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ENEMY LINES: THE ADVERSARIAL RELATIONSHIP BETWEEN COMMUNITIES AND ELECTRICITY

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ENEMY LINES:

THE ADVERSARIAL RELATIONSHIP

BETWEEN COMMUNITIES AND ELECTRICITY

BY

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Abstract

Throughout the country, power line siting has become a controversial community issue, even close to home. By early summer, the Rhode Island State Planning Council will have issued an advisory opinion on a 115kV (kilovolt) transmission project which would incorporate construction and relocation of high voltage lines along a 5.3 mile corridor in Warwick, East Greenwich, and North Kingstown. But Rhode Island is not alone: from the suburbs of San Diego to our own northeast region, citizens and officials alike are concerned with the potential impacts of power lines. There is no simple solution to the questions which transmission line siting raises: the problems are complex. As one member of the State Planning Council in Rhode Island recently noted, conducting a review of the issues surrounding power line relocation "is like opening a pandora's box".

The health risk associated with EMFs, or "ElectroMagnetic Fields" is among the most prominent issues raised during the siting and approval processes. An electromagnetic field is created every time electricity is sent through a wire. The strength and size of the EMF varies with the current. Overhead power lines are not the only producers of EMFs, but they are certainly the most visible and potentially the least controllable. While household appliances, such as toasters, microwaves, and hairdryers produce fields, these appliances are used for a short period of time every day. Exposure to the EMF from a transmission line could

take place for many hours a day.

The first studies of the adverse effects of EMFs were conducted in the mid-1960's in the Soviet Union and linked exposure to electromagnetic fields with leukemia and lymphoma in children. In the past thirty years, two studies in the United States and one study in Sweden have provided additional evidence to support the initial claim. However, studies conducted by Canadian researchers and scientists at the Electric Power Research Institute (EPRI) have debated whether the correlation can be confirmed. Although the proof is inconclusive, researchers from engineering colleges such as Pittsburgh's Carnegie Mellon University are urging caution in dealing with the issue of EMFs.

In the past five to ten years, concerns about power line location have shifted away from a purely physiological focus and turned to the socio-economics of transmission projects. Some of the concerns which may arise in a community include: impact on the natural environment, aesthetics, property devaluation, tax increases (as a result of the loss of property value), noise generated by the lines, landscaping and buffer areas, real estate slumps, and difficulty in obtaining loans. Since 1990, a dozen court cases have been heard which address the fear of EMFs as the cause of property devaluation. *Criscuola v. New York State Power Authority*, a case which was heard during the fall of 1993, was a landmark decision in EMF litigation. The New York State Court of Appeals ruled that homeowners could be awarded damages due to the perception of danger from EMFs. The opinion

stated that "whether the danger is a genuine or verifiable fact should be irrelevant to the central issue of its market value impact".

At the APA's national conference in April of 1994, staff of the Planning Advisory Service (PAS) noted that information on EMFs and power line location was among the most frequently requested. Furthermore, two sessions at the conference dealt with "The Public and Electric Facility Siting". This issue will be of critical importance to planners, especially in urbanized areas where it is difficult to site power lines away from population centers. Pandora's box is open.

Acknowledgements

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Preface

As the modern world becomes more and more complex, the role that a planner must fill has become increasingly difficult to define. The traditional concept of planner as technician has receded, to be replaced by planner as advocate, as expert, as manager, as politician, and as technician. The only conceptual which all the roles have in common is a dependence on the planner's ability to obtain and distribute information.

The issue of electromagnetic fields (EMF) and high voltage power lines has resulted in an influx of information from the different stakeholder groups. The problem lies in the fact that much of the information is skewed by the interest which produced it. The planner's responsibility becomes a double-edged sword: to understand the technical concepts presented in the fields of law, engineering, epidemiology, and the economics of power supply, and to understand the implications of such projects for the community. The planning process becomes a struggle between values, thoughts, feelings, and opinions and quantifiable data such as kilowatts and rate increases. This project presents the varied points of view associated with a power line siting project. Using a case study of the Narragansett Electric 115kV relocation project, which is located in three Rhode Island communities, the difficulties involved in taking a responsible role in the siting process are examined.

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PART ONE:

The Issue

"God made the moon and the light. Then the electric company took over, but that wasn't until many years later." Bart, age 9[1]

CHAPTER ONE:

Background

In 1979, United States scientists discovered a link between leukemia and lymphoma in children and exposure to low-frequency electromagnetic (EM) radiation. Up until this point in time, there was little concern about siting a home immediately adjacent to a utility right of way (ROW). In fact, utility ROWs were considered good neighbors because they would never be built upon. However, since 1979, "much of the concern about low-frequency EM radiation has focused on extremely low-frequency EMFs (electromagnetic fields), which are generated by all electrical equipment and devices"[2]. The past fifteen years has seen growing uncertainty and acrimony in the fight over the siting of overhead power lines. Electric companies, businesses, and the United States government maintain that "A cause-and-effect relationship has not been established between electric and magnetic fields and cancer or other adverse effects."[3]. Community groups, some researchers, and local governments admit that the proof may not be conclusive but argue that enough evidence has been gathered to warrant caution in the siting of lines. In the spring of 1993, the 7th grade class at St. Mary School in Beaver Falls, Pennsylvania entered an American Express contest to examine the proposed effect of a power line. Their report concluded that: "In our research, we kept coming across the word inconclusive, especially in regard to

evidence linking EMFs to cancer. We feel that the utility companies should use alternative methods of power until there is conclusive evidence that neither man, nor his environment, will be harmed."[4]

Overhead power lines are not the only producers of EMFs, but they are certainly the most visible, and potentially the least controllable. While the fields produced by common household appliances such as electric blankets, hair dryers, shavers, and microwaves are much greater, the exposure to these devices is generally for a far shorter period of time. In other words, it only takes a few minutes to dry your hair, but exposure to EMF from power lines can take place for many hours a day. In New Jersey, 1993 was the year which brought a 50% increase in the number of requests for home EMF measurements and 30,000 requests for free booklets on EMF[5], prompting one Jersey Central Power & Light (JCP&L) spokesman to comment "that EMF is also a major headache whenever the utility looks to build a project, like a power line or substation."[6] Meanwhile, there are more than 200 challenges to transmission projects across the nation, most based on the fear of EMF and associated health threats.

The reports which have been produced in the last 15 to 20 years by scientists and engineers have also been debated by a wide range of groups and individuals. Opponents of EMF and above ground power lines contend that the majority of studies have either been funded by the utilities directly, or through the Electric Power Research Institute (EPRI) which was founded by the utilities in 1973.

Even the studies which power companies have not funded are the subject of much debate. For example, the United Press International (UPI) wire service reports "Study finds no link between electromagnetic fields and common cancers", yet the article contains evidence of association between electromagnetic fields and certain types of adult leukemia[7]. It seems that while there is no link to "common cancers", there is a potential link to "uncommon cancers". This type of article demonstrates the slant which is often put on the results of research by a particular interest group. Even the courts have not been able to satisfactorily resolve the dichotomy between the testimony of experts in the field. "The admissibility of EMF health effects testimony also is challenged due to inconclusive studies and limitations on opinion as evidence."[8]

In order to best understand the arguments, it is important to have a working knowledge of EMF. The following definitions and terms will help to describe the language and concepts associated with electromagnetic fields and their effects on the human condition.

EMF: ElectroMagnetic Field. Virtually every time electricity is sent through a wire, an electromagnetic field is created. The strength and size of the EMF varies with the current. Common household objects such as clocks and toasters, as well as power lines and transmission equipment, all emit EMFs.

NIEMR: Non-Ionizing ElectroMagnetic Radiation. EMF is this type of radiation: it is too weak to dislodge electrons from atoms as it passes through matter. Unlike x-rays and nuclear radiation, the effects of EMF exposure are less understood and, some maintain, more insidious.

Components of EMF: An electromagnetic field consists of an electric field which is measured in volts per meter (V/m) and a magnetic field which is measured in milligauss (mG). Current research focuses on the combined effects of these fields.

Exposure to EMFs: Exposure varies with distance from the source. Typically, household appliances also vary according to the brand and setting. Table 1 provides a summary of the values to be expected at given distances.

Protection from EMFs: Even lead cannot shield a person completely from EMFs, although there is a significant reduction associated with burying a power line or encasing it in concrete or specially treated rubber. The best protection is distance: levels associated with household appliances drop 80% at a distance of one to three feet. For power lines, an 80% drop requires a distance of 1000 feet[o]. Another means of protection is to be sure that the duration of exposure is brief.

Table 1

Average Exposure to EMFs		
ITEM	mG (milligauss)	DISTANCE
Hairdryer	1-700	6 inches
Shaver	4-600	6 inches
Clock	1-30	1 foot
Computer	7-20	6 inches
Toaster	3-7	1 foot
Microwave	100-300	6 inches
Power Line	20-50	1 foot from ROW
	100-1000	1 foot from line

source: American Bar Association Journal, January 1994

Effects of EMFs: EMFs are known to cause changes in calcium flow from cell membranes which can affect cell division and reproduction. An EMF can also cause cells to vibrate at a rapid rate, with undetermined consequences. The earliest studies of the effect of EMFs were undertaken in the former Soviet Union thirty years ago. These studies showed an abnormal correlation between close proximity to transmission lines and certain types of leukemia. Studies in 1979 by the United States government, in 1986 by New Jersey analysts, and in 1991 by Swedish researchers have all provided additional evidence to support the initial claim: certain uncommon types of cancer may be linked to EMF.

CHAPTER TWO:

Legal Issues

Although the evidence to support claims of EMF generated cancers is weak, there have been a number of suits which focus on the health effects of EMF filed in courts across this country during the past decade. In California, the 1992 case of *Zuidema v. San Diego Gas & Electric* "drew far more media attention than side-by-side trials in the same courthouse of an alleged satanic child molester and an alleged serial killer"[10]. The lawsuit alleged that a rare form of childhood cancer could be tied to EMF exposure. Although the plaintiff's claims were rejected, nine similar suits are pending nationwide.

The New Jersey case of John Altoonian will be heard this spring. Altoonian and his lawyers contend that EMFs from a power line owned by Atlantic Electric Company contributed to his leukemia[11]. More than eight experts on the effects of EMF on the human system will testify in conjunction with this trial. Perhaps the most disturbing fact about this case is that it does not involve an overhead transmission line, but rather an underground line which was mistakenly buried on private property 30 years ago. This case demonstrates that it is not only overhead lines which cause people to fear for their health and well-being, but there are many other reasons that community members want to have a voice in the siting of power lines.

Reports from engineering colleges, in particular Pittsburgh's Carnegie Mellon University, have given credence to a reasonable fear of the EMF created by a power line. A 1989 study points to the uncertain nature of sixty Hz (hertz) EMF, the type of electric power used here in the United States. "Most experts believe that prudent avoidance of sixty Hz electric and magnetic fields represents sound policy."[12] This "prudent avoidance" of EMFs is often translated into fear among the public. The fear of EMFs can lead to devaluation of homes, localized slumps in the real estate market, difficulty in obtaining loans, and high vacancy rates. The fear of EMF has also led to another type of litigation: suits predicated on the loss of property value rather than the loss of health. On Tuesday, October 12, 1993, the New York State Court of Appeals ruled that homeowners could be awarded damages due to the perception of danger. In writing the opinion for *Criscuola v. New York State Power Authority,* Judge Joseph Bellacosa said "Whether the danger is a genuine or verifiable fact should be irrelevant to the central issue of its market value impact."[13] Furthermore, the opinion also set forth the criteria of an overall, public perception of fear, rather than fear on the part of a few individuals.

This decision will probably be considered a landmark in EMF and power line litigation for many years to come. However, proving that the value of a home has been decreased by the presence of transmission lines is a complicated task. Other factors in the region, neighborhood, or home itself can cause a decline in value.

Additionally, because public awareness of EMF and power line location issues has been stirred only in the last fifteen years, homeowners who bought properties before a legitimate societal fear was established may find it extremely difficult to claim damages[14].

Some states have taken steps toward controlling the EMFs which transmission equipment creates. Measures which states have chosen to enforce include requiring proper burial of lines, limiting maximum strengths of EMFs, and other mitigation techniques. States such as Oregon and New Jersey have chosen to regulate the strength of EMFs (See Table 2): this method been the most successful since utilities understand the task they are facing and can choose from a range of options to control the fields which their equipment produces. Community groups also seem to favor this method because the results are measurable and the standards can be set by those interested in public welfare rather than private business.

