Undesirable Land Uses and Equity:
The Relationship Between the Environmental Justice Movement and the NIMBY Syndrome

Submitted to:
John Pittari

Department of Urban Planning
Ball State University
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Submitted by:
Cynthia A. Bowen
6207 Deer Run Path
Plainfield, Indiana 46168
(317) - 839 - 5047
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By:
Cynthia A. Bowen
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Advisor - John Pittari

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Student: Cynthia Bowen
Degree: Bachelor of Urban Planning and Development
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Abstract

In 1992, a protest arose within Warren County, North Carolina involving the siting of a hazardous waste landfill in the town of Afton. At that time, the town was the poorest in the state and contained the highest percentage of minorities (Geiser 1993, 50). This protest can be attributed as the event which set in motion what is known as the environmental racism movement (Bullard 1994; Godsil 1991; Rees 1992; Russell 1989; Satchell 1992). This movement addresses the disproportionate siting of toxic waste facilities near minorities and low-income people who, in the end, have had to bear a large proportion of the negative effects of pollution.

In an attempt to provide support, or lack thereof, for the environmental justice movement, many articles and studies have tried to address the disproportion and the economic, racial, and political ramifications that can be associated with the location of undesirable land uses and the negative environmental impacts they bring (Bullard 1983; Burke 1993; Godsil 1991; Mohai and Bryant 1992). Many of the prevalent studies such as the United Church of Christ Commission on Racial Justice (UCC) Study, the General Accounting Office (GAO) Study, the Bullard Study, and the Been Study, to name a few, claim environmental racism, equity, or justice in their conclusions. However, the question remains ... do the methods and definitions employed in these studies accurately represent the changes or outcomes within a community that has had an environmentally hazardous facility or undesirable land use. The studies noted above examine two premises that are widely claimed within the environmental justice research: the disproportionate siting process and market dynamics. They focus on the causation of environmental justice rather than the outcomes that are produced within a community.

The purpose of this thesis is to provide a framework to examine the issues and effects related to the environmental justice movement. This thesis is intended to present a literature review which compares the prevalent case studies concerning this movement and its relationship to that of the NIMBY syndrome. An attempt will be made to provide insight to planners as to the issues surrounding the environmental justice movement and how these issues relate to those of the NIMBY syndrome. This framework provides a better way for planners to examine and understand the issues associated with these two movements. With this understanding, planners will be able to provide the much needed insight and can begin to study in-depth the siting issues and market dynamics, therefore offering viable alternatives that will mitigate the impacts of LULUs.
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Chapter One:  
Introduction

History of the Environmental Justice Movement

In October 1982, the nation's attention turned to a protest organized in Warren County, North Carolina in an attempt to resist the siting of a landfill in the town of Afton that would eventually accept over 32,000 cubic yards of soil contaminated with polychlorinated biphenyls (PCBs), a toxic substance. The PCB-contaminated soil originated from the illegal dumping of PCB-contaminated fluid by Robert J. Burns' trucking operation of Jamestown, New York (Geiser 1993). After waiting four years before initiating efforts to clean up the contaminated soil, North Carolina decided to build a landfill to dispose of the contaminated soil and Warren County offered the most promise.

Afton was considered the poorest town in North Carolina with a per capita income of $5,000 in 1980 (Geiser and Wanek 1994). An even more significant point was that Afton had a 65% African-American population (Geiser and Wanek 1994). According to Ken Ferruccio, one of the citizens leading the protest, "the trend is very clear. They would rather experiment with poor black people, poor white people, than experiment with the middle and upper class ... The regulations are such that they allow landfills to be placed in environmentally unsafe, but politically powerless area" (Geiser and Wanek 1994, 50). Subsequently, the citizens banded together and took an active role to educate themselves about both PCBs and landfills.

As the siting process continued, the residents of Afton found the overriding consideration for the placement of the landfill within their community was that the State required a place to legally dispose of hazardous wastes generated throughout the state. The Afton residents became further concerned because, in their opinion, the site was not very suitable. The primary concern among residents was
that the water table was only five to ten feet below the surface. If the landfill leaked, Afton's water supply could become contaminated from the landfill leachate.

Due to the concern over the potential ground water contamination, the residents organized a protest. The protest at the landfill brought about civil disobedience and numerous arrests were made, including NAACP president Reverend Benjamin Chavis and Congressman Walter Fauntroy. This protest was the first recorded incident in the United States in which people were arrested for protesting the siting of a hazardous waste landfill within their community.

Subsequent to the demonstration by the residents of Afton, the landfill was sited, constructed, and PCB-contaminated soil began to arrive for disposal at the landfill. Though the protest did not have an effect on the siting and construction of the landfill, other more positive results were achieved. First, no more solid or hazardous waste landfills would be built in Warren County and second, the residents' blood and well water would be tested periodically to monitor the level of toxins in their bodies and drinking water.

Although the Warren County protest received a significant amount of attention, other types of undesirable land uses, particularly those known in planning jargon as LULUs (Locally Undesirable Land Uses), have also been contested. Citizens have been upset because certain services which have been essential to the larger community have been located in close proximity to where they lived. These services have included grocery stores, power plants, airports, prisons, highways, or anything else that someone thought would deter their quality of life. The factors that determine which services are identified as LULUs depends on the perceptions of the people in the community and the perceived and actual risk that is associated with a land use. To preclude certain undesirable services from being located in or near their neighborhood, citizens protested, while the larger community enacted laws that excluded certain types of development from their neighborhoods and surrounding areas. The opposition to these LULUs has been described as the NIMBY (Not In My Backyard) syndrome. As the opposition to LULUs have become intense, citizens have become unaccepting of certain types of LULUs that presented a significant risk, whether perceived or real. One such facility
was a solid and hazardous and waste landfill. Although these facilities served a public need that dispersed the benefits regionally, the harm was aggregated locally. Many communities argued that they have had to bear the costs associated with waste facilities as well as the pollution from the facility while others outside the community received the benefit of dumping their waste in “someone else’s backyard.” This was the case with Warren County, North Carolina.

The protest that arose within Warren County can be pinpointed as the event which ignited a new movement, beyond the NIMBY syndrome, which has been variously known as “environmental racism,” “environmental equity,” or “environmental justice” (Bullard 1994; Godsil 1991; Rees 1992; Russell, 1989; Satchell 1992).

Environmental racism was the first term coined to describe this growing movement. This term strictly defined minorities as the victims and the only population that was at risk. Due to the negativity of the word and the exclusion of populations, environmental equity was soon adopted to more accurately describe the movement. Environmental equity encompassed those persons who were economically disadvantaged as well as all minorities. Still others thought this term limiting and politically unacceptable and coined the term environmental justice. Environmental justice is now the acceptable term that represents this movement. This movement addresses the siting of solid and hazardous waste facilities near minorities and low-income people who, in the end, have had to disproportionately bear the negative effects of pollution.

For the case of discussion throughout this thesis, when describing the movement the term environmental justice will be used. As for the general discussion of the unequitable practices, the term environmental equity will be used, which is consistent with how the planning profession addresses the issues of equity. Using these terms will not discount any of the other ideas associated with the other terms but will embody all the ideas and theories surrounding the progression of the movement.
Purpose

The purpose of this thesis is to provide a framework to examine the issues and effects related to this movement. This thesis is intended to present a literature review which compares the prevalent case studies concerning this movement and its relationship to that of the NIMBY syndrome. An attempt will be made to provide insight to planners as to the issues surrounding the environmental justice movement and how these issues relate to those of the NIMBY syndrome. From exploring these issues in this type of framework, planners will have a greater understanding of the socio-economic, political, and environmental aspects concerning the siting of undesirable land uses including hazardous waste facilities, airports, prisons, strip malls, and housing developments, and why and how these facilities have impacted communities across the country. This framework provides a better way for planners to examine and understand the issues associated with these two movements. With this understanding, planners will be able to provide the much needed insight and can begin to study in-depth the siting issues and market dynamics, therefore offering viable alternatives that will mitigate the impacts of LULUs.

Limitations

With this growing environmental/social movement, there are several definitions and case studies that have been undertaken. With the best of knowledge, this thesis will incorporate the many definitions and pertinent case studies of both the environmental justice movement and the NIMBY syndrome. Due to the relative currency of the environmental justice movement, many articles, definitions, and case studies are continually published on the subject with new ideas and methods being adopted. In the case of LULUs and the NIMBY syndrome, these terms were only coined in the early 1980s, therefore any case studies before that will not have these terms incorporated into the articles. Therefore, for both subjects, though every attempt has been made to incorporate the important and prevalent articles and case studies, with new articles continually being published, an important definition, case study, or idea may not be included.
Relevance to Planning

This thesis will clarify the issues of environmental equity and establish a connection to the NIMBY syndrome. Conclusions from this clarification will direct urban planners to conduct future studies in the examination of the outcomes of undesirable situations in communities. By examining the outcomes and the different variables that influence them, manipulating the variables may be a possible way of mitigating the outcomes so they would have less of a negative impact on a community.

This thesis will be focused on the topic of environmental equity and the NIMBY syndrome and will draw upon major case studies that have been undertaken in the past. The thesis will provide a discussion which will detail some of the issues associated with the environmental justice movement so that planners, government officials, citizens, or interest groups can determine the possible changes that will occur in their community from undesirable land uses. The results from this study will provide a better understanding of the environmental justice movement so that planners can begin to forge a new path that will measure and explain the outcomes in these communities. Urban planners will need to explore the topic of environmental equity and how the NIMBY syndrome plays a role in the way the market causes changes in a community. Since planners have an understanding of market forces, they will be able to differentiate between the variables that are associated with and affected by certain undesirable land uses and the influences the market has on these variables. With this information, urban planners will be able to take steps to diminish the negative impacts that undesirable land uses can have on a community.

Methodology

When this thesis was initiated, the topic was considered to be environmental justice. However, what was not known was the extensive literature that has been published over the years to support and deny the theories associated with this topic. Therefore, an extensive literature review was undertaken to find articles related to environmental racism, equity, and justice. An important point in determining the issues and effects of inequity was to analyze the current work. Therefore, out of
the immense literature that was obtained, all case studies on the topic were reviewed. The conclusion was that out of the numerous studies undertaken the seven case studies by Robert Bullard, United Church of Christ Commission on Racial Justice, General Accounting Office, Vicki Been, Theodore Glickman, Paul Mohai and Bunyan Bryant, and Matthew Klein were the most prominent and contributed to the environmental justice movement.

Due to the purpose of this thesis, which was to provide a framework for a discussion about the environmental justice movement, an in-depth review of these case studies was necessary. The case studies were analyzed to answer several important questions: which variables were used in the studies, what were the methods used, how did these methods differ from one another, what were the assumptions, what were the limitations of the studies, and what were the conclusions of the studies. After answering these questions, several others remained about the issues associated the environmental justice movement and if there was an underlying force driving this movement. Therefore, another literature search was initiated to find answers to the remaining questions.

This search, however, was directed more toward the topic of LULUs and the NIMBY syndrome to determine how the planning profession has dealt with the inequitable siting of facilities. In this literature search, only a few articles and case studies were found that explored the NIMBY syndrome and LULUs. This was due to the fact that prior to the 1980s when the terms NIMBY and LULU were coined, the opposition to facilities were not give any type of specific terms, so some of the literature could have been overlooked. There were two case studies found that examined LULUs in respect to race and income. These studies were Michael Greenberg’s study on waste to energy facilities (WTEF), and Sharon Lord Gaber and Brett Kunde’s study on New York City’s Municipal Shelters. Like the other case studies, these studies were analyzed in-depth and the same questions were asked. After the analysis of this set of literature was complete, a relationship between the environmental justice movement and the NIMBY syndrome was established, and conclusions were made based on this relationship.
Thus, in chapter two, a discussion of theories of the environmental justice movement will take place. In chapter three, the prevalent case studies will be explored. Following this discussion, an analysis of the case studies and the methods employed by the authors will be discussed along with the court cases and legislation that have been passed from this movement. Then, LULUs and the NIMBY syndrome and the role it has played in siting essential services in communities across the United States will be explored. After this exploration, a presentation of the two LULU case studies of the siting of services will be presented, again with the analysis of the case studies concluding chapter four. The final chapter will contain the conclusions of this author, which will ascertain how the two subjects are related and how planners need to move forward and take action concerning the siting of any type of LULU and the negative impacts that can be created.
Chapter Two:
The Environmental Justice Movement

Statement of the Problem
In an attempt to provide support for, or lack thereof, many articles and case studies pertaining to environmental justice movement have tried to address the economic, racial, and political ramifications that are associated with the location of solid and hazardous waste facilities and the negative environmental impacts they cause (Bullard 1983; Burke 1993; Godsil 1991; Mohai and Bryant 1992). In many of the prevalent studies such as the United Church of Christ Commission on Racial Justice (UCC) Study, the General Accounting Office (GAO) Study, the Bullard Study, and the Been Study, to name a few, claim environmental racism, equity, or justice from their analyses. However, the methodologies employed in these studies do not represent the longitudinal changes within a community that surrounds an environmental hazard or other undesirable land use.

Instead of determining the outcomes and possible remedies, many of the aforementioned studies have focused on the causation of environmental inequity. In order to determine this causation, the studies evaluate the socio-economic characteristics of the community surrounding the environmental hazard. The premise of these studies states that there are two possible reasons for a disproportionate burden on minorities and low income individuals. The first premise addresses the siting process, which is known as procedural equity in the environmental justice movement. The UCC, GAO, and Bullard studies each rest on the hypothesis that when a landfill is sited, for example, there is racism and classism involved in the decision making process and that the laws governing the siting process are not properly implemented or enforced in all situations. Also, the studies assume that the siting pattern is inequitable or unjust when either the percentage of minorities or low income individuals are greater in the community hosting the environmental hazard than the percentages of the regional or national area that would benefit from the facility (Been 1994). Some researchers argue that the
site has been established within a particular community because minorities and low income individuals do not have the money, political clout, nor empowerment to fight the decision; therefore, governments and industries look to these areas to site facilities without protest (Bullard 1994; Mohai and Bryant 1992; Bryant 1993; Collin 1993). According to Bullard, once the facility is established, the area becomes a breeding ground for other polluting industries (1990).

