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Implications on a Nuclear
Facility in South County
Rhode Island
Volume I
Report Summary: Key Issues

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IMPLICATIONS OF A NUCLEAR FACILITY IN SOUTH COUNTY RHODE ISLAND

Volume 1

REPORT SUMMARY: KEY ISSUES

prepared by

REGIONAL COASTAL ENERGY IMPACT PROGRAM

WAKEFIELD, RHODE ISLAND

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Preface

The Regional Coastal Impact Program (RCEIP) Region encompasses seven towns: Charlestown, Hopkinton, Jamestown, Narragansett, Richmond, South Kingstown and Westerly. These towns make up what is commonly known to Rhode Islanders as "South County", a coastal area valued for its scenic and natural attributes.

Plans to construct a nuclear facility in Charlestown, Rhode Island, provided the impetus for the organization of RCEIP in 1978. During a one and one-half year grant period, RCEIP staff have prepared a four-volume report with the sponsorship and assistance of the participating towns. Director Jonathan Feinstein; Acting Director, Cynthia Collins; Environmental Consultant, Kathy Jones and Research typist, Coralie Gough have been the permanent RCEIP staff. Consultants Francis X. Cameron and Malcolm Grant of Interface Consulting and Dr. Eliahu Romanoff of Regional Science Research Center assisted the Program and are responsible for Volumes 3 and 4 of the report, respectively.

Special thanks are due to Anna Prager, South Kingstown Town Planner, whose foresight brought RCEIP planning to South County, and Town Manager, Stephen Alfred for his constant support and the provision of office space and facilities in the South Kingstown Town Hall.

Finally, the Program has benefitted from the guidance of Roger Buck, Director of the Governor's Energy Office, whose supervision throughout the Program has been appreciated.

The study appreciates the cooperation of the many state and local agencies who provided their time and made information readily available to members of this study team.

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TABLE OF CONTENTS

	Page
Preface	i
RCEIP Grant Participants	ii
Table of Contents	iii
List of Figures	iv
1. INTRODUCTION	1
2. VOLUME 2 - REGIONAL INVENTORY AND GROWTH PROSPECTS	4
3. VOLUME 3 - CASE STUDIES AND MITIGATION OF NUCLEAR FACILITIES .	11
4. VOLUME 4 - ECONOMIC IMPACT DYNAMICS	18
5. CONCLUSION	23