It is the dichotomy between public need, in the form of electricity, and private want, in the form of security and welfare, which fuels the debate over power line siting. "Inequality is a central motivating force in our society."[15] The inequality which motivates citizens to organize into action groups around the central concern of power line siting is the belief that the electric company is a profit-driven big business and has no concern for the neighborhoods along the project route. In Florida, Illinois, and West Virginia, 1993 was a banner year for

citizen action groups who were able to stop construction of overhead power lines

Table 2

State Regulated Strengths for EMFs	
Montana	1 k/V at edge of ROW in residential areas
Minnesota	8 k/V maximum in ROW
New Jersey	3 k/V at edge of ROW
New York	1.6 k/V at edge of ROW
North Dakota	9 k/V maximum in ROW
Oregon	9 k/V maximum in ROW
Florida (existing)	10 k/V or 8 k/V maximum in ROW, depending on the strength of the transmission line
Florida (new)	2 k/V at edge of ROW

source: The New Illustrated Book of Development Definitions: Moskowitz, 1993.

on a variety of grounds, including environmental, social, and economic contexts. "It is surprising enough that such a grass-roots struggle could continue this long, what is astounding is that it appears- at least for now- that the citizens are winning."[16] Through legal action, individual citizens and action groups have been able to make their voices heard, both to big business and to the decisionmakers in their communities.

CHAPTER THREE:

The Project

The Energy Facility Siting Act (General Laws 42-98-1), enacted in 1986 to provides the legal basis for utility siting review. The Act establishes the Energy Facility Siting Board (EFSB) which consists of three (3) members: the Chairman of the Public Utilities Commission (PUC), the Director of the Department of Environmental Management (DEM), and the Associate Director of Administration for Planning. The Chairman of the PUC also serves as Chair for the EFSB.

The function of the EFSB is to act as a comprehensive regulatory agency. The Board is granted power to approve and issue all state and local permits, with the exception of permits to be issued by the DEM and the Coastal Resources Management Council (CRMC). The General Laws instruct the EFSB to review all applications to construct or modify "major energy facilities". In 1992, the laws were amended so that the definition of a "major energy facility" includes transmission lines of 69kV or more.

As part of the review process, the EFSB is required to obtain advisory opinions from the affected municipalities and state departments or agencies which the EFSB feels are the most appropriate. The Energy Facility Siting Act states that "the Board shall have the benefit of the full range of technical expertise available

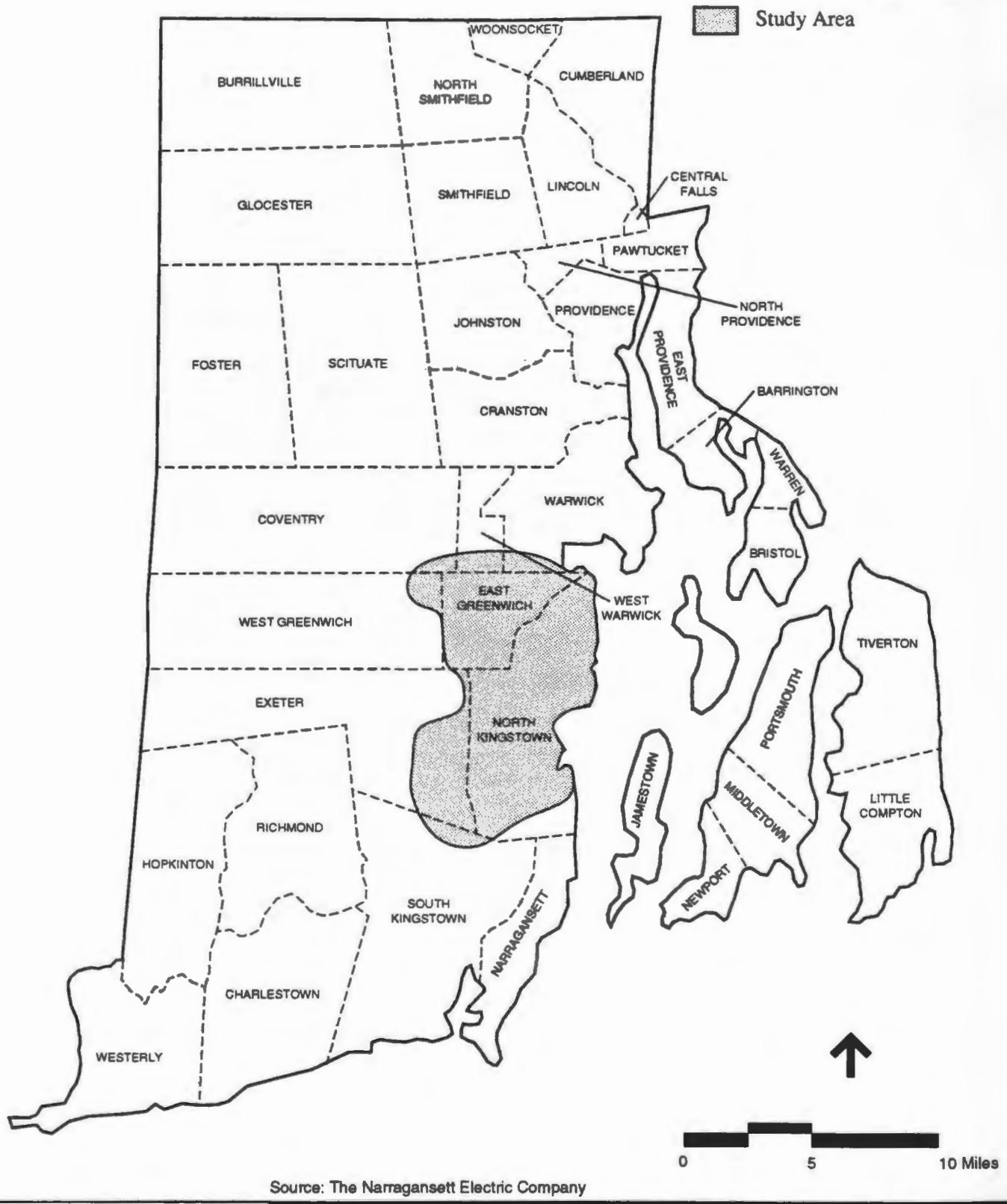
within other existing agencies in making its decisions."[17]

In September of 1993, Narragansett Electric applied to the EFSB for a permit to: 1) construct five (5) miles of a new 115kV transmission line, and 2) relocate an existing 115kV transmission line within the right of way. The project would extend from the Kent County substation in Warwick to the Old Baptist Road substation in North Kingstown (See Figure 1). Table 3 shows the linear miles and the percentage of the project to be located in each community.

Table 3

Project Location (By Municipality)		
CITY OR TOWN	LINEAR AMOUNT	PERCENT
North Kingstown	0.8 miles	12.5%
Warwick	1.5 miles	30.76%
East Greenwich	2.7 miles	56.74%

For the purpose of their analysis, Narragansett Electric divided the transmission line into three segments which are based on the landmarks, as well as the type of construction taking place within each segment. Table 4 explains the differences between segments, Figures 2 through 4 illustrate the clearing which will take place in the ROW, and Figures 5 and 6 represent the equipment which will be put in place in each segment. While Narragansett Electric owns the right of way, the one hundred and fifty (150) foot wide strip of land passes through a variety of neighborhoods and conditions. In North Kingstown, it crosses the Hunt River



Source: The Narragansett Electric Company

Vanasse Hangen Brustlin, Inc.

115 kV Relocation Project
Narragansett Electric

Figure 1
Location Map

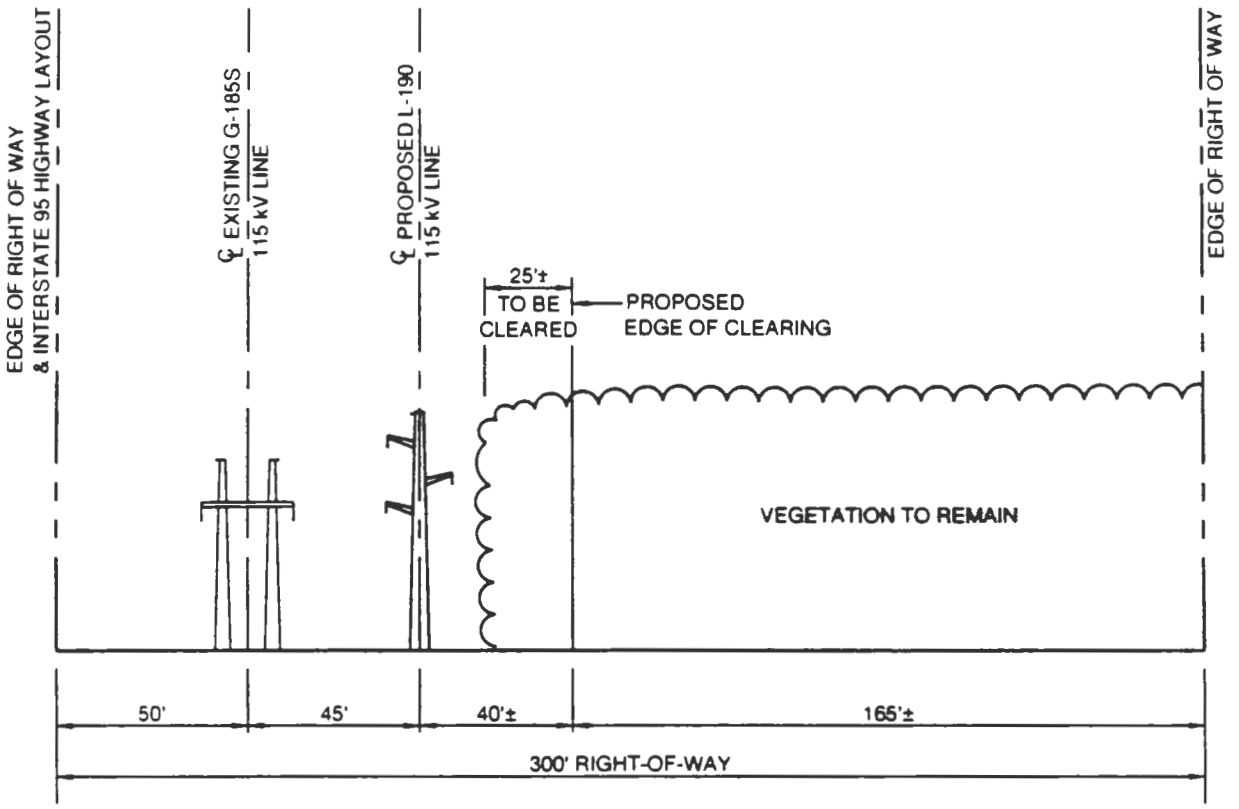
and the surrounding wetland: last time the lines were replaced, a helicopter was used to hang the one hundred forty (140) foot section over the high value wetlands. In East Greenwich, the project crosses school grounds where a play field remains unused because of fear of injury or other health risks. In Warwick, the project enters a largely urbanized area and becomes lost in the tangle of intersecting power lines at the Kent County substation.

Table 4

Project Segment Descriptions	
Segment 1	Extends from Kent County substation to the vicinity of Interstate 95. New line will be 45 feet west of existing lines: requires 25 feet of clearing. New structures 60-80 feet above grade, average 75 feet above grade. (See Figures 2 and 5)
Segment 2	Extends from the vicinity of Interstate 95 to the vicinity of Frenchtown Road. New line will be 100 feet west of existing lines: requires 80 feet of clearing. New structures 80-110 feet above grade, average 85 feet above grade. (See Figures 3 and 6)
Segment 3	Extends from the vicinity of Frenchtown Road to Old Baptist Road substation. New line will be 45 feet west of existing lines: requires 25 feet of clearing. New structures 60-80 feet above grade, average 75 feet above grade. (See Figures 4 and 5)

source: Narragansett Electric Co., project application, 1993.