The second premise addresses market dynamics and states that the siting process is not biased, but in fact, when a facility is sited, market dynamics cause changes in the socio-economic factors of the community or neighborhood. Market dynamics deal with how the market is affected by some type of change, for example, the siting of a LULU. A site for a LULU is chosen based on whether a site can meet several criteria, such as, but not limited to, accessibility to a site, location of a site near other services, infrastructure, minimal environmental impact, and the monetary value of the land. Though these criteria are established to ensure that a LULU will not adversely impact a community, some change in the market will still occur. Though this premise focuses on market dynamics, it does not discount that in some cases, whether intentional or unintentional, minorities and low-income individuals have been exposed to environmental risks that adversely affect their health and well-being. There are two potential possibilities involving market dynamics which could explain this exposure. First, in essence, the neighborhood’s socio-economic characteristics might have already been changing. The neighborhoods surrounding the land use, before a facility was sited, may have become poorer and contained a higher percentage of minorities. The siting of a LULU can cause those people who are unsatisfied with the results and are more economically advantaged to leave the area do so, most likely to another community, where the environment is less affected by environmental hazards or other LULUs. Gradually, places of businesses and residences become abandoned and run down. Citizens begin to move away and the tax base for the area becomes smaller. In many cases, economic development projects are not considered for the area, therefore the economy becomes unstable and the overall appearance of the neighborhood declines. The area can then become prone to gangs, drug houses, and other nuisances which drive residents away from it. This type of decline is gradual in nature, however, when an undesirable land use is established, it could cause changes in the socio-economic characteristics of the area to occur even more rapidly.
The second possibility could be due to the site itself. Market dynamics play a role in the choice of sites. Certain criteria such as cost of land, accessibility to site, and existing infrastructure are established by the developer to determine whether the site is suitable for the type of development. If the site meets the developers' requirements, the developer enters the siting process. When the siting process is complete, the land use is sited. After a land use is sited, the site may be perceived as an environmental threat to the surrounding neighborhoods, which in turn affects the market, which may cause the characteristics of the area to change. This perception can cause people to leave the area and the neighborhood becomes an undesirable place to live. Therefore, not only does market dynamics play a role in site selection, but also the placement of the land use on the site and as a result the appearance of the area can decline, property and housing values can decrease, making the property more financially feasible for low income residents. The land use itself may also provide an incentive such as job opportunities for those low income residents who would be able to move near the land use. Also, other market factors such as public facilities, transportation routes, and housing discrimination may cause persons to "come to the nuisance" because the property values are cheaper and due to housing discrimination may be the only place low income or minority persons can afford. Therefore, because of close proximity to a facility, low-income and minority households begin to bear the negative environmental, economic, political, and social risks that are associated with LULUs. Though the siting of the facility still has negative impacts on the characteristics of the neighborhood, merely because the facility was sited in a minority neighborhood does not indicate that racism was involved in the siting process. Instead, it could be attributed to the market forces, therefore, rendering the studies' conclusions incorrect.

There are several disparities in the methods used by those authors who claim racism, inequity, or injustice occurs within the siting process which raises questions as to the validity of their hypotheses and conclusions. First, many of the sites selected in the aforementioned studies represent extreme cases of a high number of minorities or poor located in the area where the hazardous facility was located. Due to this higher proportion, many of the studies introduce a bias, which skews the results of the data toward the anticipated results. Secondly, when these studies were undertaken, they did
not take into account the prior demographics of the surrounding areas before the site was chosen. Instead, they used the demographics after the facility was located to try and lend support for their claims. These disparities could suggest that the siting pattern was fair but other forces acted on the community. Lastly, when the studies claim “environmental racism, inequity, or injustice,” each author or scientist’s definition of the impact is slightly different. Each definition deals with the issue of equity, however, each term represents a different population that can be affected.

The focus of these studies are not on the direct or indirect impact the waste facility has on the community, but how unfairly the sites have been distributed. The researchers do not emphasize the possible correlation between the location of a site and how market forces affect the socio-economic characteristics of a community. A more valid approach for researchers to investigate is that of the NIMBY syndrome. The NIMBY syndrome, like the environmental justice movement, provides the opportunity for examining siting issues in the context of environmental, social, and political impacts. However, the NIMBY syndrome includes all types of land uses, and does not specifically address the causation of the problem. Instead, its approach is outcome oriented. The solutions in each case mitigate the negative impacts so that the community can get much needed services and enjoy the benefits, but without the costs and other burdens. Numerous environmental justice studies examines populations surrounding a solid or hazardous waste facility. Only two studies, Greenburg (1993) and Gaber and Kunde (1994), examine other services and the impact they have on low income and minority individuals. Yet, similar to other environmental justice studies, these studies fail to explore how the facilities affect the demographics of the rest of the community or derive a correlation between market forces and the location of the facilities.

The overlying problem that runs rampant through the studies is that the methodologies employed do not accurately represent the outcomes in the communities that host facilities. Many different methods have been employed in each study to try and determine the effects of an unwanted land uses on a neighborhood or larger community. These methods have been compared to one another with the conclusion claiming “environmental equity.” In theory, the claims are the same, but because the definitions are inconsistent, and disparities are evident in the methodologies the results do not
accurately represent the impacts. Therefore, this thesis will explore the topic of environmental equity and its relationship to the NIMBY syndrome. This exploration will provide planners with a better understanding of the issues and how they influence both the siting process and the market. With this knowledge, planners will be able to make informed decisions and take an active role in preserving neighborhoods and communities and combat the forces that can cause these areas to decline.

**Definitions**

There are several terms which offer a description of the disproportionate siting and the environmental impacts associated with hazardous waste facilities and undesirable land uses. The terms used will either be “environmental racism,” “environmental equity,” or “environmental justice.” These terms are important to the development of the movement because they imply procedural equity within a community as caused by disproportionate siting. Though these terms imply the outcomes, they mean something very different. In this thesis, these terms are important to define in order to understand the issues associated with these terms and why they do not accurately describe what is happening in communities with environmental hazards and other undesirable land uses.

The term environmental racism was first coined by the Reverend Benjamin Chavis in the United Church of Christ Commission for Racial Justice Study in 1987. He defined environmental racism as “racial discrimination in environmental policy making and the enforcement of regulations and laws, the deliberate targeting of people of color communities for toxic waste facilities, the official sanctioning of the life-threatening presence of poisons and pollutants in our communities, and the history of excluding people of color from leadership in the environmental movement” (Grossman 1992, 31). Robert Bullard, of Clark-Atlanta University, defines environmental racism as “any policy, practice, or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race or color” (Bullard 1994, 1037). The United States Environmental Protection Agency, takes the two definitions and merges them together to define environmental racism as “encompassing any policy, practice or regulation, intentional or not,
that adversely impacts disadvantaged individuals, groups, or communities based on minority status” (Klein 1994, 2). The definition that Bullard uses includes an element of intent, whereas Reverend Chavis’s definition arises from a showing of a racially-disparate impact. The EPA has adopted the term “environmental racism”, and has merged the two definitions together, favoring that of Bullard’s.

The studies of the aforementioned authors have attempted to show that the siting of various hazardous waste facilities was indeed racially motivated. Finding a lack of support for racially-motivated sitings, the term of environmental racism has come under attack. The term, in itself, is very limited in scope and focuses only on minorities who have been disproportionately exposed to environmental hazards. Many environmental racism advocates think that trying to prove discriminatory intent is an insurmountable task (Collin 1992). Nonetheless, several studies have shown that race is a better indicator than income or housing values in determining the spatial distribution of various environmental hazards, including hazardous waste facilities (Bullard 1983; Mohai and Bryant 1992, UCC 1987). Therefore, many individuals support the term “environmental racism” as an accurate phrase to describe the movement.

A second term that has been used recently is the term “environmental equity”. Unlike environmental racism, this term incorporated those persons who are economically disadvantaged. Lauretta Burke defines this term as “the burden of environmental pollution borne evenly across society, and more specifically, whether racial minorities and low-income communities bear a disproportionate share of exposure to pollution and environmental risk” (Burke 1993, 44). Another author Marianne Lavelle implies “environmental equity” to mean “an equal sharing of risk burdens, not an overall reduction in the burdens themselves” (Cutter 1995, 112). Cutter defines “environmental inequity” as “a disproportionate effect of environmental degradation on people and places” (1995, 112). This term begins to take into account the proportional risk that individuals, groups, or communities, might incur if exposed or potentially exposed to various sources of pollution. Unlike the other terms, this term can be further examined through process or procedural equity, outcome equity, social equity, generational equity, and geographic equity.
Process equity or procedural equity involves studying the causal mechanism of inequity. It generally refer to the extent in which governing rules, regulations, evaluation criteria, and enforcement are applied in a nondiscriminatory way. Procedural or process equity is viewed most often in light of the Federal, State, or County procedural requirements for siting a new hazardous waste facility. Many studies have examined this facet to find what is causing the disproportion in society. The conclusions of these studies indicate that the laws and regulations governing the siting process are not properly implemented or enforced in all situations. A study undertaken by the National Law Journal found that EPA levied smaller fines in minority communities concerning the pollution of the environment (Bullard 1990). Another term associated with environment equity is that of outcome equity. Though no one has specifically documented any cases, outcome equity examines the spatial-temporal distribution of benefits and burdens. Generational equity can be defined as a framework for legal norms to bring justice for future generations from current and past practices. This is very similar to procedural equity in the sense that government prohibits individuals from destroying the environment so there will be resources left to ensure that future generations will have the same quality of life. Social equity refers to the role of socio-economic factors such as race, ethnicity, class, culture, lifestyles, and political power in decision making and environmental degradation and resource consumption. Social equity examines the spatial distribution of property values, housing values, transportation, public services, etc. of a community in relation to the hazardous facility to determine the risk to ourselves, society, and the environment. Geographical Equity is similar to social equity, except that it measures the location and spatial configuration of communities and their proximity to environmental hazards. A few studies (Burke 1993; Glickman 1994; Klein 1994; Mohai and Bryant 1992) have attempted to determine if there is some type of relationship between the location of an environmental hazard and the location of a community or neighborhood.

The terms associated with environmental equity encompass many different types of equity. The base term, environmental equity, focuses on the “sharing” aspect of both the benefits and the burdens. In this light, those authors who used this term support the theory that minorities and low income individuals are disproportionately affected and implies that those who reap the benefits must all
evenly bear the burdens as well. Yet, the theory that minorities and low income individuals unevenly bear the burden has not been conclusively proven. Instead, the subterm “social equity” not only encompasses the spatial relationships, but also the forces of the market. The term and subsequent definition represents the heart of the discussion: that some land uses may be concentrated in such a way that they pose a great deal more risk that other land uses.

A third term that has been used to describe this movement is “environmental justice”. Vicki Been, Professor of Law at New York University, defines “environmental justice” as “people of color and the poor being exposed to greater environmental risks than whites and wealthier individuals” (1994, 1384). Susan Cutter, Professor of Geography at the University of South Carolina offers a different view of “environmental justice” as “moving beyond racism to include others (regardless of race or ethnicity) who are deprived of their environmental rights, such as women, children, and the poor. It is a political action and social mobilization that marshals public and private commitment to change” (1995, 112). A third author, Stella Capek, offers a third view of “environmental justice”. 

“‘Environmental Justice’ can be understood as a conceptual construction, or interpretive “frame”, fashioned simultaneously from the bottom up (local grass-roots groups discovering a pattern to their grievances) and from the top down (national organizations conveying the term to local groups)” (Capek 1993, 5). In comparison to the other terms, environmental justice is less threatening than the term environmental racism and includes more than just minorities. It includes everyone who has been deprived of a clean, healthy environment. This term also implies an intrinsic human right that has been given to individuals by the constitution. Capek lists five specific “rights” that should be included as “environmental justice” (1993, 8):

1. The right to accurate information about the situation;

2. The right to a prompt, respectful, and unbiased hearing when contamination claims are made;

3. The right to democratic participation in deciding the future of the contaminated community;
4. The right to compensation from parties who have inflicted injuries on the victims; and

5. The right to the commitment to solidarity with victims of toxic contamination in other communities.

The term environmental justice has been revitalized by grassroots activists by shifting the focus from the pristine environmental preservations of the upper-to-middle class to a level where those individuals who do not have a preserved environment can concentrate on a local strategy to improve their quality of life. This focus, though now at the local level, still incorporates the causation of injustice. Unlike environmental racism, environmental justice encompasses the theory that individuals, neighborhoods, or communities have been unjustly burdened. Therefore, requiring a change in the siting process may not necessarily mitigate the negative impacts of a land use in a particular area. Instead, the possible change could cause the land use to be located in another area where the negative impacts will still occur.

The focus of the environmental justice movement is on the siting process and whether intentionally or unintentionally low-income and minority individual have become the victims. The terms used to describe this movement are too restrictive and do not attribute the natural market forces to the outcomes in communities. Furthermore, the focus of the movement has been on the causation of equity; which occurs in the siting process. In an attempt to change this process, this movement has overlooked the impacts that LULUs can have on a community. The question that remains is whether the focus of this movement can be shifted so that it concentrates on the impacts of LULUs rather than the siting process.
Chapter Three: Documentation of the Environmental Justice Movement

Case Studies on Environmental Justice

There have been hundreds of articles written on the environmental justice movement. To cover those articles in itself would be a thesis. Therefore, this literature review will examine the prevalent studies that provide empirical support for the existence of environmental equity. It will also include the court cases which, through two important laws of our constitution, sought injunctions against corporations to keep hazardous waste facilities out of minority communities. Finally, the actions taken by the different levels of government will be discussed and how the decisions of the court cases and the findings of the prevalent case studies have played a key role in the formation of new proposed legislation and governmental agencies to deal with environmental equity.