LIST OF FIGURES

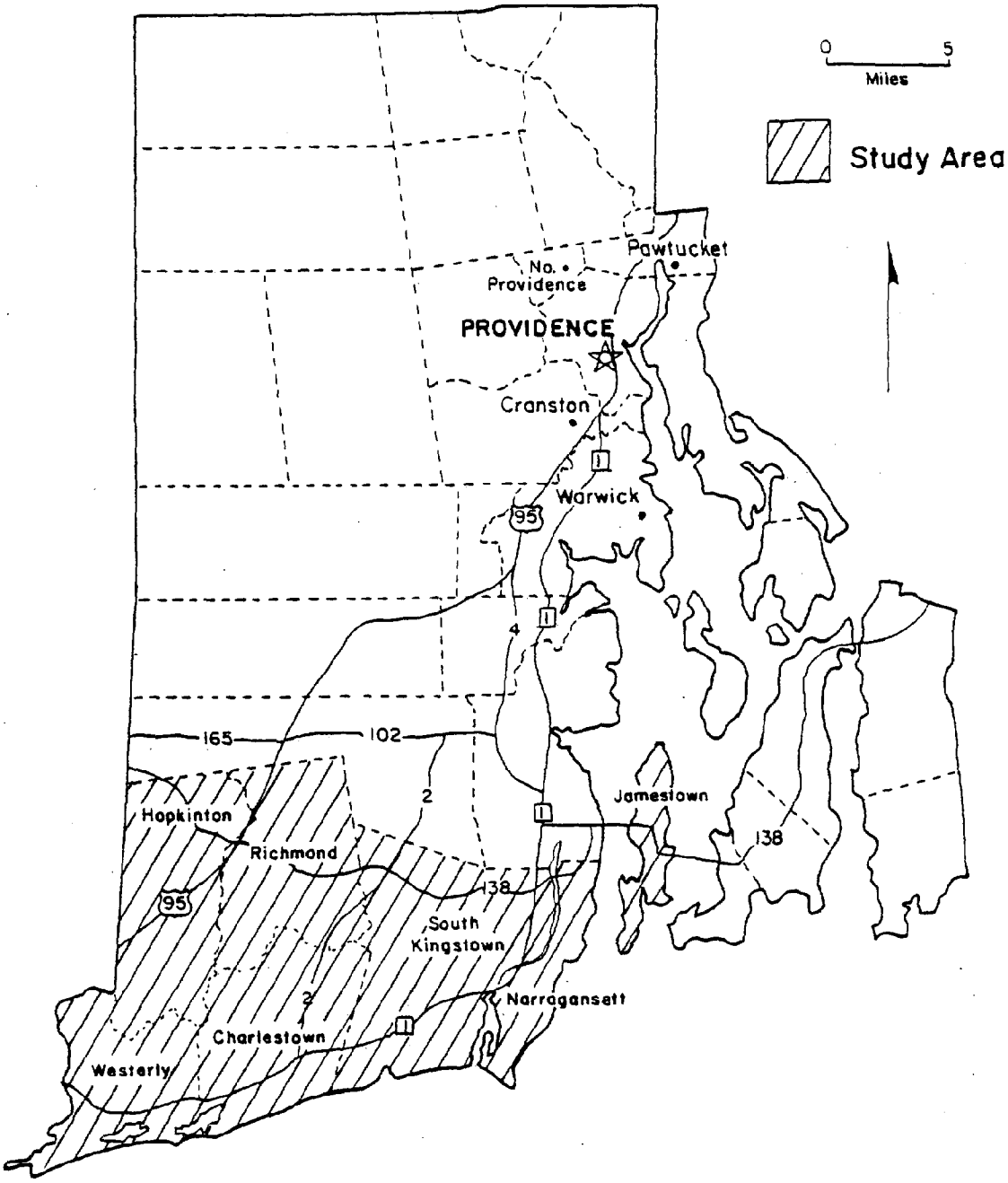
Figure		Page
1	RCEIP Study Area	2
2	Natural Systems	9
3	Regional and Towns Employment Chronologies	20

Volume 1 - Report Summary

1. Introduction.

The report of the Regional Coastal Energy Impact Program (RCEIP) is contained in four volumes: Volume 1, Report Summary: Key issues; Volume 2, Regional Inventory and Growth Prospects; Volume 3, Case Studies and Mitigation of Nuclear Facilities; and Volume 4, Economic Impact Dynamics. Volume 1 summarizes and highlights the key issues of the entire report. Each of the three main report volumes represents a different perspective on the issues raised by the proposed siting of a nuclear facility in Charlestown, Rhode Island and focuses on a different time frame. Volume 2, the Regional Inventory addresses current issues and issues in the 1980's. Volume 3 focuses primarily on the 1970's in its case studies. Volume 4 examines the 1990's in the economic impact analysis.

The central objective of the RCEIP grant was to identify the social and economic impacts of a nuclear power plant siting on a seven-town Region in southern Rhode Island including Charlestown, Hopkinton, Jamestown, Narragansett, Richmond, South Kingstown and Westerly (See Figure 1). The Town of South Kingstown, representing the seven-town Region, applied for a Coastal Energy Impact Program grant at a time when nuclear power was a volatile state and local issue. Construction permit hearings by the Nuclear Regulatory Commission were underway. Six of the seven participating towns were intervening parties. Before the end of the grant period, the power company withdrew its application and cancelled its immediate plans for a



RCEIP STUDY AREA

FIGURE 1

nuclear facility because it could not obtain the Charlestown site. With the possibility of a nuclear facility in southern Rhode Island remote and uncertain, the RCEIP grant fell short of an implementation stage. Thus the RCEIP report does not emphasize integration of impact identification and analysis of regional characteristics. Rather, the separate volumes stand on their own merit and can be utilized separately.