This report will address the Narragansett Electric siting problem from a variety of perspectives. Part One provides the basic information needed to develop a better understanding of the issues. Part Two will address environmental concerns,



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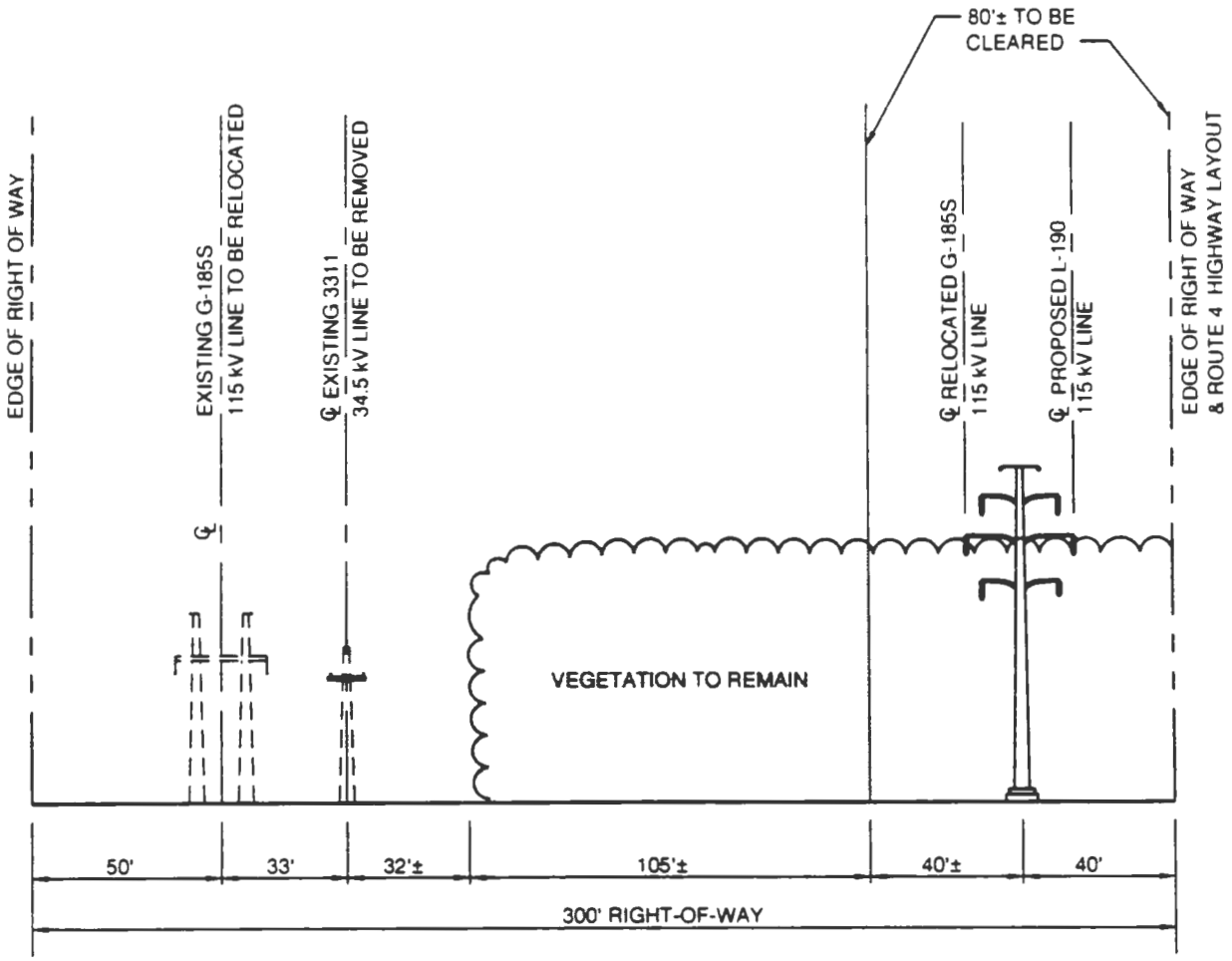
Segment 1
Typical Cross Section
Kent County Substation to
Vicinity of Interstate 95
Facing South

Figure 2



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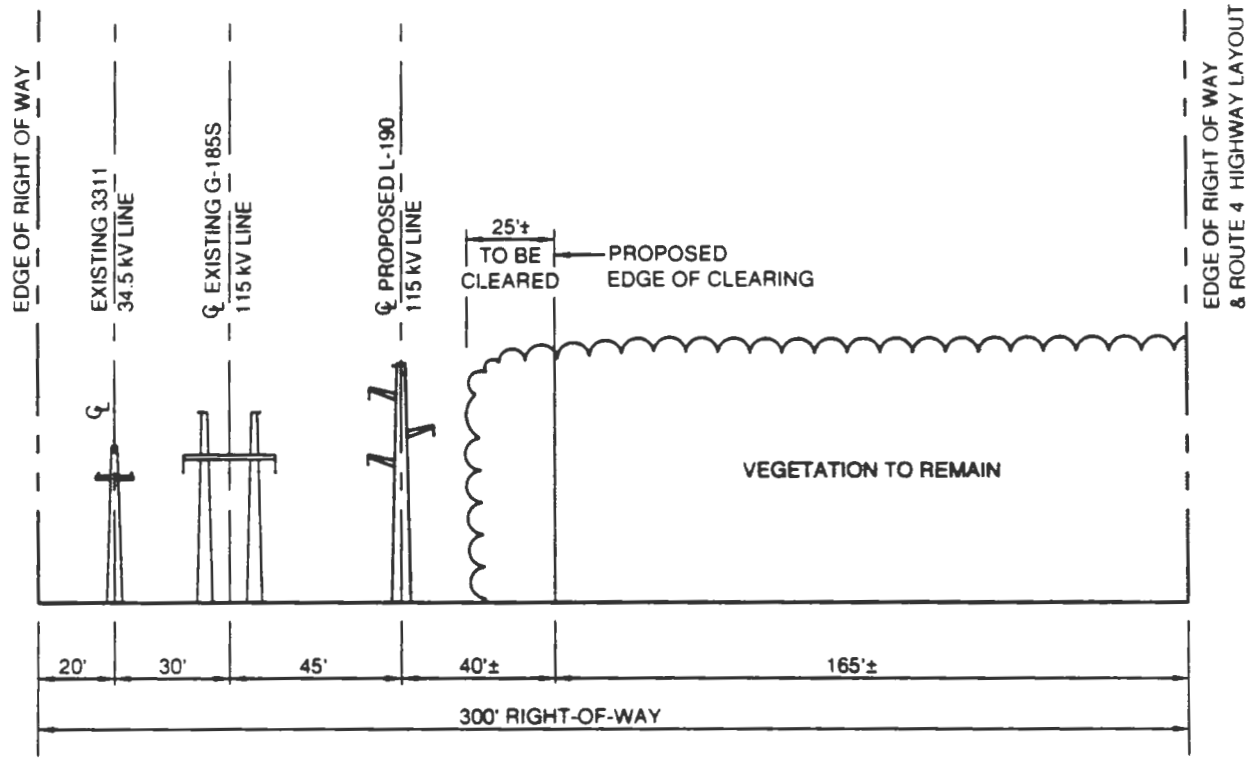
Vanasse Hangen Brustlin, Inc.

Segment 2
Typical Cross Section
Vicinity of Interstate 95 to
Vicinity of Frenchtown Road
Facing South

Figure 3



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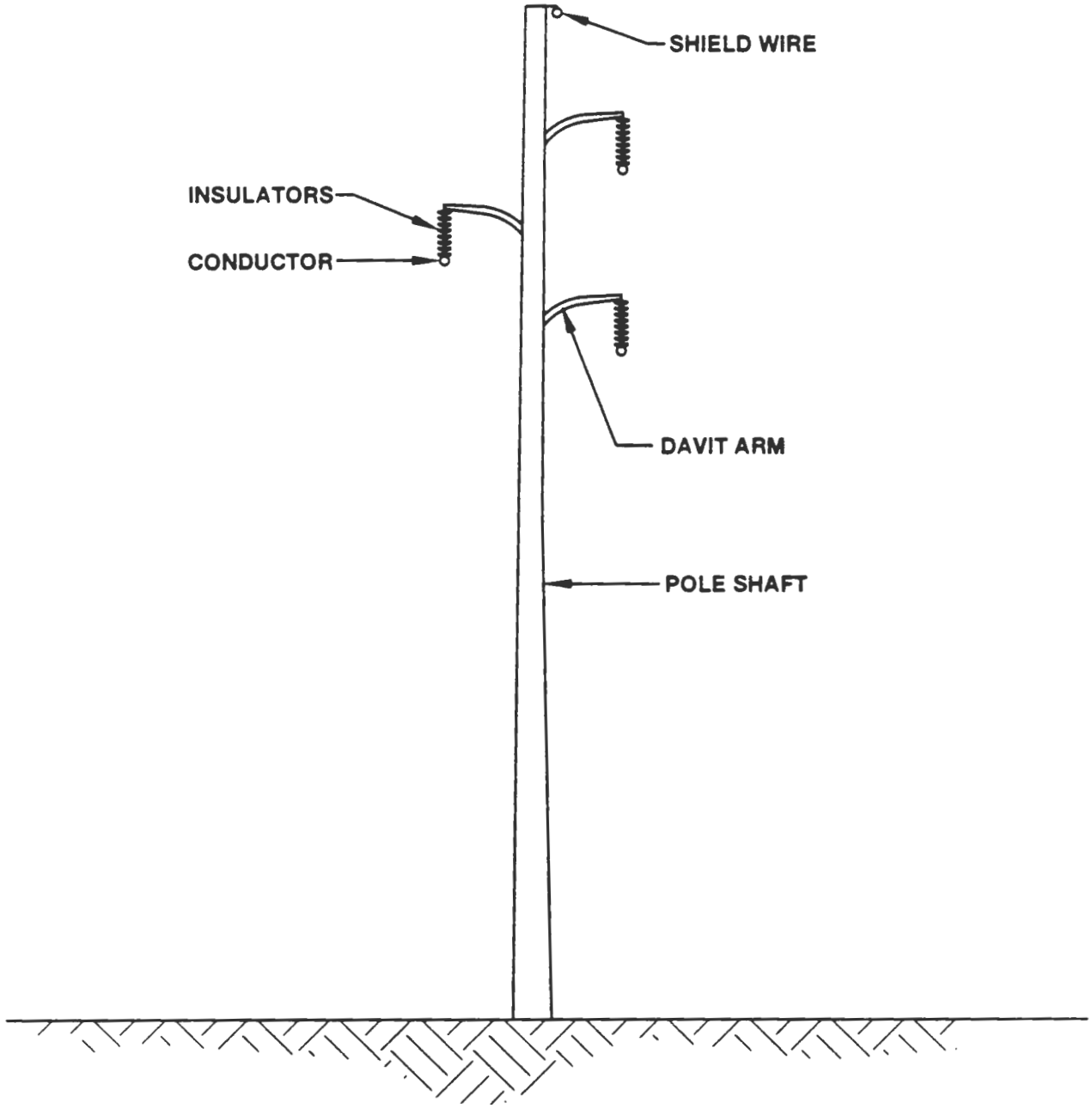
Segment 3
Typical Cross Section
Vicinity of Frenchtown Road to
Old Baptist Road Tap Point
Facing South

Figure 4



TYPICAL HEIGHT: 70 FEET
VOLTAGE: 115,000 VOLTS
MATERIAL: WOOD OR STEEL
FOUNDATIONS: DIRECT EMBEDMENT OR REINFORCED CONCRETE CAISSONS

Not to Scale

Source: The Narragansett Electric Company

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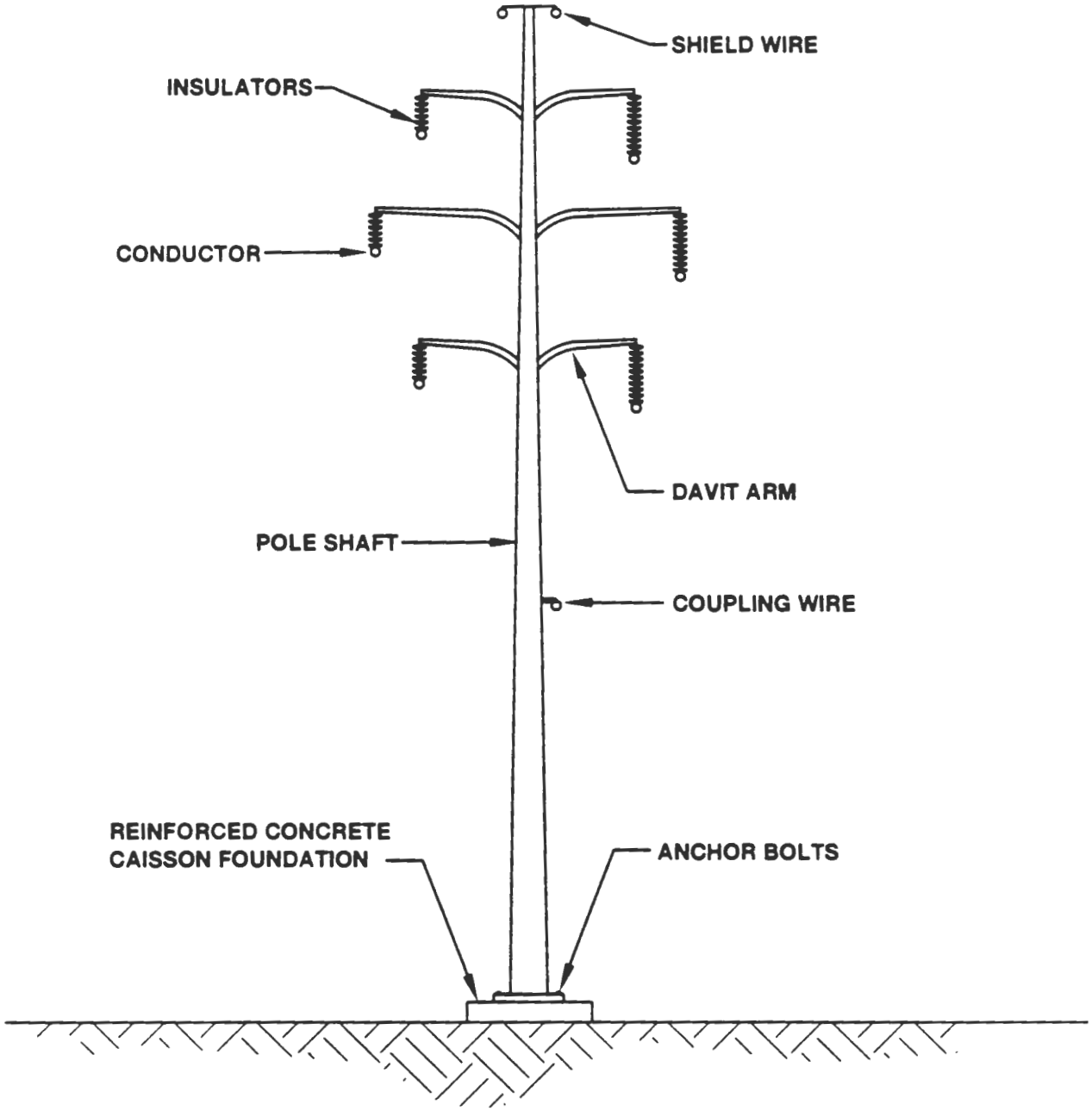
Typical Transmission Structure for ROW Segments 1 and 3

Figure 5



TYPICAL HEIGHT: 85 FEET
VOLTAGE: 115,000 VOLTS (2 CIRCUITS)
MATERIAL: STEEL
FOUNDATIONS: REINFORCED CONCRETE CAISSONS

Not to Scale

Source: The Narragansett Electric Company

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Typical Transmission Structure for ROW Segment 2

Figure 6

including the natural environment, aesthetics, and the affect of such transmission projects on the surrounding neighborhoods. Part Three will analyze the situation from an economic perspective, with attention given to the economies of power supply and municipal finance, as well as discussing economic development. Part Four analyzes the political system and provides strategies which will enable planners to make effective use of the information in applying the findings to similar siting questions. In addition, the chapter will anticipate the position which Rhode Island will take on the issue of utility location.