There are seven studies of the environmental justice movement which have tried to settle the question of whether the disproportionate burden on minorities or low income individuals is due to racism in the siting decision or market dynamics. Many of these studies focus on the hypothesis that there is an imbalance in the siting process of waste disposal facilities. Others hypothesize that even if the procedural aspects of siting an environmental hazard are properly implemented and enforced, the facility may still end up in a minority or low income neighborhood. In this hypothesis, the end is more important than the means, and this situation can still be referred to as environmental equity. The first landmark study was undertaken in 1983 by Robert Bullard. The idea for a study came about when Bullard assisted his wife, an attorney, in a law suit to challenge the siting of a municipal landfill in a predominately African-American neighborhood (Grossman 1992). Bullard found that all of Houston’s landfills and incinerators were sited in predominately African-American neighborhoods. Therefore, when undertaking his study he wanted to “test the proposition that waste disposal siting
has followed the 'path of least resistance' in the Houston area” (Bullard 1983, 275). To prove his proposal, Bullard used active permit sites as of August 30, 1979 in Harris County and population data for the Houston-Harris County area. Bullard concluded that six of the eight incinerators were located in predominately African-American neighborhoods. He also concluded that all five publicly-owned landfills and five of the six privately-owned landfills were also located in predominately African-American neighborhoods. Bullard’s overall conclusion was that while 28 percent of Houston’s population was African-American, over 75 percent of the waste disposal facilities were located within predominately African-American neighborhoods (Bullard 1983).

The second landmark study that brought the national spotlight on the environmental justice movement was the GAO study. This study was brought about due to an inquiry by the Honorable James J. Florio, the Chairman of the Subcommittee on Commerce, Transportation, and Tourism under the committee of Energy and Commerce in the House of Representatives and Congressman Walter E. Fauntroy, after the protest in Warren County. Mr. Florio asked the GAO to determine the “correlation between the location of hazardous waste landfills and the racial and economic status of the surrounding communities” (GAO 1983, 2). The GAO focused their study on four off-site commercial hazardous waste landfills not surrounding industrial facilities in the eight southeastern states which comprise EPA’s Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee). The GAO used 1980 census data for counties and examined the percentage of African-American population, mean family income, and the percentage of population below poverty level. They also conducted interviews and reviewed files to obtain further information about the landfills and the surrounding communities. The GAO compared the census data with the site information and drew the following conclusions (GAO 1983):

1. Three out of the four off-site hazardous waste landfills in Regions IV’s eight states were located in areas having a majority of African-American population;

2. African-Americans make up the majority of the population (52%, 66%, and 90%) in three of the four communities where the landfills are located;

3. At least 26 percent of the population in all four communities have income below the poverty level and most of this population is African-American.
The third landmark study was completed in 1987 by the United Church of Christ Commission for Racial Justice. The United Church of Christ Commission for Racial Justice was formed when an African-American activist was assassinated in 1963 (Grossman 1992). The Commission then became the civil rights advocate for the Protestant denomination (Grossman 1992). They became involved in environmental issues in 1982 when the residents of Warren County asked for help to stop the siting of a PCB landfill. Following the protest, Reverend Benjamin Chavis, then executive director of the United Church of Christ, began asking questions concerning the sitings of toxic waste sites in minority neighborhoods. With these questions unanswered, the Commission for Racial Justice undertook a national study. This study was the first comprehensive study undertaken on a national level that focused on the relationship between race, economic class, and spatial distribution of commercial hazardous waste facilities and uncontrolled hazardous waste sites (United Church of Christ Commission for Racial Justice 1987). The method that the United Church of Christ Commission for Racial Justice used included census data that was merged with zip code boundaries. The zip code boundaries were used to define the neighborhoods. This study drew several major conclusions (United Church of Christ Commission for Racial Justice, 1987):

1. Race proved to be the most influential variable in association with the location of the commercial hazardous waste facilities;

2. Communities with the greatest number of commercial hazardous waste facilities had the highest composition of minority residents;

3. In communities with two or more hazardous waste facilities or one or more of the nation’s five largest landfills, the average minority percentage of the population was more than three times that of the communities without such landfills;

4. Race was the most significant variable in association with communities with commercial hazardous waste facilities as compared to those communities without, followed by the value of owner-occupied housing;

5. Three out of every five African-American and Hispanic Americans living in the United States live in communities with uncontrolled toxic waste sites; and

6. Approximately 50 percent of all Asians/Pacific Islanders and American Indians lived in communities with uncontrolled toxic waste sites.
A fourth study that was conducted, was built upon the data from the GAO and Bullard studies, was conducted by Vicki Been. The premise of her study was to:

analyze the existing research of these two studies and explain why it was insufficient to determine whether the siting process placed waste facilities in neighborhoods that were disproportionately minority or poor at the time the facility was opened, whether the siting of the facility subsequently drove host neighborhoods to become home to a larger percentage of people of color or the poor than other communities, or whether both of these phenomena contributed to the current distribution of waste facilities. (Been 1994, 1984).

She identified the gaps in the existing study and took demographics from the census in the years closest to the time the facility opened. With this information she examined the information for the sites over a period of time tracking the changes in the community before the site was opened and then after the site opened. Been found in the Bullard study that there was a correlation between racial demographics and initial siting. Yet, this correlation did not indicate that the minorities came to the nuisance. In analysis of the GAO study, she found that the market dynamics played a significant role in creating disparity between the host community and non-host community.

In a notable study that has been most recently undertaken and used a different methodology than the previous studies was completed by Doctors Paul Mohai and Bunyan Bryant. Their study was undertaken in cooperation with the University of Michigan and they had previously served as Co-Principal Investigators of the University of Michigan's 1990 Detroit Area Study. The purpose of Mohai and Bryant's study was to determine whether race had any relationship with the location of commercial hazardous waste facilities and whether this relationship was independent of income (Mohai and Bryant 1992). The data used to determine these relationships were taken from the University of Michigan 1990 Detroit Area Study and face to face interviews of residents 18 years and older in Macomb, Oakland, and Wayne Counties in the State of Michigan. The information regarding the location of the facilities for this study was obtained from the Michigan Department of Natural Resources.

In order to determine the relationship between the variables, Mohai and Bryant drew three concentric circles placed at intervals of within 1 mile, 1 to 1.5 miles, and more than 1.5 miles from a
existing or proposed commercial hazardous waste treatment or storage facility. They then selected 504 respondents from households that were located more than 1.5 miles from a facility for their interviews. To complete their random sampling pool, 289 respondents were chosen that lived between 1 to 1.5 miles and within one mile of a facility. From these interviews, information was collected from each household based on race and household income. With this information and their unique methodology, they were able to calculate to the nearest 0.1 mile, the proximity of the respondents to the facility. From this data, Mohai and Bryant were able to draw several conclusions. Of those living more than 1.5 miles from a commercial hazardous waste facility, 18 percent were minorities and 10 percent were below the poverty line. For those residents who lived between 1 to 1.5 miles from the facility, 39 percent were minorities, while 18 percent were below poverty level. A more striking increase is seen in the persons who lived within a mile from the facility. Of the respondents within this one mile ring, 48 percent were minorities and 29 percent were below poverty level. Mohai and Bryant concluded that as the distance from a household to a facility decreases, the percentages of minorities and poverty level persons increase. This bias is indicative of the pre-study findings. Before conducting their study, Mohai and Bryant determined that Michigan, the three-county area, and Detroit had minority percentages of 16, 21, and 76 respectively (Mohai and Bryant 1992). Of Michigan’s 21 commercial hazardous waste facilities, 16 were located within the three-county area while 8 of the facilities were located in Detroit. Mohai and Bryant concluded from these findings that “commercial hazardous waste facilities in the state are clearly located disproportionately where minorities are most heavily concentrated” (Mohai and Bryant 1992, 170).

To determine whether race and the location of the site were independent of income, Mohai and Bryant utilized a multiple linear regression analysis. They concluded that race and location were independent of income, and furthermore, found that race was a better predictor than income in location of a commercial hazardous waste facility (Mohai and Bryant 1992). Mohai and Bryant went on to state “the relationship between the location of sites and income is no longer statistically significant” (Mohai and Bryant 1992, 174).

Another more recent study is the one that was conducted in 1994 by Matthew Klein for Lake County, Indiana. The purpose of his study was to determine the extent to which both minority and
low-income households were exposed to waste management facilities (Klein 1994). Klein also wanted to develop a methodology that achieved greater precision between the variables as compared to other studies (1994). His theory for his study was that as the distance to the facility decreased, the percentage of minority and low income individuals increased. To accomplish his goals and test his theory, Klein used block group census data for Lake County, site inspections to identify sites, and Tiger/Line data which were entered into a geographic information system (GIS). Next, Klein drew concentric rings around each site at 1 kilometer, 2 kilometers, and 3 kilometers apart. From this map, he determined what block groups would be in each ring. Klein then used the minority percentage of the population within each group and median household income to figure Pearson's product-moment correlation coefficient analysis. He wanted to determine whether a significant correlation existed between the distance from the site and minority percentage and between the distance of the site and median household income (Klein 1994). Klein then used a multiple linear regression analysis to identify which variable, income or race, would be a more precise predictor of the distance from the site (1994). From his statistical analysis, Klein drew several conclusions which both proved and disproved his theory. He concluded from his findings that out of the thirteen waste disposal facilities, only two sites, the Munster Landfill and the Gary Landfill, had significant correlation coefficients. The first correlation was the relationship of the Munster site to minority percentage. He found that the closer to the center of the site, the greater the minority percentage. The second significant correlation was between the distance from the Munster site and median household income. Klein found that the closer to the center of the site, the greater the median household income. Another conclusion that Klein stated was the high frequency of minority households around the Munster site which had median incomes greater than $100,000 per year.

The third significant correlation that Klein found dealt with the Gary Landfill and median household income. He found that the greater the distance from the center of the landfill, the greater the median household income. With this result, Klein then employed the method used by Bullard to see if there would be a difference in results. With his concentric rings, Klein found that census tract 103 was the tract in which the Gary Landfill was sited. He found that Lake County as a whole had 24.5 percent African-American persons whereas tract 103 had 87.8 percent African-American persons.
He concluded, based on Bullard's method, that indeed African-Americans in particular were disproportionately exposed to hazards presented by the Gary Landfill. However, he also stated that tract 103 included areas more than 3 kilometers away from the site. Klein examined the tracts that were immediately surrounding and contiguous to tract 103. He found that these tracts were located within 2 kilometers of the Gary Landfill and only consisted of 0.6 percent African-American persons. He concluded that "any findings of a disproportionate exposure of minorities to waste management facilities derived following the methodology employed by Bullard [1983; 1984] may not be meaningful" (Klein 1994, 15).

The final case study to be discussed is the one undertaken by Theodore Glickman in 1994. Until this study was undertaken, none of the studies had taken into consideration the actual risks associated with the hazardous facilities. Therefore, Glickman combined risk assessment with proximity-based measurements to analyze environmental inequity. The subjects of the study were the industrial hazards in Pittsburgh and surrounding Allegheny County, Pennsylvania. In order to measure environmental inequity based on proximity Glickman used GIS. In his analysis, he divided Allegheny County's industrial facilities into two categories: those that may pose chronic hazards, which included the toxic release inventory (TRI) facilities and those that may pose acute hazards, which were extremely hazardous substances (EHS) facilities (Glickman 1994, 3). Glickman gathered the information on the facilities from the national database of reports of industrial air pollution and the federally required reports for facilities that store EHSs.

Like Mohai and Bryant and Klein, Glickman constructed concentric circles around each TRI and EHS facility of approximately one-half mile, one mile, and two miles. The areas within the circles were considered the close-proximity regions. This was the region where people lived in close proximity to the facilities. Glickman made one important assumption for this region, that it was homogeneous with regard to proximity effects. This means that the "hazard burden is the same no matter which facility you are close to or how close you are to it, as long as you live within the region" (Glickman 1994, 3). Using GIS, Glickman calculated the proportion of nonwhite and poor residents inside and outside each region for both types of facilities. He concluded that nonwhite residents
made up 16 percent of the population inside the close-proximity region and only 11 percent in the outside region (Glickman 1994). Likewise, he concluded that poor residents also made up 16 percent of the population inside the close-proximity region, while only 10 percent of the population made up the outside region (Glickman 1994). When calculating the results for the TRI facilities, similar results were obtained. Thus Glickman concluded that there are slightly higher percentages of nonwhite and poor people living closer to EHS and TRI facilities than anywhere else in the county.

The next step of Glickman’s study was to perform a risk-based analysis. In order to perform this analysis, Glickman used major factors on which risk depends. These factors included “the probability of an accidental release of chemicals; the size of the area affected by such a release (which depends, in turn, on the substance released, the quantity released, the nature of the release, the release rate, and the weather at the time of the release); and the wind direction at the time of release” (Glickman 1994, 3). Using the GIS, Glickman was able to create a formula that took into account all of the above factors as well as the toxicity of the chemical release and the level of exposure of the population in question.

Due to the fact that exposure varies by the time of day, Glickman had to calculate both daytime and nighttime risks. In order to do so he used the residential and journey to work data from the census to calculate the risks at each EHS facility. After making his calculations, which were based on the most hazardous chemicals stored at each facility, he drew several conclusions. Glickman’s results found that the risk from accidental chemical releases for nonwhites and the poor are 9 percent and 8 percent, respectively (Glickman 1994). The county percentages on nonwhites and the poor are 13 percent and 12 percent, respectively. Glickman concluded that “nnonwhites and poor people actually bear proportionately slightly less of the risk than they would if equity existed” (Glickman 1994, 5).