Volume 2 of the RCEIP report consists of an inventory of the Region's social, economic and environmental characteristics as well as a perspective on future growth prospects. Extensive information on the Region was collected both as a basis for impact analysis and in preparation for local management of power plant impacts. Volume 2 identifies the Region's distinct population and economic trends and inventories its extensive natural resources. It sets the stage for future planning of critical regional concerns in the South County area.

The original goal of the study was to arrive at an understanding of how siting impacts would occur and to determine what could be done to mitigate adverse impacts and capitalize on beneficial impacts. Two approaches were made to impact analysis. A comparable area methodology was undertaken to evaluate the siting effects of nuclear facilities on two other areas; Waterford, Connecticut, and Seabrook, New Hampshire. These case studies along with a perspective on mitigating strategies are presented in Volume 3 of the report.

Volume 4 of the report contains a dynamic impact analysis of the proposed Charlestown facility and its implications for South County. Previous energy impact studies have failed to quantify and identify the dynamics

associated with power plant construction and operation. The reliance on static simulation models has resulted in vague estimates of actual impacts. RCEIP took advantage of the Sequential Interindustry Matrix (SIM) which provides a nonstatic, dynamic approach for impact analysis. The SIM focused on two key issues of regional interest, employment and the seasonality of the coastal environment. Extensive data sources were collected and analyzed for use in the modeling approach to ensure its reliability and current application.

The key findings of the three RCEIP reports are summarized in the following sections. In addition, RCEIP published three discussion papers in the process of organizing its research material. South County Population Growth, December 1979; Coastal Zone Seasonality in Employment, February 1980; South County's Coastal Land: The Choices Before Us, May 1980.

2. Volume 2 - Regional Inventory and Growth Prospects.

Volume 2 of the RCEIP report describes the Region's characteristics and resources. It delineates the potentials for and the limitations on future development. Several key points of particular significance to the Region's towns are summarized below.

Population and the Economy

The population of the Region has experienced and is continuing to experience significant growth in comparison to the state. During the 1970's the Region grew by an estimated 27 percent while the state population declined by an estimated one-half percent. The population is expected to continue to grow by 15 percent in the 1980's. The population as a whole is growing older leading to a likely increase in demand for accommodations for the elderly.

Although much of the population is employed outside the Region in Providence and other commerical centers, employment in the Region has been growing faster than that of the state. Because of the importance of the tourist industry, the economy follows a distinct winter/summer cycle with economic activity peaking as one might expect in the summer months. The tourist industry draws significant summer populations to the area, increasing the population of the Region for example by an estimated 77 percent in the summer of 1980.

Future growth in the economy is uncertain because of the recession and rising fuel costs. Major development projects such as the potential of Outer Continental Shelf Development may spur economic development which is otherwise likely to decline in the 1980's.

Housing

Demand for housing has reflected the Region's robust population growth. Since 1960, the number of housing units in the Region has increased by 59 percent. Ninety percent of new construction of single family homes from 1970 to 1978 occurred in the Region's ocean-fronting towns. An examination of U.S.G.S. Quadrangle maps revealed that the housing was further concentrated along the narrow coastal zone of these towns placing special pressures on the Region's limited coastal resources.

Demand for single family housing which dropped in the mid-seventies along with the business cycle is likely to decline in the current recession. A shift in housing activity towards increased conversion of summer homes and new construction of multi-family homes is likely to occur. This shift has important implications for town services and energy efficiency planning.