Electricity is fundamental to our society. A blackout can cause havoc in the affected area as the underpinnings of society cease to exist. Even the concept of "power" and "power lines" indicates that the role of electricity is as a means to an end. One can achieve a task both through personal power (influence or charisma) and through the power provided by the utility (electric current). Power lines have become a familiar sight in any American landscape, ranging from the solitary sway of poles and lines across a lonely prairie horizon to the tightly gathered cables upon which many a suburban child's kite has met its fate. Poles and lines are a characteristic of the man-made environment in this modern age. The 1990's, however, have brought new challenges to both the utility companies and communities. The criteria for siting is no longer who has the political connections? or who has the capital? It is a question of who has the power.

Power can be defined as the ability to make things happen. Electricity is a

natural and physical form of power, but the power of information and technology is a critical tool which can be used to affect the opinions of the public and create grassroots support, or, conversely, to diffuse a sensitive issue. In the context of the energy facility siting process, the central question is who has the tool and how is it being used?

PART TWO:

The Natural and Built Environments

"Frankly, those planners who have had to confront the issue have found it to be as clear as mud."[18]

Chapter Four:

Environmental Impact

The *American College Dictionary* defines environment as "the aggregate of surrounding things, conditions, or influences". The environment surrounding the Narragansett Electric right of way (ROW) has been the subject of much debate since the initial construction application was filed. In late 1990, East Greenwich imposed a moratorium on all transmission lines over 60kV in an effort to restrict development of utility ROWs until further study on the effects of EMF had been carried out. However, the measure was challenged by Narragansett Electric: the court struck down the moratorium, citing violations of interstate commerce and takings provisions of the Constitution.

In cases such as this, land use regulations generally have very little impact because the power company is presumed to have expert knowledge about what standards determine the need for additional power supply (i.e. loading). Furthermore, since the utility owns the land upon which the equipment is sited, it is difficult to form a rational argument against activities which otherwise are in conformance with local regulations. On the other hand, it is important to keep in mind that "all utilities are chartered to serve in the public interest...utilities do not exist as profit maximizing corporations without constraint."[19]

In the past decade, management of utility location has become a critical land-

use issue. By dividing the project into three geographic segments, even Narragansett Electric concedes that there are different land-use concepts which need to be addressed along the length of the proposed route. There are at least ten factors which typically should be considered when confronting a siting project[20]. These factors include:

1. LOCATION (political jurisdictions)
2. EXISTING INFRASTRUCTURE
3. WETLANDS
4. SOILS
5. HYDROLOGY
6. VEGETATION
7. TOPOGRAPHY
8. WILDLIFE HABITAT
9. GEOLOGY
10. EXISTING LAND USE and ZONING

Location:

The power lines are located within three municipalities, Warwick, East Greenwich, and North Kingstown. Segment 1 is located entirely in Warwick and Segment 2 of the line is located entirely in East Greenwich. However, Segment 3 is located partially in East Greenwich and partially in North Kingstown: in a situation where there was less agreement between the towns, the situation could be politically volatile and could pose a zoning and land use challenge (See Figure 7).

Existing Infrastructure:

Narragansett Electric already has two power lines in place along the eastern

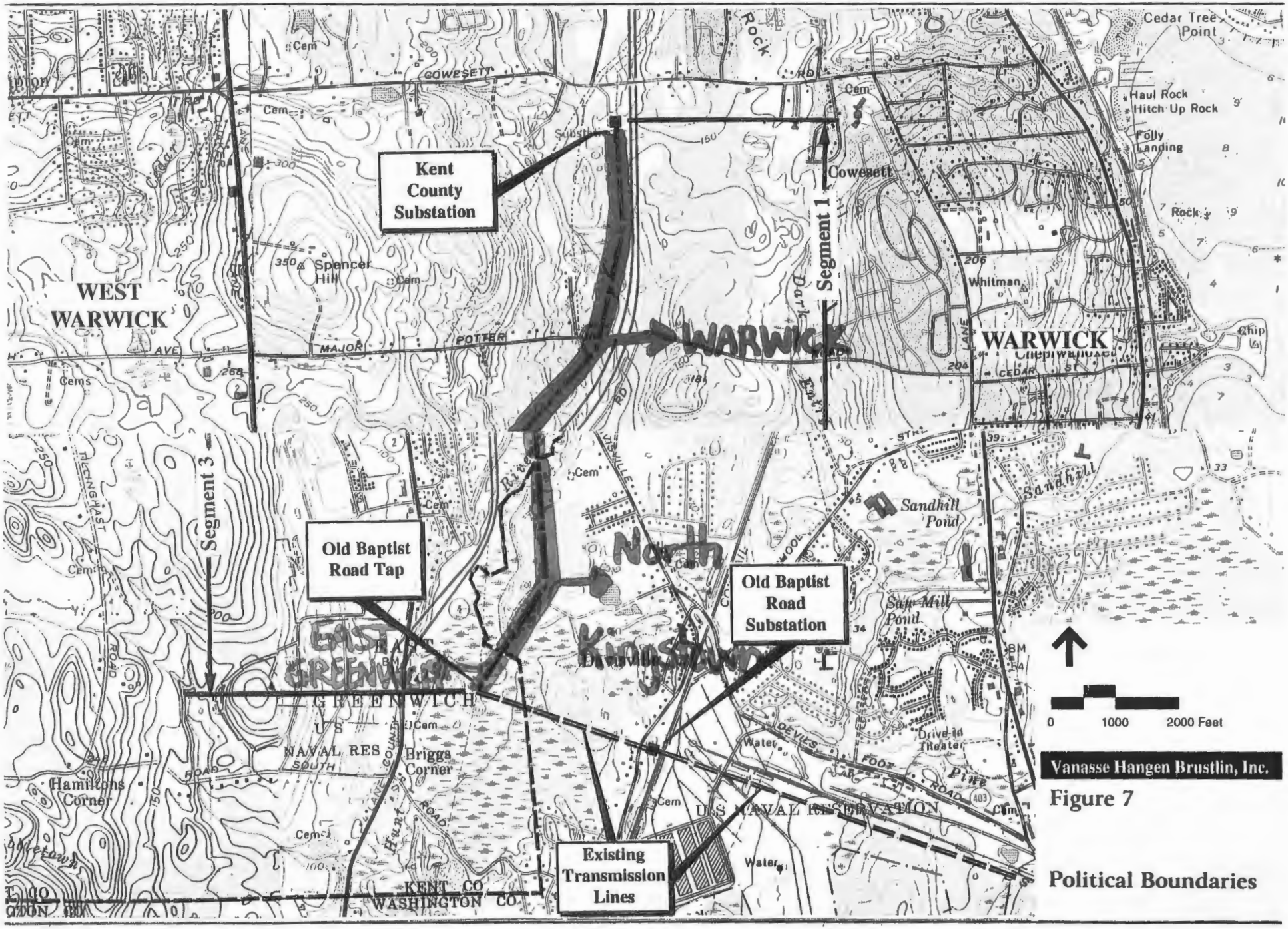

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Figure 7

Political Boundaries

side of the ROW: a 34kV line and an existing 115kV line. The right of way is partially cleared, but the project will require temporary access roads to be built. Furthermore, there are some secondary arteries which may be affected by the construction: these major local routes include Division Street, Middle Road, and Frenchtown Road. The logistics of moving the existing lines may also require power to be blacked out briefly. However, this project will not interfere with the operation of other utilities, such as water and natural gas.

Wetlands:

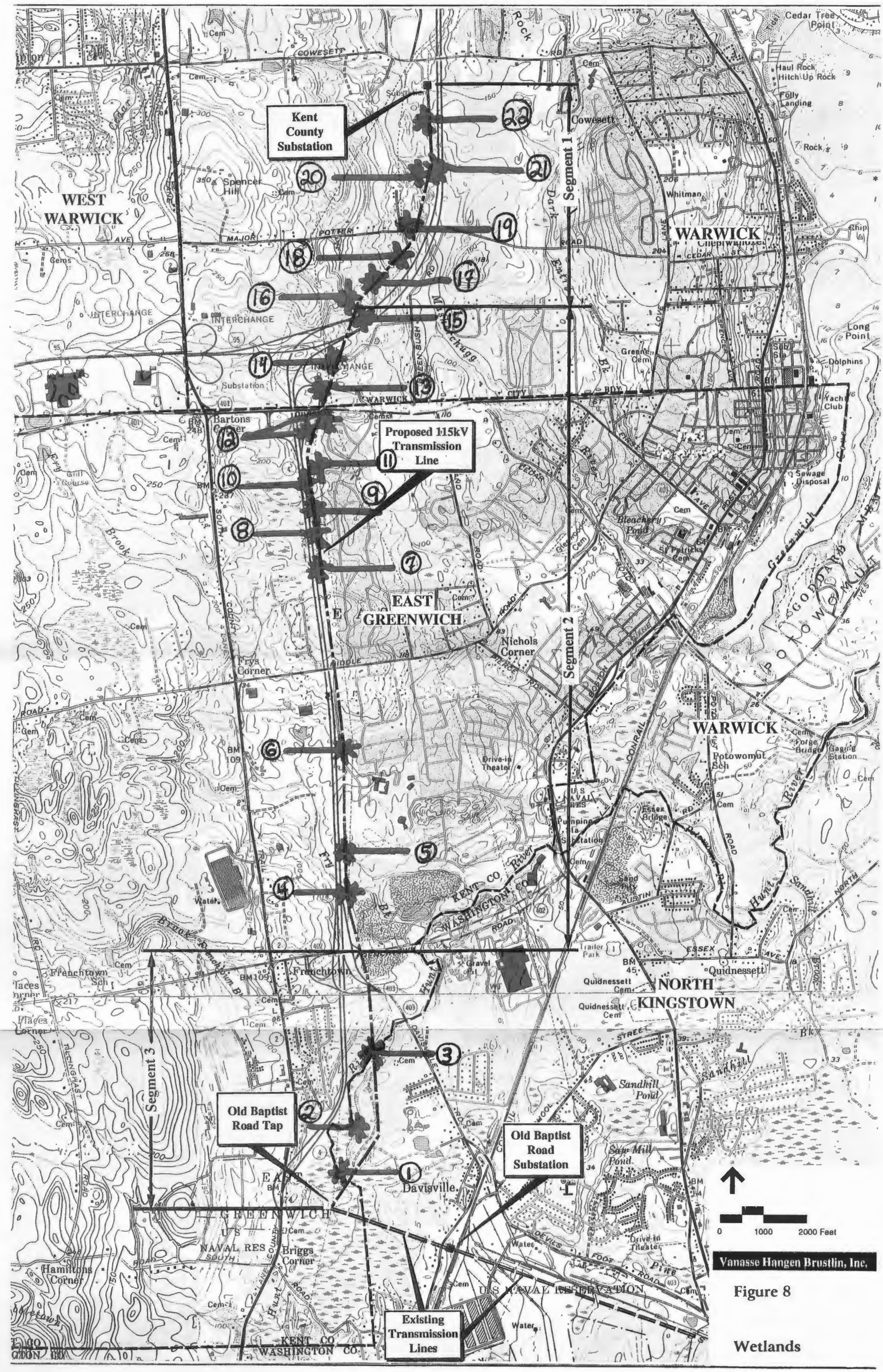
Throughout the course of this project, wetlands have been central to both the power company's and community activists' arguments. There are twenty-two (22) wetlands in the 5.3 mile corridor, ranging from federally regulated forested wetland and marsh to bogs and swamps regulated by the state alone (See Figure 8). Table 5, on the following page, lists the wetlands by size and location. Such an analysis is critical to a power line siting process because it determines the ease or difficulty of completing work in locations along the ROW, as well identifying obstacles to placing the lines underground.