Glickman offered several reasons for this outcome. First, Glickman combined all of his results for the EHS facilities. Therefore, on a facility-by-facility basis, the results could vary. Secondly, nonpoor Caucasians are at greater risk from hazards that affect a large area. This is because nonpoor Caucasians are more likely to live farther from a facility, whereas minorities and the poor live closer
to a facility. In the case of a major accidental chemical release, it often exceeds one mile, therefore causing risk to those who live in a larger radii.

**Analysis of Environmental Justice Case Studies**

There have been several studies which have addressed the subject of environmental inequity and the solutions that could diminish the effect on minorities and low income citizens. Some of the studies incorporate unique methods that begin to depict the outcomes in communities. However, when examining some of the aforementioned studies further, flaws in the methodologies these studies utilized can be detected. This analysis examines the above studies and describes why some of the conclusions the authors derive are invalid and why others further the cause of the environmental justice movement.

One of the methods used that examines the causation of the environmental justice movement is seen in the Mohai and Bryant, Klein, and Glickman's studies. Unlike other studies which only measure the percentage of minorities and poor in a census area, their method employs concentric circles centered at each facility. These circles are used to determine where residents live in proximity to environmental hazards. In previous studies, comparisons were made from census tracts. The problem with the comparison method is that there is no distinction between areas that have one facility and those that may have more than one. The problem occurs when there is more than one facility located in an area. If there are two or three facilities, there is no way of measuring the impact all three facilities will have on the populations living around the facility. Another problem is that the comparison method does not take into account the actual proximity of a facility and the residents that live around it. A land use may be very close to the edge of the neighborhood and in some situations the neighborhood next to it may be just as affected, if not more. With the comparison method there is no way to measure the risk of any persons living near the facility. A third problem with the comparison method that the concentric circle method eliminates is that census tracts and counties usually do not accurately represent the affected area or range of hazards associated with a facility. With the census tract the boundaries of the area are set. Some of the people without those
boundaries may be more than three kilometers away, in which case very little impact could occur to them. When the concentric circle method is employed, the risk that one group may face due to its proximity can be detected. The questions remains as to how large the radii of each circle should be. This methodology begins to associate proximity of one’s residence with the risks associated with living near a facility which can help to determine if a specific group incurs more risk of pollution than another.

Mohai and Bryant employ another method which can be particularly useful in trying to determine risk associations at the smaller level. In their method, Mohai and Bryant conducted face to face interviews of their respondents. At this level they could pinpoint to the nearest 0.1 mile where respondents live from the commercial waste facility. This method allowed Mohai and Bryant to define the boundaries of their study as compared to the other studies whose definition of community or neighborhood was defined through census tracts, zip code boundaries, or entire counties. They could also determine, based on the interviews, about how much exposure that the resident received due to the proximity to the facility.

Glickman’s study differs in several respects from the above studies. First, the study considers not only chronic hazards in the form of air pollution but also acute hazards in the form of potential exposures such as accidents involving toxic chemical spills. Most of the other studies indicate that chronic and acute risk is associated with the proximity but do not specifically measure this risk. Therefore, the researchers make an assumption about the risks associated with the proximity of a resident to a facility, but never test the theory. In fact, as Glickman pointed out, people who live more than three kilometers away could have a slightly higher risk from acute hazards because if a spill occurred, instead of staying contained, the spillage would drift away from the site. In many cases, the people close to the site would be evacuated while the people who live farther away would not be evacuated, therefore putting them at a higher risk. Second, this method analyzes equity not only in relation to proximity to hazards but also in relation to the actual health and safety risks associated with each hazard. Glickman’s method takes into account the different types of hazards in which the impacts to a person’s health could be determined. Again, actual health and safety risks are not
incorporated into the methods that previous studies have used. The authors assume the impact is the same no matter what the type of facility in the communities. Third, like Been’s study, Glickman’s analysis will track changes in the distribution of environmental hazards through property values, demographics, or other indicators of change. This can determine whether the siting of the facility was equitable and/or if market dynamics played a role in the changes of the socio-economic characteristics of a community.

As discussed in the beginning of this proposal, there are several terms that identify the growing environmental movement. Many of these studies do not offer the same definition or the same context in what they are addressing. Inevitable the terms used do not represent the outcomes. First, the authors use one blanket term, and in some cases incorrectly, on which they base their studies. Those studies that use the terms equity and justice, in sense, are trying to prove that a facility was sited unfairly. However, both terms are positive in context and can be defined in some measure of fairness.

Secondly, the term “environment” can refer to two different facets. The first being the physical environment, in which case the authors could be referring to the land, water, and air in the sense that these things are being unfairly contaminated in certain areas of a community. The second facet, can refer to the environment in which people live. This could include a block, neighborhood, economy, political or social structure. In this respect, the environment is changing due to outside forces acting upon it. Depending on the context of how the authors are using it, either interpretation could be correct. Though these two points may seem mute, this small discrepancy becomes a problem because these discrepancies can cause the studies to measure something different instead of what is intended. The results then become invalid because the studies inevitability are not measuring the same theory that they set out to measure and no study could be compared to another in terms of environment inequity due to this ambiguity.

A third problem within the context of a definition is the term “community.” All of the studies define minority communities as those communities whose percentage of non-white residents
exceeds the percentage of non-white residents found in the entire population of the United States. This means that even though a community may have a majority of Caucasians, if the percentage of non-white residents in the community is still higher than the percentage of non-white residents in the United States, then the community is in fact a minority community. This type of definition introduces a bias into the study which could skew the results. A more logical approach might be to examine those communities whose percentage of minority population is greater than fifty percent non-whites in their community as a whole.

Many of the studies, in association with the definition of a community as stated above, ignored population densities. The studies site a percentage of minorities that have been impacted in communities, but in what context. The research does not indicate how many people are actually exposed to the risk. For example, in one community there are one hundred residents with fifteen percent of the population being African-American. In a second community, there are six hundred residents with eight percent of the population in the community being African-American. If the United States is composed of ten percent African-Americans, then the community with one hundred residents would be considered a minority community, whereas the community with six hundred residents would not. However, when breaking down the percentages, there are more non-white persons exposed to environmental hazards in the community of six hundred residents (48 African-American residents with possible exposure) as compared to the community of one hundred residents which was considered a minority (20 African-American residents with possible exposure).

The United Church of Christ study has a similar flaw to the Bullard study within its methodology. This study used zip codes to determine the boundaries of its neighborhoods. However, when determining the percentage of minorities in each zip code district, the study used unweighted statistics. Their methodology included summing the percentages of minorities in each zip code area and dividing them by the total number of zip code areas (United Church of Christ Commission for Racial Justice, 1987). By using this method, the United Church of Christ did not take into account that each zip code area had a different population density. Therefore, some of their results were
skewed and the exact number of minority persons exposed the environmental hazards cannot be derived from their methodology.

Other questions arise concerning the definition of the area that is being studied in some of the studies. Certain studies used areas that were broad in context. The Bullard Study does not define the boundaries of the “neighborhoods” that were used. Also, because Bullard never states his methodology, determining the context in which he derived his boundaries is very difficult. Therefore, reproducing Bullard’s study may be difficult. The GAO and the United Church of Christ used regions within the county context and zip code boundaries, respectively. Both studies state that the results from their study could be applied to the United States as a whole. However, a problem occurs because the boundaries are too big. If the data were applied to smaller regions, such as census tracts or block groups, it would be invalid. This can be seen in Klein’s study when he tried to replicate his results in the Bullard study with the smaller boundaries. The results he achieved at the larger boundary became invalid as the smaller level.

Another flaw in the existing studies is that the Bullard, GAO, Klein, and United Church of Christ studies did not take into account the socio-economic conditions of the communities before the hazardous waste sites were located. These studies use the current socio-economic conditions of the communities at the time the facility was sited to prove their theories, which would alter the results of their studies. In essence, these authors have taken a picture of the socio-economic characteristics in one point in time. From this picture the authors conclude that inequity is occurring. Yet, the picture does not capture the change that is occurring in a community. This can be seen in Been’s study, which took the Bullard and GAO studies and used information nearest to when the facility was opened to fill in the gaps in the picture. From the complete picture, Been was able to make conclusions on what caused the change in the community. Furthermore, every studied review used communities that had the highest percentages of minorities as a whole as compared to the state or nation as a criteria for choosing their sites. Therefore, the studies had already begun to shape how their results would turn out.
Additional disparities can be seen in the types of facilities the Bullard and the United Church of Christ studies use. Bullard uses census data and sites that had received a permit to operate. Since many of these sites dated back to the 1920s, and there were no established census tracts back then, trying to determine racial and other socio-economic characteristics would be next to impossible. However, Bullard still discusses the different types of landfills and their relationship to minority neighborhoods. Out of all the sites he used in his study, three were actually counted twice. He states that the three sites were originally public facilities which were taken over by private contractors. However, when addressing public and private landfills and their location to minority neighborhoods, he lists them in each table as if they were different facilities (Bullard 1983).

The United Church of Christ Commission for Racial Justice study also has a similar problem. When determining their criteria, the United Church of Christ chose to use commercial hazardous waste management sites. This limited their scope to only those facilities that handled commercial wastes, not public or even non-toxic wastes. Though commercial waste facilities can have a hazardous impact on a community, sometimes public facilities or non-toxic waste facilities can have a greater impact in terms of political, economical, and societal impacts. So this study did not take into account public landfills, which are predominately the issue concerning the environmental justice movement.

Another disparity that is present in the Bullard, GAO, United Church of Christ, and Been studies is that they do not explain the locational relationship of the facility to the neighborhood. These studies show a map of where the facilities are located, but because the boundaries of the communities are not clear, no concise conclusions can be drawn as to the impact the facility has on the neighborhoods that are located next to it. Instead, the studies only imply the risks that are presented by these facilities. Therefore, the studies claims about the health threats from these facilities may not be justified.

Finally, none of the studies have adequately established that discriminatory siting has caused disparities among minority and low-income individuals. Though, the studies have matched socio-
economic conditions with the location of the facility, as stated before, they did not take into account
the previous conditions of the communities. Therefore, the studies still leave questions as to why
there are higher concentrations of minority and low-income populations near waste facilities. These
gaps, as Vicki Been has stated, may lead to the possibility that other factors are causing this disparity
(Been 1994).

Overview of Court Cases Challenging Environmental Justice

With many of these studies showing a disparate impact towards minorities, many cases have been
brought to the courts to stop waste facilities from locating in minority areas. There are two major
laws under which plaintiffs have tried to defeat future siting decisions. These laws include the Equal
Protection Clause of the Fourteenth Amendment and Section 1983 of the Civil Rights Act of 1864.
Under these laws plaintiffs must prove discriminatory intent on the part of government decision
makers. Cases that have tried to prove discriminatory intent find that it is very difficult to do. The
plaintiff first must show a burden has been placed on the minorities in the community. Like many of
the studies that have been undertaken, proving such an impact based on a geographic area is hard to
do. If the plaintiff can prove a disparate impact, the second part of the clause requires plaintiff’s to
prove the siting decision was based on intent. Again, proving intent is hard to do because it is hard
to prove one’s racial bias, and, if there have not been any cases in the community similar to this
siting, then there is no history to show that discrimination has occurred. In the case of the Village of
Arlington Heights v. Metropolitan Housing Development Corporation, the supreme court delineated
five factors which plaintiffs should use as circumstantial evidence when bringing forth a case based on
discriminatory intent:

1. the impact of the official action and whether it bears more heavily on one race than
   another;

2. the historical background of the decision, especially if it reveals a serious action taken
   for invidious purposes;

3. the sequence of events preceding the decision; any departures, substantive or
   procedural, from the normal decision making process; and
4. the legislative or administrative history, specifically contemporary statements, minutes of meetings, or reports. (Godsil 1991; Mitchell 1993; Coleman 1993)

Using these standards, three cases have gone to court to challenge a community on the siting of a facility based on discriminatory intent. The first case is Bean v. Southwestern Waste Management Corporation which was brought to the Supreme District Court of Texas in 1979. The residents of the community were attacking a permit decision that sited a facility near a predominately African-American high school and a residential neighborhood. The case was based on two theories:

1. the Texas Department of Health's decision to construct a solid waste facility in a minority residential neighborhood was a pattern or practice of discrimination in the placement of solid waste sites;

2. the Texas Department of Health's approval of the permit, in the context of the historical placement of solid waste sites and the events surrounding the application, constituted discrimination (Coleman 1993, 464)

Though, the residents provided empirical data to support their claims, the court found that they did not produce enough evidence to demonstrate that the siting decision was based on racial intent (Coleman 1993).

The second case was brought before the 11th Circuit Court of Georgia in 1989 by East Bibb Twiggs Neighborhood Association v. Macon-Bibb County Planning and Zoning Commission. The neighborhood association was trying to block the decision to operate a landfill in its neighborhood. The court found that the neighborhood did indeed prove that the siting decision would have more of an impact on minorities; however, the majority of the population in the area was African-American, therefore concluding that the facility would not affect those minorities that lived near the facility as opposed to the rest of the minorities in the community. The court also found that concerning the history of siting decisions in the community, there had been no previous demonstration of racial bias, especially when another landfill was sited in an area of the community that was primarily Caucasian. To try and demonstrate further racial intent, the plaintiffs attempted to show a "sequence of events preceding the decision" that proved this intent (Coleman 1993, 467). The plaintiffs then brought forward a study that was conducted in the community that illustrated racial discrimination in the
community and stated that during the meeting the commissioner attempted to gather input from residents around the community and urge reconsideration of the decision. The court found that the commissioner was very passionate in trying to represent everyone’s needs and see that the decision was well thought-out. Therefore, the neighborhood association failed to show discriminatory intent in its case.