Services

Water and Sewer. There is a significant range of town-supplied services in the Region. Only the more urbanized areas of the larger towns have water and sewer services. Private wells and individual septic systems serve the majority of the Region.

The State 208 Water Quality Management Program has identified several areas of high need for sewers in the Region. Generally, towns with sewers have plans for extension and upgrading of their systems. Water supply is typically adequate in the Region with future plans focused on improved distribution systems.

Water and sewer services are important factors in determining the location and type of development in the Region. Construction of new service facilities is a costly undertaking to be avoided when possible. However, planning is made difficult in the region by lack of information at the town level as well as a lack of continuity in record-keeping and rate setting. The cumulative impacts of private sewer systems, pollution problems in private wells and long-term protection of important water supplies are important planning considerations as yet unaddressed.

Landfills. There is a growing demand for landfills in the Region because of population growth and the increase in throw-away items. Some towns are faced with immediate service problems while the more rural towns generally have room for expansion or ready availability of new sites.

Several regional waste disposal options are possible including construction of trash burning solid waste disposal facilities and exploration of the economic benefits of recycling activites.

Fire and Police. Public protection in the region is provided by a range of professional police departments and almost entirely by volunteer fire departments. There is a good deal of cooperation among the services in the several towns, and some assistance from the state where service is otherwise inadequate.

With the exception of Narragansett, which has a town fire department, the Region's fire protection is provided by 16 fire districts with 16 different service areas, facilities and rate regulations. More coordinated record keeping on fire service would serve the homeowner who not only depends on the service but also is subject to fire insurance rates linked to the type of available fire service. Coordinated planning would also be desirable for combating major fires and forest protection.

Schools. In most of the Region school populations are declining while costs continue to rise. An examination of the Region's schools revealed a few current and future capacity problems. Where there are problems, they are often of a temporary nature which may not require facility construction with the proper planning.

Health Services. A good network of primary and secondary care is provided in the Region by two hospitals and three regional health centers. A need for more reduced fee services and better transportation was expressed by health service providers. Hospitals, in particular emergency room care, experience a doubling of demand in the summer months placing critical pressures on these services.

Increasing state regulation and planning of health facilities is striving to limit and budget new facilities, as well as regionalize health

planning. In South County which is growing rapidly and in which the western part of the Region has been designated as medically underserviced, there is particular need for strong regional planning for new facilities.