Soils:

The soils within the project area are conducive to drainage in most locations. However, portions of the land within the right of way lies in the hundred-year

Table 5

Wetlands in the 115kV Relocation Project Area			
Wetland Number	Regulatory Authority	Approximate Land Area	Municipality Where Located
1	RI, FED	618,965	N. Kingstown
2	RI, FED	1,460	N. Kingstown
3	RI, FED	8,305	N. Kingstown
4	RI, FED	27,175	E. Greenwich
5	RI, FED	50,970	E. Greenwich
6	RI, FED	8,160	E. Greenwich
7	RI, FED	35,780	E. Greenwich
8	RI, FED	97,795	E. Greenwich
9	RI, FED	77,830	E. Greenwich
10	RI, FED	19,385	E. Greenwich
11	RI, FED	1,730	E. Greenwich
12	RI	2,340	E. Greenwich
13	RI, FED	14,840	Warwick
14	RI, FED	8,775	Warwick
15	RI, FED	4,350	Warwick
16	RI, FED	76,165	Warwick
17	RI, FED	29,915	Warwick
18	RI, FED	17,760	Warwick
19	RI, FED	47,820	Warwick
20	RI, FED	500	Warwick
21	RI, FED	49,645	Warwick
22	RI, FED	428,185	Warwick


Kent County Substation
Proposed 115kV Transmission Line
Segment 1
Segment 2
Segment 3
Old Baptist Road Tap
Old Baptist Road Substation
Existing Transmission Lines
WEST WARWICK
WARWICK
EAST GREENWICH
NORTH KINGSTOWN
Cowesett
Davisville
Frenchtown
Quidnessett
Nichols Corner
Frys Corner
Bartons Corner
Briggs Corner
Hamiltons Corner
Sandhill Pond
Saw Mill Pond
Bleachery Pond
Potowomut Sch
Drive-in Theater
US NAVAL RES
US NAVAL RESERVATION
Sewage Disposal
Long Point
Cedar Tree Point
Haul Rock
Hitch Up Rock
Folly Landing
Whitman
Greene Cem
Yacht Club
Dolphins
Spencer Hill
Trailer Park
Gravel Pit
Essex Bridge
Forge Bridge
Gaging Station
Pumping Station
Sand Pit
Water
0
1000
2000 Feet
Vanasse Hangen Brustlin, Inc.
Figure 8
Wetlands

flood plain. Each municipality has land along waterways which cross the project area: it is along the waterways (streams, rivers) where the soil is damp and contains high percentages of clay, which prevents drainage. Flooding and poor drainage are constraints to underground utilities, but they can also be accelerated by the clearing required to install the overhead wires.

Hydrology and Geology:

It is difficult to place lines underground where bedrock is very close to the surface: such an operation would require extensive drilling and could disrupt groundwater. Approximately half of the study area exhibits the presence of bedrock formations within a foot of the surface. Similarly, the height of the water table in an area can affect the feasibility of underground lines. Where the water table is high, further precautions with the placement and maintenance of the cables would need to be implemented. However, the heavy construction equipment which will be needed to complete this project and the additional stormwater runoff which may occur due to the removal of vegetation also may impact the two primary aquifers which supply drinking water for East Greenwich and North Kingstown.

Vegetation and Wildlife Habitat:

The proposed project would require the clearing of 11,396,000 square feet

of shrubbed and forested buffer zone: that's an area equivalent to 10 times the total wetlands areas within the project. Many of the trees and other vegetation have been maturing for forty years or more, ever since the right-of-way was last completely clear-cut. The vegetation also provides habitat for a variety of wildlife species, including deer, coyotes, birds, rabbits, raccoons, and squirrels.

Topography:

The three municipalities are very similar in terms of land features. The relocation project crosses ten rivers or streams between the Kent County and Old Baptist Road substations. This is an area of low relief: there are not many changes in height or surface features. The highest point within the study area is a hill in North Kingstown which drops off steeply to wetland. This location provides the greatest challenge in terms of above ground and/or underground lines. The last time the lines were replaced, the cable was mounted by helicopter.

Land Use and Zoning:

Since the municipalities cannot affect any changes to the zoning or use of the ROW, the concern in this case is how the areas around the ROW are zoned. Narragansett Electric has argued that residents should not have built homes along the right of way if they had a substantial fear of the effects of EMF. However, only part of the responsibility lies with the residents: clearly, the areas of

controversy were zoned residential and the municipalities allowed these uses to occur. In any case, few could have foreseen the changes which have brought this type of controversy to the forefront of the siting project.

Along Segments 1 and 3 of the project, in Warwick and North Kingstown, residential areas are further removed from the ROW and the homes which are situated along the power company property are predominantly on large lots in low-density neighborhoods. However, the properties in East Greenwich are high to medium-density residential (see Figure 9). The high school in East Greenwich is also in close proximity to the ROW. Furthermore, no zoning changes have been implemented to prevent homes and schools from being developed along Narragansett Electric's property.

Land-use planning is often used as a last-ditch defense in a controversial siting issue. For example, community advocates often say NIMBY! (Not in my backyard!) or BANANA (Build absolutely nothing anywhere near anyone) in response to an issue they fear. Often, lower-income housing is argued against on the basis that the land cannot sustain a higher density, or that the lot is not zoned appropriately. In this case, both the power company and the residents are locked in a land-use standoff. IMP! (It's my property!)

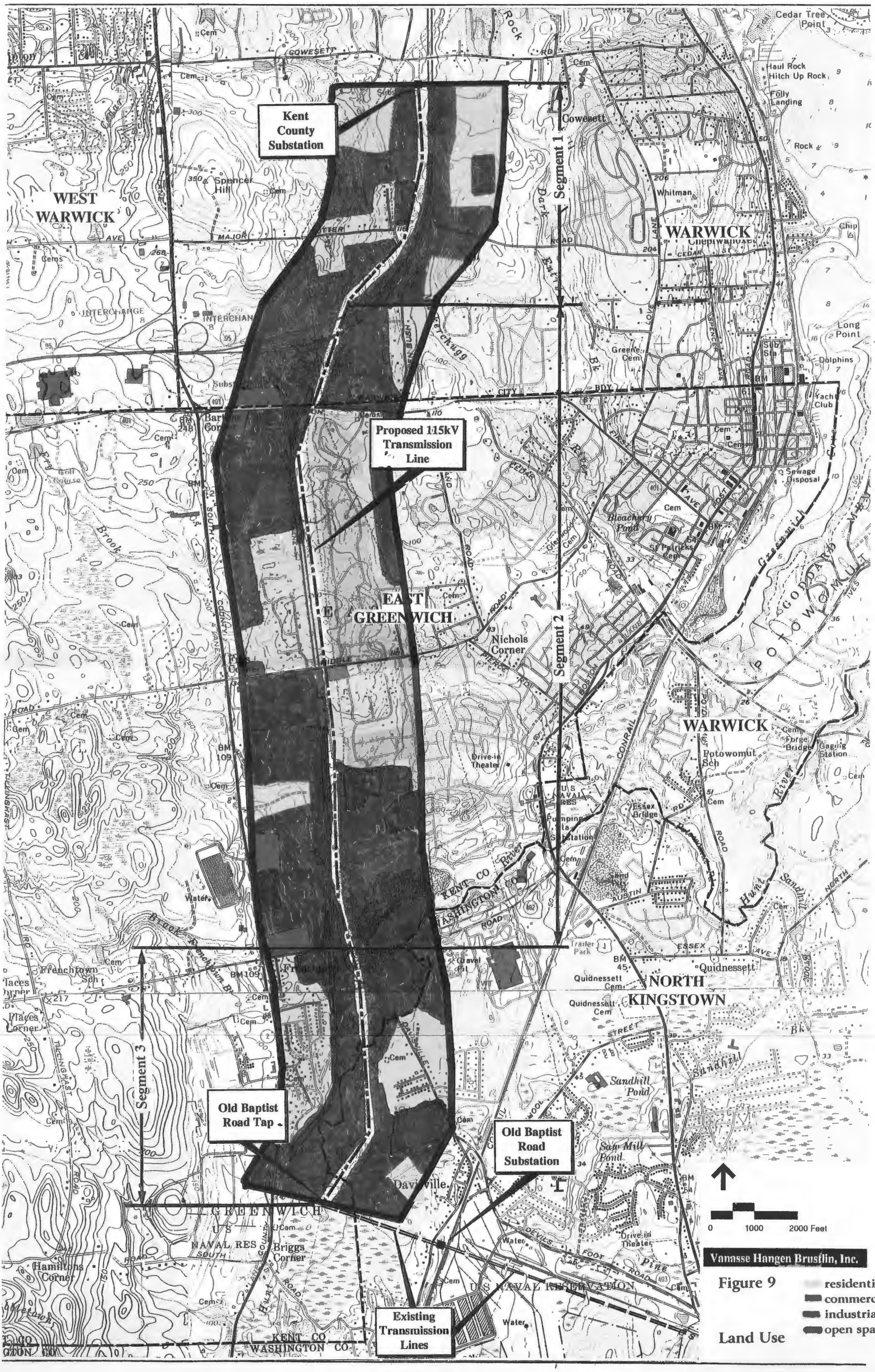


Figure 9

Land Use

CHAPTER FIVE:

Aesthetics

The landscape of the study area is made up of gently rolling hills, deciduous and coniferous forests, medium density single family homes, a school, and scattered commercial and industrial properties. Interstate 95 crosses Segment 3 and Route 4 bisects Segments 1 and 2. During the winter, this region of Rhode Island is frequently pelted by ice, buried under snow, and assailed by gusting winds. Many of the power lines in the project area are visible from the primary transportation corridors during the late fall, winter, and early spring. During the summer, Route 4 serves as the main artery through which tourists flow into the heart of the thriving South County tourist economy. The existing vegetative buffer camouflages most poles and lines. However, the project proposes to remove an additional 25 feet of vegetative buffer in Segments 1 and 3, while stripping the land of 80 feet of vegetation in Segment 2. Such clearing would increase noise from the highways, have an adverse visual impact on drivers entering and leaving South County, and could decrease property values as the result of the eyesore which the additional height and deforestation would create. Figure 10 illustrates Narragansett Electric's rendering of the visual affect which changes would produce. Figure 11 illustrates how the public perceives the changes. The photographs which follow depict the tenuous balance which exists between the