The third case that went before the 4th Circuit Court of Virginia in 1991 was R.I.S.E., Inc. v. Kay. The case came about when the Board of Supervisors in King and Queen County bought land to open a new landfill. Though the residents petitioned against the landfill, the board approved the facility. Hence, R.I.S.E. brought suit against the board claiming the board was “maintaining a pattern and practice of racial discrimination in landfill and zoning” (Coleman 1993, 469). Though, the residents proved disparate impact by illustrating that African-Americans did host a disproportionate number of county landfills in their communities, the court found that the racially motivated decision was not proved, and thus the suit was not found in their favor.

**Federal Actions on Environmental Justice**

Based on the studies that have been performed and the above court cases, Congress and the President have sought legislation to deal with environmental inequity in neighborhoods. In 1965, there were several crisis’s that led Congress to realize that improper waste disposal of any type could cause severe health problems. Therefore, in conjunction with public perception and the disasters that arose, Congress created the Resource Conservation and Recovery Act (RCRA). RCRA set federal guidelines to manage the generation, transportation, treatment storage and disposal of hazardous waste (Godsil 1991). The federal guidelines offer a framework as to the siting of a facility. Hence, the state is left to create more stringent guidelines by following the guidelines set by Congress and the EPA. The EPA set up three basic requirements that the state must follow when creating development guidelines for siting programs. These include:

1. the state must complete a technical analysis of all proposed sites before any single site is selected;
2. the public must be allowed to fully participate in site selection; and

3. the state must not allow the process of site selection to be hampered by blanket local vetoes. (Godsil 1991, 402)

The states, therefore, are the one's left with the burden to make sure the sites are evenly distributed over the entire state. Hence, the NIMBY syndrome has been felt up to the top levels of the state. This usually leaves top state government officials placing facilities in those areas where there is lesser political power to oppose the facility. The facility ends up in poor, powerless, minority neighborhoods. Many states have tried to establish approaches which bypass or overcome local opposition to these facilities. There are three such programs which states could implement to determine siting decisions: super review, site designation, and local control. In the first approach, super review, a developer will chose a site and then apply for a permit from the state. The state agency (Department of Natural Resources or Department of Environmental Management or the equivalent of EPA) will review the site to determine the type of impact it will create on the surrounding areas. If the application satisfies the state requirements, then the application is passed on to a siting board. The siting board is made up of experts and local representatives. Since the board retains local representative who are the voice of the community, public hearings are not usually held. The problem with this method is that discriminatory siting can still occur. The developers pick the sites, and therefore, will pick the most cost efficient sites. Usually these sites are located near poor and minority areas.

The second type of process the state could implement is the site designation approach. In this approach, the state creates a list of possible sites within the state from which a developer can choose from to locate their waste disposal facility.

This approach leads to less discriminatory siting in the fact that the states have more control over the distribution of waste facilities. The states require each county to submit a list of potential sites to the state. The state then reviews the sites and compiles a list of the best possible sites. In this process, the states have the opportunity to check the demographics of each site and the surrounding areas to ensure that sites submitted are not in favor of poor and minority areas.
The final process a state can adopt is local control. In this approach, the localities create land use restrictions (usually through zoning) in order to block hazardous land uses from sensitive areas such as residential areas, water supply, etc. In the United States, there are only two states left that use this approach, Florida and California. Again, in this situation, there is more of a likelihood that environmental inequity can occur. Many communities will try to create strict land use ordinances that block any type of hazardous waste facility from their community. Therefore, states will have to provide incentives to try and influence communities to accept facilities. In the end, many minority communities are still "coaxed" into accepting the facilities.

Though federal and state guidelines have been established to provide equal distribution of waste disposal sites and to protect the health and safety of citizens, public outcry of environmental disproportion has still existed over the years. With the onset of the environmental justice movement, President Clinton signed an executive order in February 1994 entitled, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," addressing environmental equity. The general purpose was threefold:

1. to focus attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice;

2. to foster non-discrimination in federal programs that substantially affect human health or the environment; and

3. to give minority communities and low-income communities greater opportunities for public participation in, and access to public information on, matters relating to human health and environment. (EPA 1994, 1)

The executive order required each agency to make environmental justice part of its mission; not to discriminate in federal agency programs; research, collect data, and to analyze the effects of cumulative exposure to environmental pollutants. It also stated that federal agencies should encourage public participation and access to information, and state that the administrator of the EPA shall create an interagency working group on environmental justice, and required the federal agencies
to develop strategies that would identify and address those programs, policies, or activities that would cause adverse environmental impacts on low-income and minority population’s health.

In addition to the President’s executive order, Congress has introduced legislation which will address environmental equity. The legislation, which is pending, will create the Environmental Justice Act (EJA) and the Department of the Environment Act (DEA). The Environmental Justice Act seeks to “ensure equality in the implementation and application of environmental, health and safety laws” (Fisher 1994, 475). The EJA also requires the identification of toxic chemicals in areas that have severe contamination so that assistance can be provided to those communities affected. The DEA, if passed, would elevate the EPA to departmental status among the federal agencies and create the Office of Environmental Justice. This office would be responsible for helping collect data on groups that are affected by environmental pollution and ensuring that environmental equity was being implemented throughout governmental agencies.

The agency that has made the most strides in addressing environmental equity is the EPA. The most prominent step was creating the Environmental Equity Workgroup. The workgroups’ first task was to assess whether the minority or poor communities were at greater risk of exposure to environmental pollution than the majority of the population and then review all programs to make sure there was not any disparate impact to these groups. Based on their assessment, the workgroup found:

1. give greater priority to issues of environmental equity;
2. establish and maintain information for assessing risks by income and race;
3. consider the expected risk reduction in all EPA’s major rulemakings;
4. reduce high concentrations of risk for certain population groups
5. revise all EPA procedures to reduce risk in low-income and minority communities;
6. improve EPA’s communication with low-income and minority communities;
7. increase efforts to involve low-income and minority populations in environmental policy-making decisions; and
8. ensure that environmental equity concerns are incorporated in EPA’s long-term planning. (EPA 1994, 4)
As a result of these findings, the EPA established an Office of Environmental Equity to spearhead the fight for environmental justice and to begin to carry out the recommendations of the workgroup.

Though there have been several studies undertaken and legislation has been drafted to deal with the environmental justice movement, the question still remains as to whether it can be documented. Definitive proof has not been shown as to whether discrimination has occurred in the siting process or if market dynamics played a role in the distribution of undesirable land uses across the United States. Furthermore, the approach of focusing on the causation of inequity may not be as productive as addressing the outcome. Therefore, case studies and laws and regulations need to be redirected to focus on the types of changes that occur in a community, why those changes, whether positive or negative, are occurring, and how they are affecting the health of the residents in the area where LULUs are located.
Chapter Four: 
LULUs and the NIMBY Syndrome

Overview of LULUs and the NIMBY Syndrome

The focus that addresses the outcomes of environmental inequity in communities is that of the NIMBY syndrome. In past decades, several land use issues have emerged that require closer attention by urban planners. Many of the issues deal with the siting of public facilities which would benefit society as a whole. Several interrelated acronyms were coined by planners that either describe the public reaction to these land uses, or the land uses themselves. These acronyms include NIMBY and LULU, as well as, NIMTOO (Not In My Term Of Office), NOOS (Not On Our Street), and NOPE (Not On Planet Earth). The attitudes associated with the NIMBY, NIMTOO, NOOS, and NOPE phenomenon's have become known as the "NIMBY syndrome." Those who refer to this syndrome argue that the facility must be located somewhere, but not near them. The arguments associated with this syndrome are based more on the public's perceptions of LULUs. Therefore, this argument is not concerned with the technological aspect of the facility, but with the locational placement and the possible impacts of a facility somewhere in a community (Freundenburg 1992, 40).

The term LULU is based more on the type of the land use and the technology that it might employ. The term was first coined by Frank Popper who defined it as being certain projects that are needed by society but are opposed by the persons living near them (Popper 1981). LULUs, to some people, are undesirable land uses that they may not want located near them even though a community would benefit from them. Though LULUs can be classified as any land use someone is opposed to, they are generally public in nature such as prisons, airports, homeless shelters, aids hospices, strip malls, and junkyards, to name a few. These facilities provide desperately needed services to an area, but can cause a stigma to arise. This stigma (also know as the NIMBY syndrome) breeds a fear that property
values will decrease, crime will increase, environmental contamination will occur, and the appearance of a community will decline if a facility is sited in a community. Usually this stigma is unwarranted and is motivated by self-interest. Those people who do not want the facility sited near them hide behind the NIMBY syndrome, although in some instances the arguments against the location may be sound and socially acceptable.

There are two different types of perceptions that the public has toward a LULU that could initiate the NIMBY syndrome. The first type of perception is one in which individuals in a community are opposed to the location of a land use. In some cases, there may be certain land uses that people may not want to live by such as daycares, strip malls, hospitals, residential developments, or cemeteries. To these people that are opposed to the land use, they understand that the facility is needed, but the placement of the facility is undesirable and can better serve the needs of the community somewhere else. For their own reasons, they may think that the land use will have a negative impact on them in some way, whether it be an increase in traffic or noise pollution or a decrease in property. When this fear arises, it can breed within the community and can cause the NIMBY syndrome to occur, in which the whole community could become opposed to the proposed facility.

With the second type of perception, individuals or communities may oppose a land use or facility because of the type of land use and the technology it might employ. In essence, communities deal with many issues which include LULUs and their technology. In many cases, residents think that the technology cannot be separated from the land use. To these people, these facilities or land uses employ technologies that, in their opinion, are detrimental to the environment, their health, and can cause their surroundings to deteriorate. Another concern is that the land use is located near other land uses which are not compatible and will have a negative impact on its surroundings. Therefore, this concern creates a perception in a community as to whether a land use is “good” or “bad.” This perception then brings about the NIMBY syndrome, in which people do not want the land use in their community because it is “bad.” In some cases, with certain facilities, some of these opinions may be true. To illustrate this point, consider that a steel mill is going to be located a few miles upwind from a housing development. The site for the steel mill, because of the location, provides
good access to it, the land is reasonably priced, and the land is large enough to allow future expansion. The developers from the steel mill have also provided a buffer zone to disperse the noise, relocated the entrance so that it does not affect the flow and contribute to the volume of traffic, and implemented pollution control measures. However, the residents are still concerned that these measures will not be enough. Though appropriate measures have been taken, the residents think that the noise and pollution still cannot be controlled, and therefore do not think that this industry should be placed near them. Their concerns will cause other residents in the community to protest the facility and threaten to take legal action if the site is not denied. Though the steel mill has taken precautionary measures to protect the community, it could provide local jobs, increase the tax base, and contribute money and resources for the upgrade of the infrastructure, it is still perceived as "bad", and therefore will have to be sited somewhere else. Those people who become in tune with this perception and engulfed in the NIMBY syndrome become very hard to convince that the technology is safe and with the proper regulations and monitoring can cause little damage to their health and the environment.

Many of the social arguments about LULUs revolve around the fact that the NIMBY syndrome is a "result of a social dilemma characterized by a spatial separation of advantages and disadvantages" (Wolsink 1994, 854). When society needs a public good, a facility must be constructed. Usually the facility is sited in an area that already supports that type of environment or land use. Typically these areas are in powerless communities that cannot block the siting decision. In some cases, these communities are already deteriorating, therefore, by placing the facility in a particular location, the area may be helped economically. The disadvantage occurs though, when at the local level, the residents in a community feel they have to bear the burden and the costs of the facility and enjoy few of the benefits, while society as a whole benefits greatly, lending some credence to the issues of environmental inequity.

The NIMBY syndrome can occur on two different levels. The first level represents the opinions and attitudes of the individuals who will live near the facility while the second level represents the opinions and attitudes of the larger community where the facility will be sited. On the individual
level, a person or persons within a community will live within close proximity to the proposed site. In some cases, the persons living near the site may not know about the proposed plans for the site until the last hearing, in which the siting decision will be made. These persons, for various reasons, oppose the facility and do not want it “in their back yard” because they were not informed about the facility and were not included in the siting process. They are also opposed to the land use because of the perceived impacts the land use may impose on them. Therefore, within the community there is an outcry that the facility is being located in an area that would be detrimental to both the community and those people living near the site.

The second level occurs at more of the larger community level. This level is more concerned with the overall opinions and attitudes of the larger community about the siting process and the facility. Often times, the state government will decide that a facility, usually an undesirable one, could be located in several different areas within the state. Due to the fact that the state needs the facility because it provides a desperately needed service, the facility must be located in some community. A social dilemma occurs, and the NIMBY phenomenon takes place in each community with a proposed site. Many of the communities will argue that the facility would not be in the best interest of the state if sited in their community. In the end, in order to site the facility, only one community needs to come forward to accept the responsibility and possible benefits. If there is a possibility that a community may come forward, many other potential communities may delay their own decision making process in the hopes that one community will step forward and accept the responsibility of hosting the facility.

**Case Studies on LULUs and the NIMBY Syndrome**

In reviewing the literature, most of the literature deals with the NIMBY syndrome and LULUs in a general sense. The literature explains what the terms mean, how the opposition of facilities came about in a community, and certain actions that can be taken by politicians, planners, and the community to insure that the facility is sited with minimal opposition. Though many of the facilities have had some opposition to their siting, in the end, the facilities were still sited and the
communities and residents continue to move forward. Since these communities have moved forward, little study has been done on the actual siting process. Many of the case studies have discussed with how to effectively diminish opposition and incorporate citizens into the decision making process. There have only been two case studies that examined the siting process and whether it is equitable. The first study dealt with a New York City Municipal Shelter Siting, which occurred from 1980s until the 1990s. The study was undertaken by Sharon Lord Gaber and Brett Kunde. Gaber is an assistant professor in the Department of Community and Regional Planning at the University of Nebraska-Lincoln and wrote her dissertation on shelter siting, while Kunde is a master’s student in the department at the University of Nebraska-Lincoln and is working on his master’s thesis which addresses environmental justice.

