equity issues are part of discussions over the siting of a hazardous waste facility. In this manner, the proposal forces environmental equity issues into public discourse rather than allow them to remain unnoticed or unimportant.

Whether the proposed model can effect environmental equity in hazardous waste facility siting remains to be seen. A measure for its success, however, is discussed below.

H. A Measure for Success

A comparison can be made to the National Environmental Policy Act (NEPA). When NEPA was ratified in 1970, it established a national structure for examining major federal projects.\footnote{PLATER, supra note 99, at 596; see National Environmental Policy Act of 1969, 42 U.S.C. § 4331 (1988).} The law requires that an environmental impact statement (EIS) be produced by federal agencies "for all major federal actions significantly affecting the quality of the human environment."\footnote{42 U.S.C. § 4332(2)(C).} Since NEPA was enacted, however, the success of the law has been difficult to measure because its effectiveness "includes the anonymous thousands of destructive federal projects which are withdrawn, or never proposed in the first place, in anticipation of NEPA [(EIS)] scrutiny."\footnote{PLATER, supra note 99, at 596.}

The success of the proposed scheme similarly would be difficult to measure. Efficacy of the scheme would result in the abandonment of proposed projects or a decision not to site a facility in a poor and minority communities or in areas overburdened with facilities. Sites not considered for proposed site status, or even candidate site status, because of concerns for environmental equity also would be testimony of the proposal's effectiveness. In short, because
the scheme's success lies in distributing facilities equally across all communities it would be hard to account for facilities not sited because of the siting model.
VII. CONCLUSION

High living standards in the United States are maintained by industries, which generate tons of hazardous wastes that must be stored, treated, and disposed of safely and efficiently. Hence, hazardous waste facilities will always be necessary. There are many hazardous waste facilities in operation today, and more will be needed in the future. Appropriate sites for future facilities must be found. Because of the dangerous nature of hazardous wastes, health and economic risks are associated with hazardous waste facilities. For this reason, hazardous waste facilities are unwanted land uses: siting proposals frequently trigger public opposition. Nevertheless, facilities have been sited in the past. There is convincing evidence, however, that shows that poor and minority communities are hosting a disproportionate number of these sited facilities.

To the extent that facilities are found disproportionately in poor and minority communities, risks associated with facilities are borne unequally by these communities as well. The evidence suggests that past siting practices may have produced unequal siting results. Furthermore, a review of existing state siting models reveals that they are not suited to distribute hazardous waste facilities equally across race and income groups. A need exists for mechanisms to generate more equitable distribution of these unwanted, yet necessary, facilities.

Solutions proposed by various commentators to effect environmental equity are worthy of further study. Specifically, calls for a national mandate for environmental equity, and enhanced public participation, geographic fairness, and inclusion of race and income in state siting models have potential to promote the equal distribution of hazardous waste facilities. The proposed siting model is a step toward more equitable siting practices. Following the lead of existing
recommendations, the model calls for factors of race, income, history of past siting practices, and geographic fairness to be important considerations in future sitings of hazardous waste facilities. The model also establishes that tradeoffs between the need for hazardous waste facilities and the goal of environmental equity should be resolved in favor of environmental equity. Although inequitable results of past siting practices cannot be easily remedied, subsequent sitings can be conducted so as to produce more equitable results.