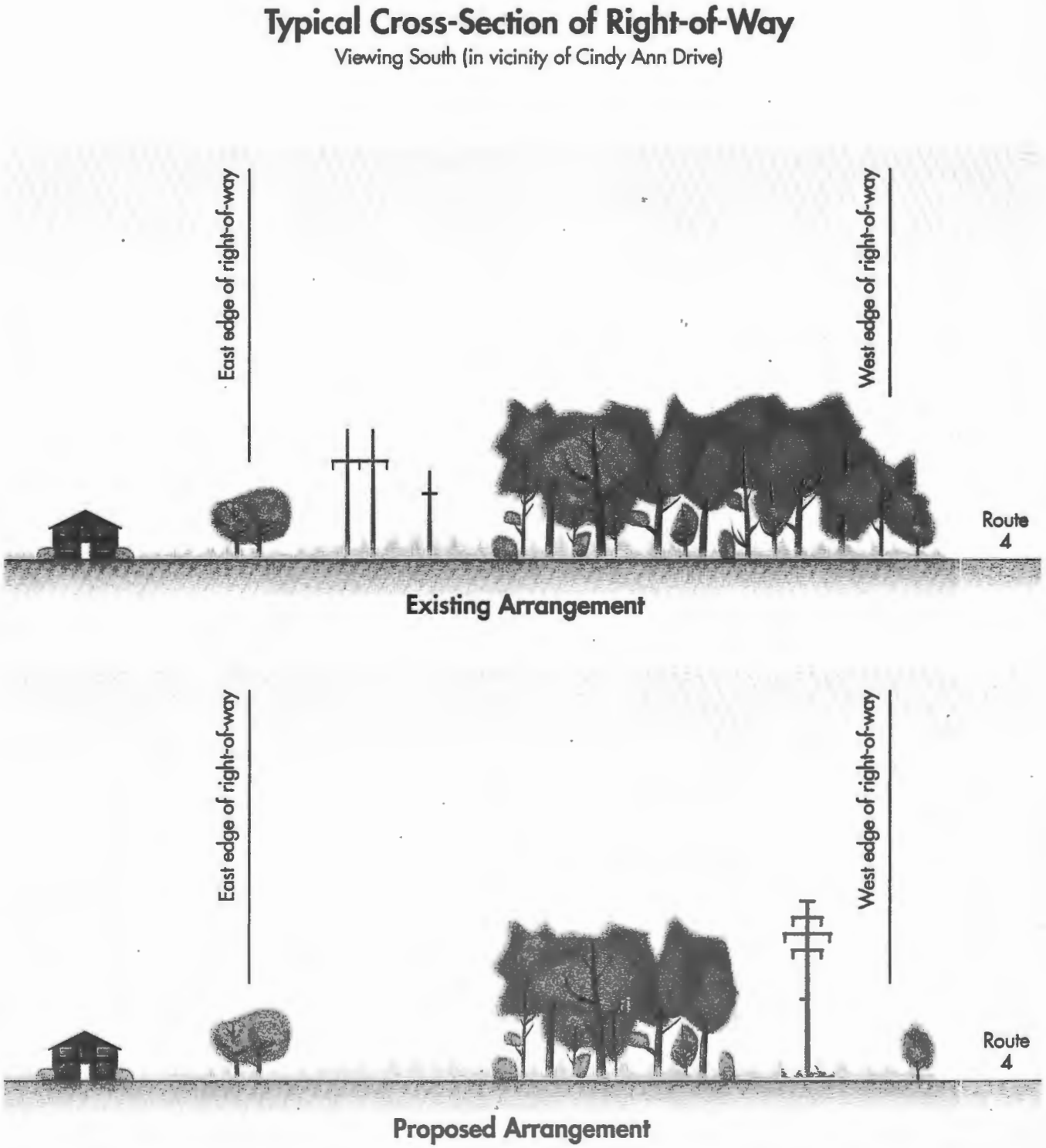
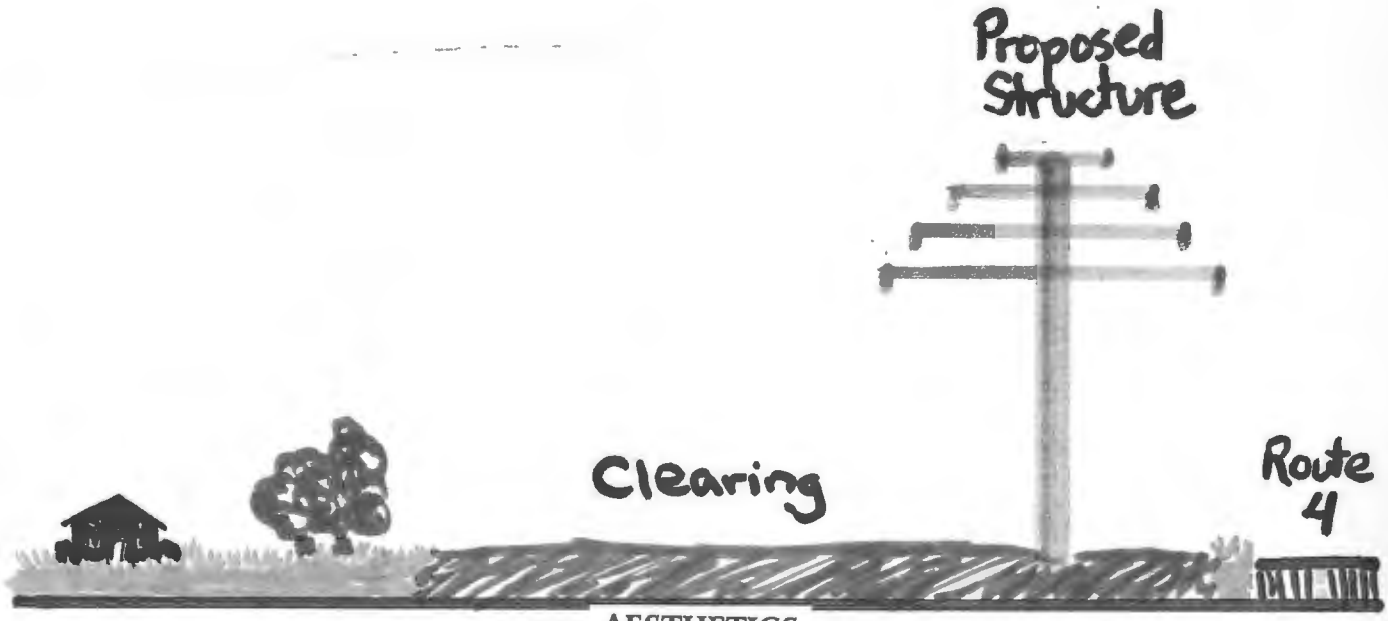
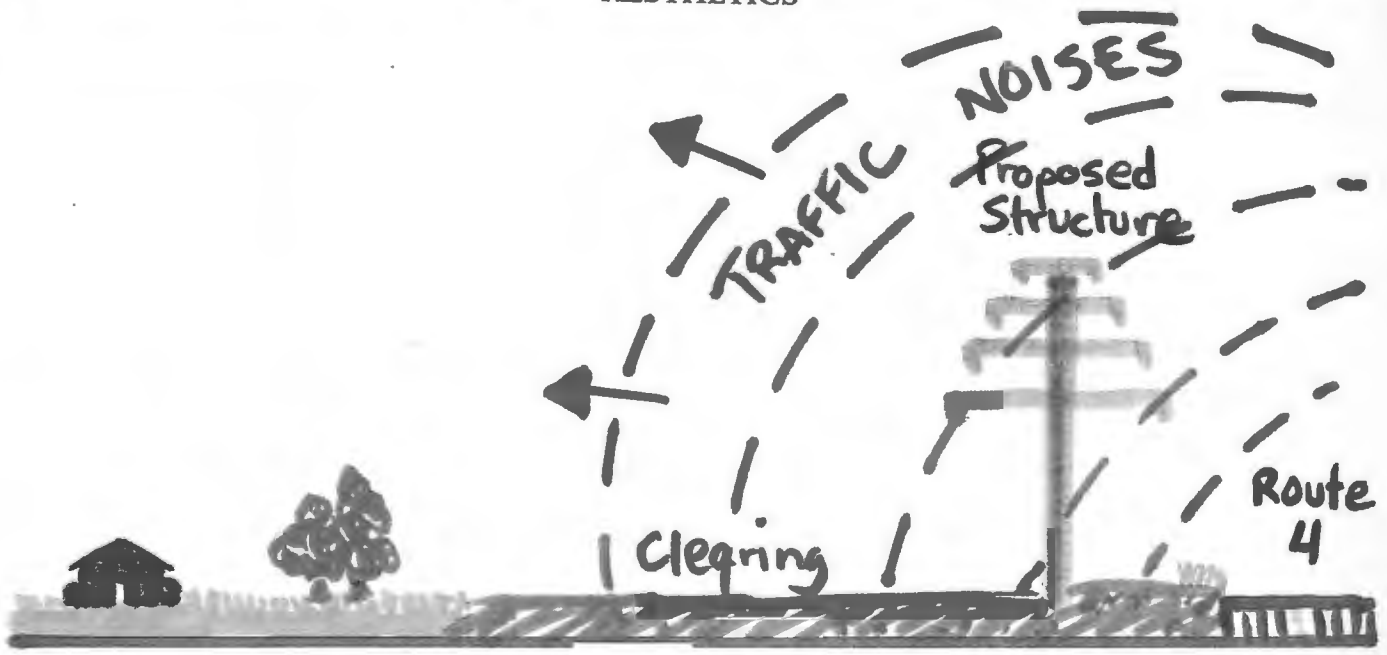


Figure 10: After the Project- Narragansett Electric Perception

Public Perception of Impact on Right-of-Way



AESTHETICS



NOISE

Figure 11: After the Project- Public Perception

transmission lines and the land uses along the corridor.

At the Kent County Substation, northern terminus of the project area, transmission lines are supported by 110 foot high metal structures. Here, the lines are shown crossing Cowesett Road. Just out of the picture, to the right, is Interstate 95.

The existing 115kV and 34.5kV line stretch to the horizon. Similar viewscapes exist throughout the corridor. This segment of the line will be shifted 45 feet west (or left, in the photograph), requiring an additional 25 feet of clearing. The poles shown are approximately 50 feet high: new structures will be 20 to 30 feet higher.

In the backyard of a home on Cindy Ann Drive, the power lines and poles are clearly visible. The structures will be moved 100 feet, but will also be 50 to 60 feet higher. Residents in the Cindy Ann neighborhood claim a high incidence of cancer and property devaluation as a result of the EMF generated by the lines.

As if trying to raise the homes from the "dead" on the real estate market, this home on Cindy Ann Drive is being sold by Lazarus Properties Ltd. The owners know it will be a miracle if it sells soon. The house has been on the market for over three years, although it is structurally sound, beautifully maintained, and priced well below market-value.

Even the students and staff of East Greenwich high school cannot escape the controversy generated by the power lines. The building in the background of this picture is the high school. Although the proposed project will locate the lines further from the facility, the athletic fields (next page) will still be affected. Some parents have commented that they are a little reluctant to let their children participate in after school sports because of the EMF controversy.

The goal posts on the playing fields and the tops of the utility poles have a similar outline and provide a stark contrast between a desirable community facility and an undesirable facility. In the foreground, another playing field which has been abandoned because of the fear of EMFs.

These power lines will gain an additional 50 to 60 feet and will be relocated 100 feet closer to Route 4 (left of picture). In order to remove the lines and poles from this location, any of the vegetation which has grown up in the cleared right of way will also be removed. All of the trees to the left of the photograph are part of the 85 feet of clearing which will be needed to complete this project.

Next to Avenger Drive in East Greenwich, a view from beside one of the 115kV poles illustrates that Cindy Ann Drive is not the only location where poles and lines are clearly visible from the homes.

The view from the other side. The utility poles along Avenger Drive can be clearly seen from Route 4, and vice versa. The transmission lines will be moved 100 feet closer to the road in this segment. Narragansett Electric maintains that there will be no negative visual impact on traffic traveling Route 4.

The Hunt River crosses the right of way at the North Kingstown, East Greenwich town line. This area has the highest topography and the most wetland of any location along the corridor. It also took a helicopter to place the lines properly when the project was originally completed.

In your own back yard... these lines near the Old Baptist Road Substation are so close to a side yard of a home that you can actually see the change in color between the grass of the lawn and the vegetation of the right of way. This view is just beyond the project's scope.

The Old Baptist Road Substation is the project's southern terminus. The type of structure shown here may be used along some areas of the corridor. Construction trailers are present at this site.

Construction has already begun within the Old Baptist Road substation in preparation for the new equipment which will be needed to handle the additional 115kV load.

CHAPTER SIX:

Community

Social geographers place emphasis in the difference between definitions of neighborhood and community. While a neighborhood is defined as a place or physical location, the definition of a community incorporates the social interactions which take place within a specified location. For example, residents of a city neighborhood, such as North Beach in San Francisco or the East Side in Providence, may live within a close proximity to each other but never really communicate or have any knowledge of the lives of other people on their street or in their building. A lack of community can be caused by high migration rates, problems such as drugs and crime, or even a poorly designed building or streetscape which discourages attempts at friendly contact.

While in certain situations, social, economic, and political problems can create distance between neighbors, a mutual interest in fighting the problem can also create a greater sense of community and forge closer ties between neighbors. The Narragansett Electric project has drawn people closer together around the rallying cry of an organization which formed in response to the fear of electromagnetic fields: Rhode Islanders for Safe Power (RISP).

"It usually takes the perception of a crisis directly affecting their daily lives to mobilize people to invest the time, effort, and organization that will enable

them to affect and change public decisions."[21] RISP organized in 1990, when Narragansett Electric first proposed the project. At the time, the new transmission line would have been a 34.5kV project, as opposed to the 115kV project which is being considered. RISP quickly came to life. The group convinced the East Greenwich planning staff to propose a moratorium on all transmission line construction within the town while further studies as to the effects of EMF and the potential alternatives were conducted. The town council unanimously passed the measure, only to have the moratorium overturned. Meanwhile, the Energy Facility Siting Act had been amended to require greater public participation. The amendment now included any project of 69kV or greater as a "major energy facility", subject to public hearing requirements.

Also in 1991, RISP hired an executive director: Ms. Linda J. Seiler. Ms. Seiler has since earned national attention for the organization through her outspoken dedication to the cause and involvement in the Electromagnetic Radiation (EMR) Alliance. However, over the past two and a half years, the issues which RISP addresses have become far more complicated than determining the impact of EMFs or siting alternatives. The community group has challenged the whole bureaucracy of the electric utility industry. "This issue is not going to go away nor are the citizen groups such as RISP. More and more groups are being formed every day and our national and international network continues to grow. If the electric utility industry, A MONOPOLY, doesn't immediately start changing

its approach to citizens' concerns and altering its way of doing business, groups such as ours only become stronger." Ms. Seiler wrote in October of 1993. The threat was not idle: the group has gained support in the Rhode Island General Assembly and in other communities affected by similar proposals. "A group of individuals from RISP continued to educate members of the General Assembly about the EMF issue. The fact is that the more the senators and representatives looked at the issue, the more convinced they became that a law must be enacted to protect the public."[22] Presently, there are two bills before the Senate which would make the Energy Facility Siting Act more burdensome for the power company and more comprehensive in its analysis requirements. The House has three bills to consider which propose varying degrees of statewide requirements to bury power transmission lines.

In North Kingstown, citizens and officials have lately realized just how critical the decision in this case could be to future siting projects. In an advisory opinion to the Energy Facility Siting Board, the Planning Commission surprised Narragansett Electric by stating that it was "forced to participate in an exercise in democratic absurdity... the state siting board has failed miserably on this issue."[23] The commission criticized the process for dividing the power line's route into three sections, a move which could create conflict between municipalities.