In 1979 the Coalition for the Homeless filed a class action lawsuit against New York City charging that the city did not provide enough beds and allowed conditions to deteriorate to an unhealthy level at a mens shelter on East Third Street (Gaber 1994). In 1981 a dissent was finally given that stated it was the city’s responsibility to provide shelter and board for all eligible homeless men. Though the court had ruled for the Coalition for the Homeless, the Mayor of New York, Edward Koch, stated that he did not support the development of more city owned shelters and that the residents of the communities were opposed to the siting of a shelter in their neighborhoods. Therefore, the policy of siting shelters became one of isolated locations. However, in New York, it has been very difficult to find isolated locations, and the city had trouble keeping up with the demand for shelters. So, the city turned to locating shelters on city owned property, mostly located in low income and minority areas. These communities were given little to no notification that facilities were being placed in these areas. Therefore, many communities were not represented fairly in the siting process. As time pressed on, again most of the city property had been used up, and the demand still had not be met. Some communities began to cry “NIMBY”, while other’s stated “no more, we’re already saturated” (Gaber and Kunde 1994, 78). Allegations had been charged that some of the shelters were not fairly distributed. In 1986, Mayor Koch designed a plan that would equally distribute twenty shelters. However, due to new political alignments, trades in services were made so that some neighborhoods
would accept other public services rather than the homeless shelters. In 1987, the Board of Estimate approved the siting of eleven shelters in the Bronx, Brooklyn, and Queens.

Based on the above siting policy in New York, Gaber and Kunde inquired as to whether environmental racism/classism was occurring in New York City, and the possible outcomes of this type of environmental racism/classism (Gaber and Kunde 1994, 80). To determine this, Gaber and Kunde used 1990 census data to identify community board districts by percentages of families living below the poverty level (Gaber and Kunde 1994, 80). Gaber and Kunde took this information and installed it into a GIS, producing a map which showed the areas percent of families below poverty level for each community board district. The map indicated that families living below the poverty level were concentrated in the Bronx, Harlem, the Lower East side of Manhattan, and central Brooklyn.

Once these areas were determined, Gaber and Kunde used the 1990 Residential Facility Bed Indices to determine the number of shelters by community board districts. Again, Gaber and Kunde produced a map to display this information. The greatest concentration of shelters occurred in the Lower East side of Manhattan, central Harlem, parts of the Bronx, and central Brooklyn (Gaber and Kunde 1994, 81). The map also indicates that over fifty-nine of the community boards have either none or the lowest category of bed, one to 400 hundred shelter beds (Gaber and Kunde 1994, 81). The authors concluded that the city concentrated shelters in “poor, minority communities to take advantage of the available land and the political weakness of the community” (Gaber and Kunde 1994, 81).

To answer their second question of “What are the possible outcomes of this type of environmental racism/classism,” Gaber and Kunde use the theories of W.J. Wilson. Wilson’s theories are based upon the concepts of concentration effects and social isolation (Gaber and Kunde 1994, 81). Wilson states that “the inner city has been transformed resulting in a disproportionate concentration of the most disadvantaged segments of the urban African-American population, creating a social milieu significantly different from the environment that existed in these communities several decades ago”
(Gaber and Kunde 1994, 81). Due to this concentration, these individuals are isolated from others. This isolation causes the decline in access to jobs, diminished involvement in social activities, and the decline in economic activity in the area because the higher income families often move away.

Gaber and Kunde surmised that by locating shelters in areas that are already declining, those individuals that use the shelters may have little incentive and motive to try and change their economic and social situation for the better (1994). As for the communities themselves, they may also begin to deteriorate and become socially isolated (Gaber and Kunde 1994). The authors concluded that by forcing economically depressed communities to host homeless shelters, communities will be home to "new ghettos" (1994). These new ghettos will become the home to broken families, drug dealers, and the poorest families. In order to keep these new ghettos from forming, Gaber and Kunde concluded that by New York City adopting the fair share method of siting facilities in their charter, the inequitable siting process will be corrected (1994).

The second case study was undertaken by Dr. Michael Greenberg, a professor of Urban Studies and Community Health at Rutgers University. The premise for Greenberg's study was that other LULUs such as drug halfway houses, airports, maximum security prisons, and housing projects are disproportionately located in poor and minority communities (Greenberg 1993). In order to prove his theory, Greenberg created a five step process to test for outcome inequity. Greenberg's process includes answering five questions (Greenburg 1993, 327-328):

1. Who are the populations to be studied?

   With this question, Greenberg believes that a list should be created in which all the different types of populations are identified so that certain groups that may be burdened are recognized and appropriate action can be taken.

2. What are the LULUs to be assessed?

   Greenberg indicates that there may be a subset of LULUs that would indicate outcome inequity. This subset needs to be identified as well as other LULUs that may provide some type of harm to communities or persons. Along with this list, Greenberg suggests that some type of index should be created that would rank the LULUs as to the seriousness of the burden.
3. What are the burdens to be studied?

Many of the burdens that have been studied provide some type of health risk to persons. Many of these risks have been detected by performing risk assessments and environmental impact statements. However, many of these risks only apply to certain facilities. Therefore, Greenberg suggests that when a community is assessed all types of burdens be taken into account, such as socio-economic, political, environmental, and health related risks.

4. What are the geographical areas to be compared?

In the aforementioned studies, many researchers have used census tracts, block groups, zip codes, towns, and counties to determine if outcome inequity exists. Greenberg insists that the area that benefits the most people be compared to the area that bears the brunt of the burdens, both financially, but political, environmental, social, and health.

5. What are the statistical methods to be used in evaluation?

Greenberg states that many different types of statistics can lead to different conclusions to outcome inequity. In order to forego any type of unsubstantiated conclusions, several different types of statistical measures should be undertaken. In case studies, Greenberg suggests that researchers should include the locational history as well as at least one parametric statistic (ex.: arithmetic mean) and one nonparametric statistic (ex.: proportions statistic).

Greenberg used this process to test for outcome inequity using all Waste-to-Energy Facilities (WTEFs) in the United States. In this study, Greenberg used four different tests to indicate the importance of the steps in his five step process. In order to determine the location of the WTEF, Greenberg used the 1991 Resource Recovery Yearbook. The yearbook listed 294 facilities, of which ninety-two had to be excluded from the study because they were still in the conceptual stage of design, or they were permanently closed (Greenberg 1993). Of the remaining 202 facilities, another ten had to be eliminated because they were located in towns of less than 2,500 people (Greenberg 1993). In towns of less than 2,500, demographic information is hard to obtain. Therefore, to conduct his study, Greenberg used the 192 waste-to-energy facilities for which he could pinpoint a location.

In the first test, Greenberg wanted to “illustrate the impact of the choice of LULU to study on the results” (Greenberg 1993, 241). To accomplish this illustration, Greenberg compared the seventeen
towns with 100,000 or more persons and large WTEF (>1,000 tons/day (t/d) capacity) with the fifty-eight towns that had less than 25,000 persons and smaller facilities (<1,000 t/d) (Greenberg 1992). To compare the populations and the facilities, Greenberg used the towns as the burden area, and compared it with the actual service, which was the benefit area. Greenberg used as his test populations African and Hispanic Americans and per capita income.

To make the statistical comparisons, Greenberg used both proportions and arithmetic mean. For the proportions, Greenberg subtracted the service area from the town and then divided that number by the service area and multiplied it by 100 to determine the proportional percentage. For example, if a town had a per capita income of $10,000 and the service area had a per capita income of $20,000, then the resulting proportion would be represented as - 50%. In Greenberg’s comparison, the arithmetic mean consisted of “the percentage differences between the towns and their service areas” (1993, 241). Before making statistical comparisons, Greenberg made the assumption that “if LULUs were inequitably located in poor areas, then the arithmetic mean of per capita income in the towns should be significantly lower than the income of the US” (1993, 242).

When calculating the proportional statistics, Greenberg found that in the large facility-populated towns, less than half, 23.5% of the seventeen facilities, had a higher per capita income, while 88.2% of these facilities had a higher percentage of African and Hispanic Americans as compared to their service areas. Concerning the arithmetic mean, the larger-populated facilities per capita income average was 13.4% lower than their overall service area, while the percentage of African and Hispanic Americans were 77% higher than the service area as a whole. In examining the smaller facility-populated towns, Greenberg found when calculating the proportions that 60.3% of the fifty-eight facilities had a higher per capita income as compared to the service area, while only 43.1% of the towns had a higher percentage of African and Hispanic Americans as compared to their service areas. When analyzing the arithmetic mean, the towns per capita income was only 1.7% higher than their service area, while the percentage of African and Hispanic Americans were only 17.3% higher. From this analysis, Greenberg was able to draw the following conclusions (1993):
1. the larger facility-populated towns had significant inequities for per capita income and minorities;

2. the smaller facility-populated towns had a slightly higher per capita income and less minorities than their service area;

3. based on this test, outcome inequity is hard to argue for the WTEF industry as a whole; and

4. concerning large facility-populated towns, the industry does have a problem with inequity.

Concerning the second test, Greenberg wanted to "illustrate the impact of varying the region of benefit by comparing WTEF towns to the US and to the service areas of the WTEFs" (1993, 243). For this test, again the test populations remained per capita income and the percentage African and Hispanic-Americans. In this test, for the town/service area comparisons, Greenberg eliminated thirty-four of the facilities because they only served one town, airport, hospital, military facility, or university (1993). This left a total of 158 facilities for the comparison of the town/service area and the 192 facilities for the town/US comparison. Again, Greenberg employed the proportional percentages and the arithmetic mean.

During the proportional percentage analysis, Greenberg found that when comparing the town to the US, 28.6% of the towns had a higher income than the US and 38.0% of the towns had a higher percentage of African and Hispanic Americans when compared to the US as a whole. When analyzing the towns and their service areas, Greenberg found that 38.0% of the towns were more affluent than the rest of the service area, while 60.1% of the towns had a higher percentage of African and Hispanic Americans. In comparison to the arithmetic mean, the towns per capita income was 4.9% lower than the US, as was the percentage of African and Hispanic Americans, which was 4.2% lower. When comparing the towns and their service area, Greenberg again found that the towns had a lower per capita income, -5.4%, than the service area. However, when comparing the percentage of African and Hispanic Americans, the towns were 45.1% higher than the comparative value of the service areas. From these results, Greenberg concluded (1993, 244):
1. The results of the per capita incomes were not affected by the service areas;

2. Towns had a lower per capita income when compared to both the US and their service areas;

3. Minority results depend on the benefit area;

4. The towns/US comparison illustrate less minorities than what was originally expected; and

5. If the service area was chosen as the benefit area, then racial/ethnic inequity existed, but not if the US was chosen as the benefit area.

Greenberg, in the third test, wanted to "illustrate the complexity introduced by varying both the choice of populations and statistics" (1993, 244). In this test, Greenberg used the 192 WTEF towns and used the US as the benefit area. Again, the test populations were the same, except that Greenberg added one more population, the elderly. In addition to the statistics previously used, Greenberg added the population-weighted statistics. When using this statistic, the per capita income of the test populations would be multiplied by each of the respective populations and added together. Then, the result, would be divided by the sum of the populations of all the towns to get the weighted value.

In examining the results from this test concerning the elderly population, Greenberg found that in comparing the proportions of the towns to the US, 60.9% of the towns had a higher percentage of elderly than the US as a whole. (The results of per capita income and the percentage of African and Hispanic American persons was summarized above.) Unlike the results regarding per capita income and percentage of African and Hispanic Americans an analysis of the arithmetic mean of the towns concerning the elderly populations showed that the percentage of elderly was 9.0% above the comparative value for the US as a whole. Next, Greenberg calculated the population-weighted statistic for each test population. He found that the towns per capita income was 5.8% lower than the value of the US. However, both the percentage of African and Hispanic Americans and the percentage of elderly were higher than the value of the US, 65.1% and 9.6%, respectively. With the fluctuation in these results, Greenberg further divided the arithmetic mean of the towns into the larger facility-populated towns and the smaller facility-populated towns (refer to the beginning of test
one for the definitions of these towns). Greenberg found that the larger facility-populated towns, had a lower per capita income value than the US, 2.7%, while both the percentage of African and Hispanic Americans and the percentage of elderly were higher than the value of the US, 62.9% and 10.7%, respectively. When analyzing the smaller-populated towns, Greenberg found that both the per capita income and the percentage of African and Hispanic Americans were lower than the comparative values of the US, -5.4% and -22.9%, respectively. The arithmetic mean regarding the percentage of elderly for the smaller facility-populated towns was higher, 8.5%, than the value of the US. For these results, Greenberg drew several conclusions (1993, 246):

1. When using proportion statistics, the results suggest that African and Hispanic Americans are underrepresented in WTEF towns, while the population-weighted statistics suggest that African and Hispanic Americans are over-represented, therefore indicating that the proportion statistic ignores extreme values;

2. Proportion statistics are biased against people living in large population centers, while the population-weighted statistics corrects for this bias; however, it has a bias against towns with few residents;

3. Concerning the third test, inequity was more prevalent in the percentage of elderly not income and race/ethnicity;

4. Regarding the arithmetic mean, a few extreme values can drive the statistic;

5. Inequity depends not only on geography of LULUs but also the geography of the characteristic being tested for inequity; and

6. Conclusions cannot properly be drawn about equity without evaluating other statistics, both parametric and nonparametric should be used.