One of the factors which has promoted a greater degree of unity has been the residents' fear of property devaluation. At the March 10, 1994 meeting of the

State Planning Council, three real estate agents and several residents testified to the declining property values and the difficulty of marketing a home in the neighborhoods along the right of way. Whether or not the fear of EMF is justified, it has still impacted the salability of homes in the communities. The *Criscuola* court decision was based, in a large part, on the fear of EMF, not the validity of the danger. "Perception can become reality."[24] To the communities along Narragansett Electric's ROW, the fear of EMF is a factor they must live with every day. They wonder, when their children get sick, whether it was caused by the EMF generated by the power line in their back yard or whether its a normal childhood illness. They wonder if they will be able to sell their homes. On Cindy Ann Drive alone, a street of approximately 30 homes, there are 5 homes on the market. Each of the five has displayed a For Sale sign on their front lawn, some with different real estate companies, for more than a year.

One State Planning Council member called the residents of these communities "victims of a changing society and new information". Residents would rather not consider themselves victims, however, but community organizers and activists. The Sierra Club, an organization which promotes community activism, notes that "Crises vary, but effective means of organizing to deal with these crises remain amazingly constant."[25] Their recent handbook to community organizing recommends the following steps:

1) Notify your community.

2) Organize a meeting of concerned residents.

3) Schedule regular and frequent meeting times.

4) Meet with local decision makers.

5) Formalize the organization.

6) Elect officers.

7) Create committees.

8) Publish a newsletter.

9) Get into the newspaper: write letters to the editor, talk to reporters.

10) Prepare for public hearings.

11) Don't give up hope, don't get discouraged, don't get bored or distracted.

12) Do follow through until the issue is resolved, one way or the other.

source: The Sierra Club Guide to Community Organizing, How to Save Your Neighborhood, City, or Town by Maritza Pick.

Rhode Islanders for Safe Power have successfully followed many of these guidelines. By holding meetings, briefing other stakeholders at a state and local level, and contacting all interested groups, RISP has achieved a remarkable sense of community in an area known for "people in nice big houses with nice big yards telling us what to do."[26]. If no other result comes from the turmoil over the power line relocation and electromagnetic field controversy, at least the community will have been strengthened by joining to "do the right thing".

PART THREE:

Economics

"Public use of the ROW for "off-roading" and for other, less wholesome activities (such as setting fires) will continue to require close monitoring, as power line ROWs tend to be attractive nuisances."[27]

CHAPTER SEVEN:

Project Costs

"Electricity affords one of the few cases in which performance of the private entrepreneur was so inadequate as to invite government initiative and public planning."[28] Joseph Schumpeter, noted Harvard economist, made this observation over 57 years ago. In the intervening years, little has changed. Public utilities are subject to government oversight, not merely because they provide a public service, but also because the potential to abuse the system is considerable. Everybody needs electricity. In 1980, the residents of a housing complex in New York City were threatened with eviction. It seems their owners, Drith Corporation, were refusing to pay the electric bill. Tenants complained and tried to find out who was behind the ownership corporation, to no avail: the electricity was turned off and tenants were forced to move. Only later did former residents discover that the real owner was ConEd, or Consolidated Edison: the electric company.[29] Even with government regulation, the demand for electricity is a motivating force in society.

Cost has been one of the most vehemently debated questions throughout the Narragansett Electric application and siting process, particularly as it applies to undergrounding and rate increases. Table 6, on the next page, displays the Narragansett Electric presentation of the cost and construction options.

Table 6

Cost and Construction Options Narragansett Electric Kent County to Old Baptist Road Project		
Alternative	**Cost**	**Difference from Proposed Plan**
1) Existing Arrangement: No Change	none	-100%
2) Proposed Plan: Two 115kV Lines at Western Edge of ROW	5.2 million	0%
3) New 115kV Line Only at Western Edge	3.3 million	-36.5%
4) Optimize Phasing of All Lines on ROW	3.75 million	-28.4%
5) Switch Loads of 115kV lines	4.25 million	-18.3%
6) Install New Line Underground: Entire Route	9.3 million	79.0%
7) Install New and Existing 115kV Line Underground, Remove 34kV Line: Segment 2 only	10.9 million	109.6%
8) Install New and Existing 115kV Line Underground: Entire Route	16.7 million	221.2%
9) Install New and Existing 115kV Line Underground, Remove 34kV Line : Entire Route	17.5 million	236.5%

source: Narragansett Electric Company, 1994

This table of costs and options was presented by Narragansett Electric as part of its project summary. However, upon closer examination, there are some interesting omissions and discrepancies in the information.

1. For Segment 2, the cost of installing only the new 115kV line underground. This option is given for the entire corridor, but not for the segment of concern, Segment 2.

2. For Segment 2, the cost of the proposed alternative. Again, this option is given for the entire corridor, but not for the segment of concern.

3. Segment 2 accounts for approximately half of the project area, but the undergrounding cost of Segment 2 is more than 62% of the total undergrounding cost.

Besides the discrepancies in the information which Narragansett Electric initially provided, there have been numerous statements of cost made which contradict these estimates. Commonwealth Associates, an engineering firm hired by the Division of Public Utilities two years ago, estimated the cost of burying a 115kV line at approximately $800,000 a mile[30]. The 16.7 million dollar price tag

for the burial of two lines over a distance of five miles (a total of ten miles of line) amounts to $1,670,000 per mile, more than twice the Commonwealth estimate. Narragansett Electric helped finance the Commonwealth study, but officials now maintain that a desire not to force higher figures on proponents of undergrounding (who also sat on the committee overseeing the Commonwealth study) led the company to agree not to challenge the figures. If the estimates weren't accurate, what did Narragansett Electric hope to accomplish by having them published?

The rate increase, per customer, has also been a source of consternation. Narragansett Electric's estimates of the rate increase vary significantly from independent estimates, but the company has been reluctant to give out basic information such as typical kilowatt hours (kwh) used by residential, commercial, and industrial customers. Table 7 on the following page illustrates the differences between Narragansett Electric estimates and independent estimates of rate increases. The power company cites factors such as the potential contribution from the regional public utility holding company, New England Electric System (NEES), in explaining the differences. Narragansett Electric maintains that NEES will only contribute to projects which benefit the entire New England system. The proposed project fits the criteria, but undergrounding does not. However, there are significant savings associated with undergrounding, despite the fact that the initial installation costs 2 to 3 times more than conventional overhead lines.

Underground systems can better protect the lines during severe weather, decrease the likelihood of vandalism, and decrease the needed width of right of way. Furthermore, underground systems experience fewer failures and have a longer life expectancy, although they may cost more to repair. A conventional system may last 20 to 30 years, while underground systems may last 40 to 80 years[31]

Table 7

ESTIMATED RATE INCREASES			
	Residential	**Commercial**	**Industrial**
Number of customers	302,945	16,094	2,781
Typical kilowatt hours per month	500	1,000	27,500
Proposed project (Narragansett)	$0.30	$3.00	$500.00
Proposed project (independent)	$0.03	$0.06	$1.48
Complete underground (Narragansett)	$2.94	$30.00	$5,600.00
Complete underground (independent)	$0.06	$0.11	$3.17

sources: Narragansett Electric, 1993; Senate Fiscal and Policy Office, 1994. Note: underground figures based on a longer project life (40 years).

Another cost issue which the municipalities must address is the fiscal impact of the project on municipal services. Statewide Planning conducted an in-depth analysis of the potential fiscal burden on the cities and towns as a result of an

increased need for services such as police, fire and emergency services, and traffic mitigation, versus the benefits from increased property tax revenues. Warwick is expected to generate additional revenue of $25,000 and East Greenwich will generate $40,000, but North Kingstown will face a shortfall of $1,100. Narragansett Electric has made no provisions to compensate the town for the additional fiscal burden: this type of oversight is certainly a flaw in the siting process.

CHAPTER EIGHT:

Economic Development

Throughout the discussions of this Narragansett Electric project, the rationale behind the need for the additional transmission line has won supporters among those who own and operate businesses and industries. Narragansett Electric argues that the installation of the additional 115kV line would virtually eliminate any chance of a power failure that lasts longer than a few minutes (see Table 8). If one line fails, automatic switching to the other 115kV line would take place, thus preventing brownouts and blackouts. Some 48,000 customers[32] would be benefitted by the upgrade: that's about 14% of all Narragansett Electric customers.

Table 8

Projected Times Between Transmission Line Failures		
substation	**with existing system**	**with proposed system**
Old Baptist Road	1.4 years	3.3 years
Davisville	1.4 years	2.9 years

source: Narragansett Electric

Since there is a direct relationship between the length of the transmission line and the likelihood of failures, the benefits to the system are achieved through the fact that the new location of the line will make the overall distance between substations slightly shorter. Throughout the month of April, Narragansett

Electric confidently asserted that they benefitting the residents along the corridor by moving the lines away from homes. Another, more economical alternative had been suggested by the Division of Public Utilities, the utility pointed out: the new line could be installed adjacent to the existing line. However, this alternative would not result in a shorter transmission line and would not serve Narragansett Electric's purpose. The company is benefitting itself by relocating the line. Undergrounding the line could also result in a shorter line, and would save the costs of extended blackouts in severe weather. On average, only 1% of power lines placed underground experience failure during severe weather, as compared with 33% of overhead lines[33].

The more "firm" power supply would allow businesses to be confident that there would be no power surges and no loss of power when technically advanced equipment is being operated. Much of the attention in the economic community is being focused on drawing high-tech research and development firms to the local area. Such companies perform delicate and painstaking operations which require a constant current of electricity, and if interruptions occur, information can be lost or equipment can be damaged. The Quonset Point/Davisville Naval Air Station has been the site of speculation concerning intensive economic redevelopment efforts. It is estimated that more than half of the state's businesses are connected to the defense industry[34]. Although the effects of defense closures and downsizing are already being felt, the greatest challenge for the state lies in

promoting jobs and industry in the future. Quonset Point's electricity needs are served through the Old Baptist Road and Davisville substations, which helps to rationalize the project in the eyes of business and industry. However, as J. William W. Harsch, lawyer for East Greenwich, points out, it will take a number of years before any kind of fully developed industrial park in Quonset Point relies on this power supply. The doctrine of "prudent avoidance" could apply to this project without any detrimental effects. That is, Narragansett Electric could wait until further research is conducted before proceeding with the project. The three years over which the company has fought to construct the new line have brought about many interesting advances in power transmission technology and changes in the results of EMF litigation.

Narragansett Electric has also used the issue of job creation and the value of goods and services purchased from local suppliers as a factor which should contribute to the positive effects of the project. Table 9, on the following page, itemizes the numbers and types of workers needed by the project. A total of 73 workers will be hired by the company throughout the phases of the project, which is scheduled to take ten months. However, the Department of Economic Development predicts that a more reliable power supply could attract 30 to 40 new companies to the Quonset Point/Davisville area and create 3,000 to 4,000 new jobs "in the future"[35]. No time frame for the expected job creation is specified.

Table 9

PROJECT EMPLOYMENT ESTIMATES	
Type of Employment	**Number of Workers**
Flag limits of vegetation clearing	3
Construction mobilization	4
Vegetation clearing	6
Install erosion and sedimentation control	3
Survey and construction layout	3
Access road construction	3
Materials site delivery	3
Excavations and foundation construction	8
Structure erection	6
Conductor stringing	14
Testing and cutover	6
Removal of existing lines	8
Restoration and landscaping	4
Construction demobilization	4

source: Narragansett Electric, 1993.

Only 14%, or ten, of these employees will be from Rhode Island. The workers will be hired from among the employees of New England Power Service Company, based in Massachusetts.

Narragansett Electric is also estimating that the value of goods and services purchased from local suppliers will be approximately $253,000. The company has also indicated that there will probably be increased revenue for area convenience

stores, gas stations, and restaurants. With no more than 14 workers present on the job site at any one time, the increased sales probably will not exceed $500 a week divided between several businesses. Over the 42 weeks of the project, the total local economic benefit, including the wages of the 10 Rhode Island workers, will not amount to more than $400,000. However, traffic around the project area will be inconvenienced and additional municipal services will be needed. Furthermore, businesses may also be negatively impacted by the traffic tie-ups and other associated problems.

While economic development professionals point to higher electric rates as detrimental to the ability of the state to attract business, other states have found an effective way to deal with this problem. States such as Kansas, Iowa, and New Jersey have encouraged utilities to provide "incentive rates" to industrial and commercial customers. After all, when the state cannot attract business, it is not only the state which loses out on potential economic benefits: the power companies also lose potential customers.