For the final test, Greenberg used the conclusions he derived from his previous tests to conduct this test. Out of all of the facilities used in the first three test, Greenberg picked New Jersey to conduct this case study. New Jersey is the most densely populated state in the US and has shifted from an importer of solid waste to an exporter. Due to this change, the government has proposed legislation that would ban interstate garbage, increase tipping fees at disposal sites, institute mandatory recycling programs, and construct larger incinerators. To compare statistics to the service areas of the incinerators in New Jersey, Greenberg used town and zip code data. Greenberg continued to use per
capita income, percentage of African and Hispanic Americans and percentage of elderly as his test populations; however, Greenberg also added the percent of population 0-4 years of age.

Greenberg, from the 1991 Resource Recovery Yearbook, located thirteen incinerators. One of the facilities served a military base, while the remaining twelve were to serve either a single county or several counties. Like the third test, the proportion statistic, arithmetic mean, and the population-weighted values were used as indicators of inequity. To make the comparison between areas, the service area served as the region of benefit, while the zip code boundary of the facility and the town of the facility were the burden areas.

When analyzing the proportion statistics for the town versus the service area, Greenberg found 41.7% of the towns were more affluent that their service area, 25.0% of the towns had a higher percentage of African and Hispanic Americans, 41.7% of the towns had a higher percentage of elderly, and 50.0% of the towns had a higher percentage of young people. In the comparison of the zip code percentages to the service areas, Greenberg found similar comparisons, 41.7%, 16.7%, 66.7%, and 25%, respectively. The arithmetic mean for the town versus the service area concerning the per capita income was 9.0% lower than the comparative values of the service area, as was as the percentage of elderly, in which the town was 7.0% lower than the value of the service area. The percentage of African and Hispanic Americans and the percentage of young values were higher than the comparative values of the service area, 33.8% and 6.2%, respectively. When comparing the town and service area with the zip code and service area, the results are similar in comparison. Both the per capita income and the percentage of African and Hispanic Americans are lower than the service areas comparative values, -11.1% and -1.0% respectively. As for the percentage of elderly and the percentage of young, Greenberg found that the comparative values for the zip code were 6.2% and .8% higher, respectively, as compared to the service areas. When Greenberg analyzed the population-weighted statistics, again the values were different. For the town, Greenberg found that the per capita income value and percentage of elderly was 24.0% and 12.6% lower than the values of their service area. For the percentage of African and Hispanic Americans and the percentage of young the comparative values are higher than the values of the service area, 171.9% and 18.8%,
respectively. From the results from this case study, Greenberg formed several conclusions (1993, 249):

1. This test demonstrates how difficult evaluating a few populations at limited geographical scales, especially when the number of facilities is limited;

2. None of the three populations, percentage of African and Hispanic Americans, percentage of elderly, and percentage of young, demonstrated consistent results; and

3. The zip code areas surrounding the WTEF sites show no evidence of racial/ethnic inequality.

After conducting these four tests, Greenberg made several recommendations as to how the government should proceed. Due to the fact that the term “environmental racism” can cause both economic and political impacts, Greenberg urged that the government ask a credible organization to conduct a policy analysis of environmental inequity based on a specified protocol that can become standard in the field (Greenberg 1993). Greenberg also stated that the process that he had invented should be considered. Greenberg thinks that, in accordance with step one, that a comprehensive list of disadvantaged persons should be created. In accordance with steps two and three, a comprehensive and prioritized list needs to be created that details which LULUs need to be evaluated and the possible burdens, including social, political and economic, that could occur. Consideration of a method that would define the primary and secondary areas of benefit and burden for each type of LULU and a way of weighting this analysis is the recommendation of step four. With step five, once the lists were made, the last recommendation would be to develop a method that would test the hypothesis that outcome inequity exists. After making recommendations for each step in his process, Greenberg made one final recommendation which included finding a way to accurately cover and report the results.

**Analysis of LULUs and the NIMBY Syndrome Case Studies**

Though there have been many different types of facilities that communities and individuals have been opposed to, in the end of the process, the concerns of everyone involved have somehow been met.
Therefore, there have not been an abundance of case studies that have addressed the issues of siting a facility. Those studies that have been performed examined the process of siting a facility instead of the outcome in the community. Not until recently have there been case studies that address the possible outcome inequity of siting decisions. The two studies of LULUs use different methods to achieve their desired results and begin to shed new light concerning planning and siting facilities. The analysis of these two case studies will detect some of the flaws of these methodologies as well as point out why parts of the methodologies could be useful in changing the negative outcomes as a result of an undesirable facility.

Greenburg's methodology provides a unique approach in dealing with the outcomes of siting facilities. Unlike many of the other studies which have tried to prove inequity, Greenburg first examined which approach should be taken and then developed a methodology to prove outcome inequity. Many of the studies performed, including the Gaber and Kunde shelter siting case, focus on process equity, which the authors have found very hard to prove. In proving process equity, many of the authors concluded that in the siting process certain criteria were deliberately ignored in order to site the facility in a low income or minority area. Gaber and Kunde suggested this, however, proving that the city ignored certain criteria in the siting process is never clearly proven. When Greenburg focused on outcome inequity, he began to examine the heart of the issue and determine what may be the possible cause of the outcomes and some of the possible solutions. By examining inequity in this light, the process began to include other factors that have not been taken into account before.

The process in which Greenburg used to demonstrate outcome inequity is unique. He began with a set of questions that should be answered to determine the outcome of the facility. With this comprehensive methodology, it can be applied to any type of facility. The author began to examine all the different types of populations that could be impacted, not just minorities and the poor. He included both children and the elderly, which can be affected as much as any other group. As stated earlier, including all of the populations in a study is important. Trying to determine exactly which
population was most at risk will help shape the solutions and will protect communities now and in the future.

Unlike the Greenburg Study, the Gaber and Kunde Study did not begin to examine other populations, however, they did begin to include the ideas of market dynamics. In their conclusions, they refer to W.J. Wilson’s theories based on concentration effects and social isolation. In essence, the inner city becomes transformed into a place where the economy and the environment are declining and by placing more unwanted land uses in these area, further decline will occur to the point where people will not begin to help themselves (Gaber and Kunde 1994). The authors made conclusions surmising that if deteriorated areas host facilities they would continue to deteriorate and become new ghetto’s. Though Gaber and Kunde did not thoroughly explore why the areas that hosted shelters would continue to decline and become new ghetto’s they did insinuate that economics, politics, and social structure did played a role.

In the Greenburg Study, the author also began to break down the different categories of LULUs instead of lumping all the types of facilities together. This is important, because unlike any other study, Greenburg recognized that each type of facility may provide different types of impacts which needs to be taken into account and that these impacts can burden and benefit different sized areas depending on the intensity. Some of the studies have tried to prove this by using a concentric circle method. Though this method is great in showing who is at risk and where, it has only been applied to hazardous waste facilities. This method also assumes that facilities are hazardous to the environment in the physical context, in which some LULUs may not cause that type of impact. By categorizing LULUs, information can be relayed easier to communities concerning impacts, and it may help to determine which process is effective in combating the NIMBY syndrome so that facilities are sited equitably and everyone shares the burdens and benefits.

Greenburg also recognized that different sized areas provided different results. In his methods, the author used several burden and service areas to determine which best represented the outcomes in each area that hosted a facility. In many of the other studies that have been performed, the authors
only used one area, in which they defined, to be the service area to compare to the location of a facility. As Greenburg has shown, depending on the defined benefit area, the results can be varied and may not accurately represent the trends in a community. When comparing Greenburg's findings with others' studies' conclusions, serious concerns arise as to the validity of the others' conclusions that were made based on their benefit and burden areas. In these studies, no mention was made as to the determination of the benefit and burden areas, and how they might impact the results. Such findings will lead researchers to the questions of "What area accurately represents the benefit and burden areas?" and "How can these areas be depicted graphically and statistically?"

Another useful methodology from the Greenburg study is the statistics that were used to conduct the analysis. In all of his comparisons, Greenburg, used two or more statistics to try and prove outcome inequity. However, like his conclusions using different burden and benefit areas, Greenburg found that when using different statistics, the results could not conclusively prove that outcome inequity existed. When using statistics to prove a theory, no matter how many different types are used, getting consistent results from the various ones used is important to maintain validity. Yet, as Greenburg has shown with using three common statistical analysis's, the results were not consistent. This illustrates that in previous case studies, the statistical analysis used may not have proven that inequity of any type existed. The authors could have chosen an analysis that might favor their theory. Therefore, researchers need to be careful when choosing a statistical analysis, and might even consider, as Greenburg has, to use more than one type of analysis in order to test their theories.

Though, Greenburg has provided a useful method that begins to shed light on inequity and planning issues, questions can be raised about his methodology. First, though Greenburg points out the different conclusions with using different burden and benefit areas, he did not clearly define the burden and benefit areas for his study. For the study, all the WTEF's in the United States were used. However, though this is stated in the study, no visual reference is given. Greenburg also stated that the burden area would be the towns in which the facility was located. In his conclusions, the author indicated that with different types of LULUs, different types of impacts can occur (Greenburg 1993). When studying a facility, the locational placement of people in relationship to the facility is
very important. By providing a visual reference of the location of people in proximity to the facility, the reader will have a clearer understanding of who is impacted the most and how intense the impact may be. Those people closer to the facility may incur greater impacts than those who live farther away. Also, residents may only live on one side of the facility, the side downwind, therefore, the burden may be greater for those people who live on that side. Therefore, without examining the locational placement of a facility, the true burdens on a community may never be fully taken into account in the study.

Secondly, when studying the burden and benefit areas, Greenburg did not take into account the density of the population. In some of the areas in the United States that were studied, the facility might have served a greater number of people than another facility. If this is the case, depending on the composition of the areas, the results from the statistics may be skewed. Therefore, the true number of persons exposed to the facility cannot be derived.

Another disparity concerning the WTEF's study, and the New York study is that Greenburg and Gaber and Kunde never provided the raw data for any of the facilities and did not provide a complete explanation as to how they derived their results. In examining Greenburg's tables, only the results are published. The reader has to assume that the results are correct and the statistics illustrated explains the true outcome in communities with the facilities. In this case, though the raw data set may be long, in order to provide credibility to the conclusions, the reader must be able to reexamine the raw data. Also, if the study was to be repeated, a researcher would have a hard time determining which facilities were omitted or which were used for the different tests.

In the case of Gaber and Kunde, they show two maps that lists the percentage of families below poverty level for each community board district and the number of municipal shelters by community board districts. First of all, this is the first time the community board districts are mentioned. The authors did not define what constitutes a district or how its boundaries are determined. Secondly, in comparison to other studies performed, this is a unusual boundary to study. Many of the studies completed use some from of census boundary, zip codes boundary, town, city, or county boundary.
It would be very unlikely to produce comparable results anywhere else since many other cities do not use community board districts. Thirdly, in reference to the maps that the authors created, they force the reader to make comparisons between the two. From these maps, Gaber and Kunde concluded which people would be more burdened. Yet, when examining the map, determining who is actually burdened would be very difficult because the facilities and the people who are most impacted are not shown. Making these conclusions between the two maps is increasing difficult. One map would have sufficed and would be easier to read that illustrated the same information in a shaded pattern for areas that had a higher percentage of families below poverty and had the highest number of facilities. This map would have then demonstrated clear results than what was given.

Another question that arises with Gaber and Kunde's methodology is that they concluded that by locating shelters in areas that were already declining, little incentives were given to those people in those areas to try and change their situation (Gaber and Kunde 1994). Besides market dynamics, another theory that the authors failed to explore was why the shelters were located in the areas in the first place. Maybe it was not due to a faulty siting process, but to the fact that the areas needed the shelter due to a high percentage of homeless people. In the case of LULUs, often times, they are desperately needed services in some communities. They best place to located these services is in the area where they are needed and can benefit the greatest number of people. Gaber and Kunde did not examine the percentage of homeless people in all the areas before or after the siting of the shelters, therefore, conclusions could not be drawn as to whether or not by siting shelters in those certain districts if they were meeting the needs of those people.

Finally, another disparity that both studies overlooked was the conditions of the communities prior to and after the siting of the facility. Again, like the environmental justice case studies, these studies take a picture of only a point in time. Both studies examined the statistics of the communities after the siting occurred and still deduced that some persons disproportionately bore the burden of the facilities. Accepting these conclusions is tough because their results are altered due to the fact that they did not review the demographics prior to siting. Though Gaber and Kunde did begin to
incorporate market dynamics theories into their conclusions, the conclusions that they did make would be more valid had they examine the prior demographics.
Chapter Five:
Conclusion

In this thesis, an abundance of literature has been reviewed and presented. Several case studies have been examined to explore the issues concerning LULUs, the NIMBY syndrome, and the environmental justice movement. In the planning profession, LULUs and the NIMBY syndrome have been examined to determine why communities are opposed to certain land uses and what can be done to change the perception. With the knowledge planners have gained about LULUs and the NIMBY syndrome, they have worked with governments to establish a process in which to site land uses. Though procedural equity concerns the procedural process and planners are involved in this process, they have had little input into this realm. Accordingly, a structured discussion has been presented by reviewing the pertinent literature and bringing forth issues associated with the movement. This discussion will bring planners to a higher level of understanding of the socio-economic and political aspects concerning the siting of facilities such as hazardous waste facilities, airports, prisons, strip malls, and housing developments, and why and how these facilities have impacted communities across the country. Based on the discussion of the theories behind the movements and the research and analysis of the pertinent case studies, there are four points which detail how the planning profession should proceed concerning this ever-growing movement. The four points to be discussed are as follows: involvement of planners, bridging the gap between the two realms, redirecting the focus of the movements to include market dynamics, and creating a methodology that is suitable to measure the outcomes in communities.