PART FOUR:

Politics and Planners

"As staff, I don't know why I'd be concerned about this."[36]

CHAPTER NINE:

Outcome of Project

On April 27, 1994, the State Planning Council voted on whether or not to recommend that the Narragansett Electric 115kV project proceed as proposed. By the narrowest of margins (7-6), the Council voted to adopt the following staff opinion as their advisory opinion to the EFSB:

> **Recommended Motion:**
>
> The Council finds that the Narragansett proposal in EFSB Docket SB 93-1 is consistent with the State Guide Plan, and contributes to the socioeconomic fabric of the State as described in the staff report that is incorporated into this opinion of the Council.
>
> The Council further finds that each of the alternatives discussed, that is overhead, underground, partial underground, etc., would be consistent with the State Guide Plan, if, as with the Narragansett proposal, that alternative could earn a wetlands permit.
>
> It is the Council's opinion that any of the alternatives discussed would provide a needed facility and make a positive contribution to the socioeconomic fabric of the state.[37]

The vote was a study in political allegiances and legitimate concern for the communities in question. It was also the culmination of only one battle in the war being waged against this project in particular and overhead lines in general. With several bills to mandate the undergrounding of new transmission lines

pending before the House and Senate, the stakes for Narragansett Electric seem particularly high. If the permits for the proposed project are granted, construction will proceed and the outcome of the legislative session will not affect the construction.

On June 22, 1993, a power line burial bill passed the state Senate by a vote of 25 to 19. The House overwhelmingly approved the same bill (72-5) later in the day. However, Governor Sundlun chose to veto the bill, stating:

> "Given the scientific uncertainty, prudent avoidance of electromagnetic fields is appropriate. However, high voltage transmission lines represent a small fraction of the public's exposure to electromagnetic fields. Therefore, passage of this legislation would not substantially reduce the public's exposure to electromagnetic fields... Rhode Island's electric rates are already some of the highest in the nation. Our electricity costs will continue to rise if Rhode Island's utilities are forced to pay 2-3 times as much as utilities elsewhere to construct transmission facilities." (see Appendix A for complete text)

The Governor's arguments closely resemble those used by Narragansett Electric at the numerous public hearings and committee meetings during the spring of 1994. Mr. Harsch, lawyer for East Greenwich, calls the company's fear of setting precedent with this project a "red herring". Just last year, Narragansett Electric buried 7 miles of line from Johnston to the new Manchester Street Station. Furthermore, the cost of this project is offset by an annual savings of up to $334,000 for residential, commercial, and industrial customers, assuming that the

project is financed over 20 years, this could amount to savings of nearly 7 million dollars. Such savings, if reflected in the per kilowatt hour rate, could negate much of the additional expense of going underground. However, this fact has been conveniently forgotten since the outset of the process.

The task of determining socioeconomic impact and compliance with the State Guideplan was originally delegated to the State Planning Council (SPC) by the EFSB in November. The staff report on the issues was ready in early February. On March 10th, the SPC met to hear public comments on the project. Residents of the affected neighborhoods were there, along with lawyers, real estate agents, and the Senator Lenihan from East Greenwich. There were notable absences however. Both the Chairman, Jerrold Lavine, and the Vice Chairman, Brian Gallogly, had "other commitments" to attend to. Only eight of the fifteen members were present: quorum was achieved by the closest of margins. The citizens who spoke were determined, impassioned, and well-educated. For the space of two hours, it seemed as though the tide of political support for the project might be turned. However, tug-of-war to be played between allegiances had only just begun.

At the March 24th meeting of the SPC, the advisory opinion was due to be forwarded to the EFSB. But many questions of the Council members remained unanswered. Among the questions were issues of rate increases, property values, aesthetic impacts, noise, costs versus benefits of undergrounding, and wetlands in

the study area. The gaps which were left in the information led to the postponement of the vote for a month while staff collected additional data. Several Council members requested that as much data as possible be collected independent of Narragansett Electric. However, the project manager did not fulfill this request and much of the cost data and project specifications were forwarded by the company.

Other state and municipal bodies were also preparing advisory opinions. In Warwick, the Planning Commission and City Council agreed not to oppose the project. There are few residences near the utility corridor in Warwick: there was no public opposition. In East Greenwich, the Zoning Board voted to recommend that the Town Council approve the heights of the new poles. However, the Town has taken a position of being wholeheartedly opposed to the project. Meanwhile, North Kingstown ignored the EFSB's instructions to focus only on North Kingstown and took aim at the fractured nature of the project.

On April 27th, Daniel Beardsley moved to amend the staff opinion to include language indicating that the Council felt that burial was the best alternative. This motion failed by a vote of 6 to 7. (Table 10 on the following page charts the voting of the members present.) The staff opinion was adopted by the vote of 7 to 6. Other advisory opinions which are forthcoming or already delivered to the EFSB include the opinions of the Public Utilities Commission, the Rhode Island Department of Health, the Rhode Island Department of

Table 10

State Planning Council Vote on Advisory Opinion		
Council Member	**Supported Staff Opinion**	**Supported Amendment**
Jerrold Lavine, Chairman	yes	no
Brian Gallogly, Vice Chairman	yes	no
Robert Griffith, Div. of Planning	yes	no
Daniel Beardsley, RILOCAT	no	yes
Kevin Brubaker, Gov. Policy Office	yes	no
Scott Wolf, GOHEIR	yes	no
Russell C. Dannecker, Senate Fiscal & Policy	no	yes
Kevin Flynn, City of Cranston	no	yes
Rep. Peter Kilmartin, House of Reps.	yes	no
Dr. Gaytha Langlois, public member	no	yes
Vincent Masino, public member	no	yes
Peter Ruggiero, RILOCAT	no	yes
Michael O'Keefe, Budget Office	yes	no

source: State Planning Council meeting, April 27, 1994.

Transportation, and the Rhode Island Department of Environmental Management. By the end of July, the Energy Facility Siting Board will probably have reached a decision.

Should the project be able to proceed as planned, the first stages of clearing will take place in November of 1994. Excavation and foundation construction is scheduled for the winter months of December, January, February, and early March. With Rhode Island weather conditions as severe as they have been during the past few years, it is likely that the construction phases of the project will be delayed until spring and summer of 1995. Furthermore, there is no guarantee that the course of the permitting process will run smoothly. The State Planning Council opinion is only one of eight required before the EFSB can make a decision, and in the meantime opposition to the project continues to build. As Linda Seiler of Rhode Islanders for Safe Power noted after the disappointing vote, "This time it was very close. Next time this issue comes before the council? Who knows." The future of power line siting in Rhode Island is far from clear: we have not found the way to put the troubles back into Pandora's box.

CHAPTER TEN:

Implications for Planning

Pandora's box is open. The number and type of problems that must be addressed seem to grow every time the issues are examined. As planners, however, we sometimes get caught up in solving all the little worries and forget to re-examine the box from which they came. In this case, the box is Narragansett Electric's approach to the siting process and, ultimately, its attitude toward the community.

Narragansett Electric has presented a plan and alternatives: alternatives which they are required by law to propose but show little interest in adopting. "Consumers have no choice with their utilities as each utility company has a set service area. There is no competition in the market- the utility industry is a monopoly."[38] Narragansett Electric is aware of the fact that its customers have no choice, and that the political system favors the upgrade because business and industry support the plan. However, community members are also aware of the fact that they cannot resign themselves to accepting the proposal. They fear for their property values and for their health. Furthermore, while the utility company has used the argument that they do not want to set a precedent through this project, community groups could use the same argument. If the utility is allowed to force the community into accepting its opinion of what is economically and

structurally feasible without regard for the people the decision affects, it is likely that they will be able to do so again elsewhere. Edmund Burke, a political theorist of the 18th century, said "All that is essential for the triumph of evil is that good men do nothing.". The good men and women of East Greenwich are not prepared to "do nothing". Narragansett Electric's superior attitude has fostered an adversarial relationship. If the company had been willing to listen and to compromise, then the issues which are surfacing from the depths at the bottom of this box could have been shut away long ago.

"The planner's role as interpreter and communicator is to present to society- in the form of governments, institutions and organizations- a version of reality and of the interventions possible to change it."[39] The planners role in this conflict is more complicated because the problem is perceived differently by the different stakeholders. Furthermore, the gulf between the two realities is very wide. This siting problem has become symbolic of a greater conflict: the war between market rationality and social rationality. Market rationality, or unregulated capitalism, dictates that electricity is a commodity which society needs and that the price of the commodity may be determined by the outcome of this project. Since economics and the costs of doing business in the state are political priorities, economic development and business leaders have allied themselves with the electric company in the hope of maintaining a lower cost. Social rationality, or democracy, dictates that the costs of going overhead may be greater in social

terms than the economic benefits. Because residents are concerned for their own health and welfare, community groups have opposed the utility's attempts to push the project through as planned.

Ultimately, every planner must decide between doing good and being right. The two do not always intersect. The planner's "other roles as citizen and professional give him or her the right, and even the duty, of fighting for what he or she thinks is right and of using all means at his or her command, including political ones, for this purpose."[40] There is a balance between doing good (morally, personally, or socially) and being right (in the eyes of those with power). In this case, neither the "good" nor the "right" has been clearly defined.

Before the amendment to the Energy Facility Siting Act, Narragansett Electric would not have been faced with the complicated permitting and public participation process that exists today. Pandora's boxed would have remained safely tucked away on a shelf and the public would have remained ineffective in their efforts to change the course of these very private decisions about very public needs. The 1990's have been a decade of change in the discipline of planning as well as the broader scope of public service. Community groups are becoming educated on a wide variety of issues and demand that community leadership does the same. Transactive planning, as described by Friedmann[41], has become a critical link in the planning process. Planners must both absorb information and share information, must decide what the most appropriate sources of information

are, and to whom the information should be given. "The planner does not determine goals; this is the job of the community...even so, the planner should show them what implicit goals they are pursuing- and with what consequences."[42] In the case of power line siting, the planner must be informed through a variety of sources and must be able to present the information in a format which may help both community members and political representatives make a better decision. It is a complicated task. While the only information available comes from a limited number of sources, including government-sponsored studies, power company-sponsored studies, and the power companies themselves, the potential to misuse, dilute, and fabricate information always exists. While planners may be able to obtain information, they cannot always verify the truth in the claims made by either side.

The lines in this battle are drawn and the opening moves have been made. At some point in the future, there will be a resolution to this conflict. With tensions running high, neither side will be able to accept this standoff. In the meantime, the planners remain firmly entrenched in the middle, acting as mediators, negotiators, and technicians.

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APPENDIX A:

Governor's Veto Message

State of Rhode Island
and Providence Plantations

Bruce Sundlun, Governor

State House,
Providence

July 13, 1993

TO THE HONORABLE, THE SENATE:

In accordance with the provisions of R.I. Const. Art. 9, § 14 and R.I. Gen. Laws § 43-1-4, I am transmitting herewith, with my disapproval, S-0570 Sub A, as amended "An Act Relating to Health and Safety -- High Voltage Lines".

This Act finds that there is sufficient scientific information to link adverse health effects with the electromagnetic fields generated by high voltage power transmission lines. It would mandate the burial of all transmission lines of 69kV or greater within residential and school zones.

To date, most scientific studies do not support the findings that would be recognized and adopted were this bill allowed to become law. According to two recent reports, conducted by Sir Richard Doll for the British Government and by the Oak Ridge Associated Universities, the evidence linking electromagnetic fields and cancer is weak, inconsistent, and inconclusive.

Given the scientific uncertainty, prudent avoidance of electromagnetic fields is appropriate. However, high voltage transmission lines represent a small fraction of the public's exposure to electromagnetic fields. Therefore, passage of this legislation would not substantially redúce the public's exposure to electromagnetic fields.

On April 6, 1992, I created by executive order the Task Force on Electromagnetic Fields. That Task Force commissioned a study which concluded burying high voltage transmission lines costs 2-3 times as much as standard overhead transmission lines and that less costly alternatives exist to significantly reduce electromagnetic fields. Rhode Island's electric rates are already some of the highest in the nation. Our electricity costs will continue to rise if Rhode Island's utilities are forced to pay 2-3 times as much as utilities elsewhere to construct transmission facilities.

At the recommendation of the Task Force, legislation passed last year gives the state's Energy Facilities Siting Board jurisdiction over the construction of all new transmission lines of 69 kV or greater capacity (R.I. Gen. Laws § 42-98). The permitting process requires an extensive application and hearing proceedure with rigid due process safeguards for all interested parties. This board is the proper forum for evaluating the request of any utility to construct new high voltage transmission facilities and for considering alternatives which would minimize the public's exposure to electromagnetic fields.

Nevertheless, I am sympathetic to the concerns of residents adjacent to utility rights-of-way. Unfortunately, the value of many homes has been substantially reduced by the fear generated over the scientific uncertainty regarding electromagnetic fields. This phenomenon is not unique to those affected by utility rights-of-way; property values frequently decline due to the construction of roads, the expansion of state facilities, or the disrepair of neighboring houses. For all these homeowners, the remedy lies with the local tax assessor, who should be asked to reassess property taxes based on the current value of the home.

For the residents of East Greenwich affected by Narragansett Electric's proposal to construct a new 115 kV transmission line to Quonset Point, an additional remedy is possible. Narragansett Electric has agreed to propose to the Energy Facilities Siting Board to locate the new line and relocate the existing lines to the western edge of the right-of-way along a segment of Route 4 in East Greenwich. This proposal will result in a significant decrease in electromagnetic field exposure from current levels. In fact, it will result in lower field exposure than if, as this bill would require, the new line were buried but the old lines left in their current location. .

For the foregoing reasons, I disapprove of this legislation and respectfully urge your support of this veto.

Sincerely,

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