The first point details the involvement of urban planners in the environmental justice movement. There are several issues which have been identified in this thesis and are very complex, and cannot in some circumstances be simply explained. Of the vast number of articles written on the subject of environmental racism, equity, and justice, many of the authors have been civil rights leaders,
sociologists, government officials, or law professors who have examined the issues and have put forth their opinion. The solutions offered by these authors focused more on procedural equity rather than the outcomes. Only a few planners, including Vicki Been and Michael Greenburg, have explored other avenues of this movement and how the profession should get involved. The exploration of this topic indicates that environmental equity is far more complex than some of the authors may believe. Much more research needs to be undertaken to understand the relationships of these complex issues. The issues presented are not just about racism and classism, but about what is occurring in our communities in the United States as well as all over the world. The current literature reveals that the issues are far more reaching than just environmental inequity, it is a phenomenon that is spreading across communities opposing essential, desperately needed services that are perceived to be a threat to the well-being of a community and its citizens.

Planners need to become involved in this process because of their knowledge of land use issues and siting procedures. They have the expertise to examine the whole siting process and the effects of the NIMBY syndrome within a community to determine the possible ways to help a community accept a needed facility, while at the same time mitigating the negative impacts. The planning profession, in the past, has reviewed issues concerning LULUs and the NIMBY syndrome in light of trying to educate the public about the positive and negative aspects of certain land uses and how a desperately needed service can actually be an asset to a community instead of a stigma. Yet the planning profession has never studied the NIMBY syndrome and the impact of LULUs to the extent in which it has been studied in the environmental justice realm. As a whole, the planning profession has only begun to review the environmental justice claims and how these claims impact the profession and the direction the profession should take to deal with these issues. Planners need to become more involved as this phenomenon will continue to grow and more information about the outcomes in communities with LULUs will be needed. With the involvement of planners, steps can be taken to diminish the negative effects and successfully site other essential services in a community without opposition.

In order for planners to become involved, the questions surrounding the terms used to describe this movement need to be answered so that everyone involved in this movement, whether planners,
sociologists, or the citizen has a clear understanding of the terms used to describe the movement. Hence, the second point concerns the terms associated with the environmental justice movement. By coining the terms environmental racism, environmental equity, and environmental justice, sociologists were hoping to begin to identify those persons who were more susceptible to having undesirable facilities located in their neighborhood. By coining the term environmental racism, sociologists had identified the minority people as being unfairly burdened, while environmental equity focused on those individuals who were economically disadvantaged. The term environmental justice was finally chosen because as the movement began to grow, other sociologists rationalized that more than just minorities and low income people were disadvantaged; children, the elderly, future generations and others who had not been taken into account. The studies undertaken across the United States tried to determine if certain characteristics were common among areas that had undesirable land uses. Many authors found that race and income were indicators that environmental inequity had occurred in areas with undesirable land uses. Nonetheless, in examining those case studies the only land uses that were studied that demonstrated the indicators of race and income were those that involved some type of environmental hazards. Other land uses have not been fully studied to determine their impacts and if they are truly located disproportionately in low income or minority areas. Consequently, the environmental justice studies cannot be deemed environmentally inequitable and the terms environmental racism, equity, justice do not get to the heart of the issue and do not accurately represent the outcomes in communities with any undesirable land use. In the analysis of these case studies, questions arose as to why only facilities that involved some type of hazardous and solid waste were examined and other land uses were not included, why minorities and low income persons were the only groups targeted, and what were the outcomes in communities that led researchers to believe that inequity was occurring in certain communities. In all the articles examined, some of these questions were answered, but many were not. All in all, the causation that the terms described was not conclusively proven.

So, what happens to the terms now that the causation of environmental equity has not been proven? Other terms should not be invented to try and describe the outcomes in communities. The term equity adequately includes both individuals and places that could be affected by land uses which
decreases their total quality of life. The problem at hand is not about the inequitable siting, which is what the focus of the terms has been, but the impacts that individuals are exposed to as a result of measures not taken to mitigate the impacts of undesirable land uses. The realm that focuses on this type of impact is that of the NIMBY syndrome. As insinuated in previous chapters, there are connections between the environmental justice realm and the NIMBY syndrome realm. The common link between the two realms is the LULUs. Both realms are concerned with the type of land use, the NIMBY syndrome includes all land uses, while the environmental justice realm only includes environmental hazards. Planners would be able to bridge the gap between these two realms. They have the knowledge and experience with the siting process and the issues that are involved with the NIMBY syndrome. Many planners also have the technical background that is associated with environmental hazards. Hence, planners could take the knowledge from both areas and be able to examine the environmental equity issues in a different light and better address the issues facing communities with undesirable land uses and begin to develop strategies that would minimize the negative impacts on a community.

By using planners as a means to bridge the gap between the environmental justice and the NIMBY syndrome realms, the third point could be addressed, which is redirecting the environmental justice movement to incorporate the premise of market dynamics rather than procedural inequity. The current environmental justice case studies explored the theory of procedural inequity and its relationship to the location of a facility. Many studies concluded that the locational placement of a facility had a disparate impact on low income and minority people. All of the studies examined encompass the demographics of race and income and conclude that race is the stronger indicator of inequity. Their premise focused more on the causation of environmental inequity rather than the impact on the people. These studies rely on the hypothesis that racism and classism are involved in the decision making process and that the laws that govern the siting process are thereby disregarded. The studies also assume a site was established in a minority or low income area because these individuals do not have the money, political clout, nor empowerment to fight the decision, and that industries and the government can place facilities in these areas without any protest. However, after examining these studies and their methodologies extensively, these studies fail to prove this theory.
Even if the authors results indicate that racism/classism is present, serious flaws can be found in their methodologies. Therefore, trying to prove inequity based on the siting process is a futile effort. Though racism or classism may occur in a community, almost never will it be proven.

The premise that the proponents of environmental equity should examine, and one that planners are familiar with, is that of market dynamics, which deals more with the outcomes in communities as a possible result of the siting of a facility. This premise is based on the hypothesis that the siting process is not necessarily biased or faulty, but, after a facility is sited, the market causes changes in the socio-economic, environmental, and political aspects of a community. While the environmental justice movement only reviews environmental hazards, the NIMBY syndrome reviews all types of LULUs. This aspect is important because market dynamics can be influenced by any type of facility, whether seen as an asset or liability. Communities now depend on certain services that they can provide to citizens, business, and industries to make their area more attractive so that economic growth will occur. The market plays a key role in determining the marketability of a community and how individuals may perceive a community. Therefore, by focusing more on market dynamics rather than the siting process, planners can examine the outcomes of equity and how it affects a community and its citizens and propose strategies that can stabilize the market and help a community to prosper. Future research needs to be undertaken by planners who should study other undesirable land uses and encompass the theories of market dynamics and how certain land uses or lack of certain land uses affect communities. Of all the professions involved in the movement, planners have the greatest understanding of market dynamics and accordingly could implement strategies that bring about change in a positive manner so that communities could benefit.

In order to bring about change in a community and successfully mitigate the impacts of undesirable land uses, planners need to conduct studies that indicate the impacts of these land uses, which is the final point. For planners to study market dynamics and the effects of LULUs on communities suggestions need to be made that would establish criteria to indicate and measure the possible outcomes in communities. When investigating the case studies, flaws were apparent in all of the methodologies used. The reasons for the flaws were due to the theory being tested and the methods
chosen to try and prove the theory. Yet each methodology did provide some unique insight that could measure outcomes instead of measuring the cause. There are five approaches that planners should take when measuring outcomes. These include 1) a comprehensive list of LULUs; 2) identifying the populations to be studied; 3) inclusion of other demographic factors; 4) consistency of area to be studied; and 5) risk assessment.

First before any study can be performed, a comprehensive list should be established that details the LULUs that should be studied. This suggestion is similar to the one Michael Greenburg offered in his study. This list should offer some type of categorization, possibly one that compares each LULU based on the type of service, risk produced, age of the facility, or location of the facility. These categories are only a suggestion, but could include other factors as well. By offering a comprehensive list of LULUs, planners would have the opportunity to draw some conclusions about how the facility might impact the community before the siting process was initiated. Planners would then be able to suggest possible strategies to implement which would help to diminish these impacts. This comprehensive list could also be used much in the same way during the siting process. For example, as Plan Commissions site facilities, by referring to this list, they could require operators of the facility to make certain changes to diminish the negative impacts before they occur. Subsequently, developers could be helped by this list also. Before deciding on a site, a developer would be able to determine what a community may be opposed to and make the necessary changes before petitioning in the siting process.

Next, after a list of LULUs is completed, researchers should identify the populations to be studied. In the past, partly due to the restrictiveness of the terms, researchers only studied minorities and low income individuals. Yet, there are other groups such as the elderly, children, or single heads of households that may also be more susceptible to undesirable land uses. These populations could possibly be more affected by a facility due to their vulnerability to disease, existing health conditions, limited income, or unsafe living conditions. Currently, no conclusive studies have examined the impacts of facilities on these groups or any others. Also, other groups, such as homeless persons, ill persons, and others with disabilities should be included to determine if the services and facilities
provided by the community are helping these persons or just further deteriorating their quality of life due to the affect of the market on the facility. Hence, when studying procedural equity and the market dynamics of a communities, planners should include other groups that could possibly be affected by the LULU being studied.

Once the populations to study are determined, planners should focus on the rest of the demographics of a community. Though race and income are important indicators of equity, other indicators should be studied in order to determine the full impact a land use can have on a community, if any at all. Other indicators such as the type of industry, housing value, mobility, travel time to work, occupations, crime statistics, noise levels, and pollution levels can indicate a number of different changes that occur in a community based on its services and the population that is changing over time. Therefore, studying these demographics over a period of time, especially beginning before a land use was established in its location, is important to understand how the community is changing and whether this change was brought about by the land use itself, or if the market was changing before the land use was sited. By examining these trends, a statistical analysis may be necessary to determine the changes and how much a land use or the market has influenced change in a community. In previous studies, researchers have proven that statistics can be manipulated to achieve the desired results, and in some cases, do not produce reliable results due to the boundaries of the study being inconsistent or not of a standard size that is comparable to the results of other studies. Therefore, by eliminating statistics and using a more complete demographic data set, researchers can then begin to draw a more accurate picture of a community and whether a land use is bearing a burden upon that community.

As mentioned above, many of the environmental justice studies are not comparable to each other because the size of the study area is not consistent or is vaguely defined. Planners should decide which area best defines the population that is the most at risk so that when the impacts are determined planners will know who will be affected and the possible solutions that could be implemented to mitigate the impacts. This area to be studied is dependent on a couple of factors. The first factor being whether the type of data is available for all of the areas that need to be studied.
Some of the current studies use block groups, zip code areas, census tracts, or neighborhood boundaries. Many times though, depending on the size of a community and the level of the study, certain demographics may not be available. Thus, a boundary needs to be chosen that will incorporate all of the demographic data needed to study an area. Secondly, the area that is used to study the affects of a land use and the influence of the market on that land use needs to be consistent with those persons who are receiving the benefits of that land uses as well as incurring the burdens. For example, if a planner wanted to measure the type of impact a water treatment facility would have on the residents of Indianapolis, Marion County would be a good boundary to measure both the benefits and the costs that the facility would have on its residents. An area to compare the impacts to could be the City of Indianapolis. In some cases, researchers have used the US as a comparison for the service area, which is not as consistent as using a neighborhood, town, city, county, or state as the service area. When using the US, the results tend to be a little more skewed because the service area is not comparable to the burden area. By choosing an area that is the next size larger as a comparison, the larger area will not skew the results because the demographics of the two areas will be compatible.

After deciding the size of the area to be studied, planners should find a way to visually represent boundaries so that it is defined consistently and the study could be reproduced. In some studies, researchers indicate that a town or neighborhood will be used for the study area. However, if the reader is unfamiliar with the area, the information given is vague and has no meaning. The researcher should give a visual reference of the area in reference to the larger entity including the physical boundaries of the area and the approximate size. This type of information gives the reader an understanding of where the area is located, the approximate size of the area, and where the facility is located in comparison to the impacted areas.

A final step to be undertaken to make case studies more comparable is that risk, especially cumulative risk, should be assessed in each study. In previous studies, risk was many times not taken into account. The perceived and actual fear of the type of risks associated with a land use, no matter how small a chance something may occur, can keep a land use from being sited. Thus, a risk
assessment should be included in any type of study undertaken. Three of the studies reviewed in this thesis examined risk, and had a unique way of determining who was more at risk. These three studies employed the concentric ring method. Using concentric rings in a risk assessment study is a good way to determine proximity risk, and if an accident should occur who will be affected first. Though there are some flaws with this method, eventually with the help of computer technology and a GIS, these flaws can be worked out. Though other methods have not been developed to measure risk and its influence on the market, in the future, a scientific method may be developed that allows planners to determine how risk plays an important role in market dynamics. By determining the risks associated with a land use, residents of a community could know what type of risks they are faced with, and certain strategies could be employed to minimize those risks.

In order to better understand and attempt to alleviate the phenomenon that is spreading from community to community, planners need to understand the issues and get involved. They should examine the issues and determine ways to help facilitate the siting process so residents are involved and educated about land uses and their potential assets and liabilities. Environmental justice is not just about the disproportionate burden upon minorities and the poor, but about how desperately needed services are not being provided to those who need them because of actual and perceived threats. As planners, in order to protect neighborhoods and communities across the United States from deteriorating due to the impacts of LULUs, planners need to reach into their bag of tools and find new ways to mitigate the impacts instead of using traditional planning techniques such as environmental impact statement, design standards, and zoning plans, which have not always proven successful in the past. By educating residents, opening lines of communication between the community and developers, and addressing the land use before issues arise, essential services that neighborhoods, communities, and states need can be located in appropriate locations that would benefit everyone.
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