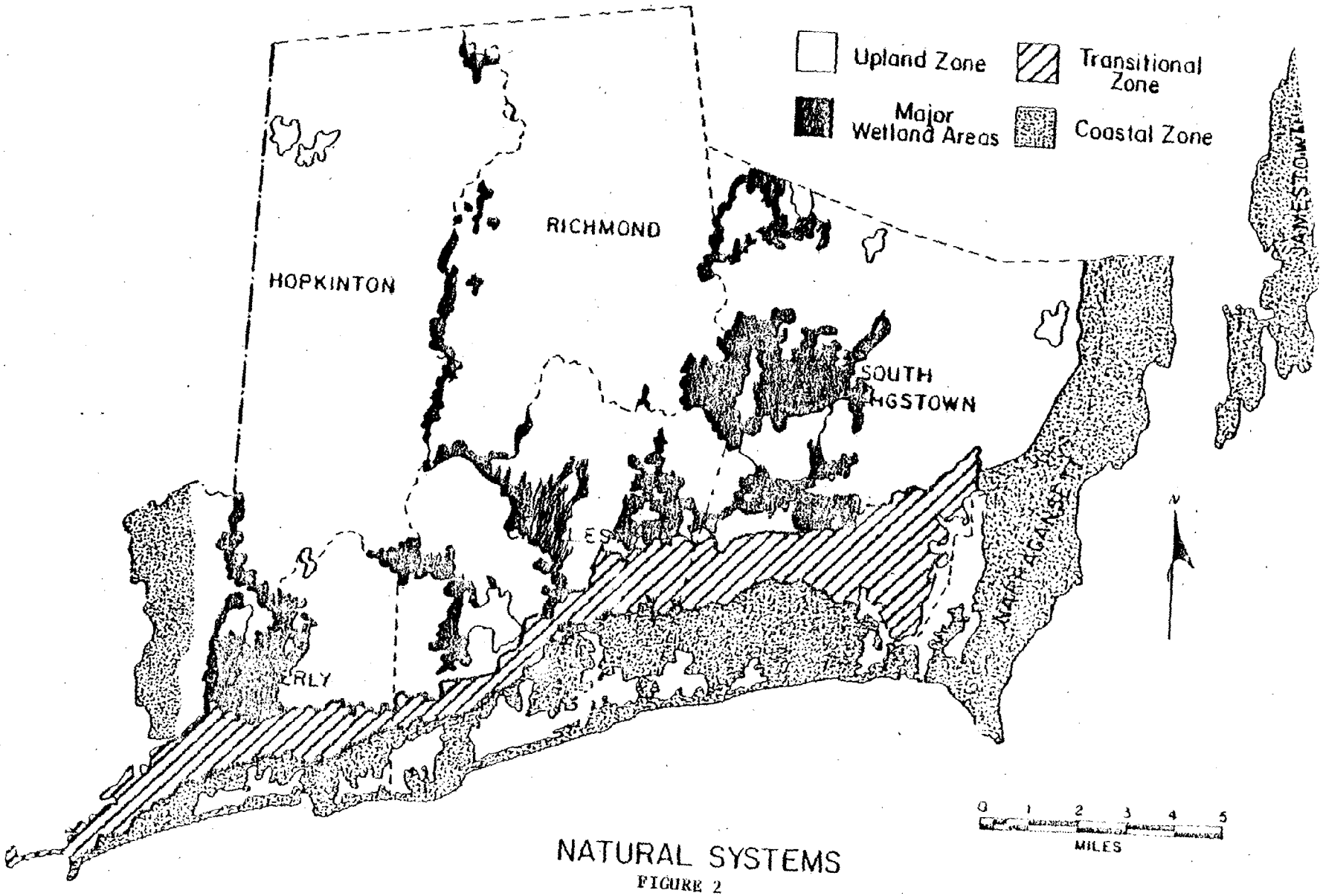
Municipal Finances

The Region's population is costing more per capita as it grows and over time in almost the entire Region. Costs associated with summer tourists and student populations are not reflected in the tax base of the towns. From a fiscal point of view, the Region's towns have an interest in studying development as it relates to town fiscal management and in forming coherent growth management policy.

Natural Resource Inventory

The RCEIP Region is unique in its diversity of natural features which span a continuum from marine to terrestrial ecosystems. The Region's vital biological diversity is seen in its rocky coastline, freshwater wetlands, coastal ponds, dense upland forests, and in its multitude of plant and animal species, both abundant and rare. Efficient use of land and other resources is paramount to the social economic and environmental well-being of South County. To gain an insight into the potentials and limitations that the Region's natural resources offer, an inventory of some of the natural systems was undertaken. Figure 2 shows the Region's four major natural system zones.

The RCEIP environmental inventory provides a standardized data base of pertinent natural resource and land use information for the seven towns in the study area. Inventory analysis has focused on a "systems approach" in dealing with growth, including identification of areas that offer unusual opportunities and constraints to development. Resource systems for RCEIP



NATURAL SYSTEMS
FIGURE 2

Source: R.I. Water Resources Board, USGS Quadrangle Maps, Revised 1975

study purposes are defined as geographical areas delineated by natural boundaries, such as watershed divides and characterized by an interaction among ecosystem components.

The natural system components mapped in the initial inventory include surface conditions such as topography, slopes, surficial geology, bedrock constraints and soils, as well as hydrologic, flora and fauna characteristics of the Region. A number of cultural components reflecting man's use of the land have been included in the inventory. These "human systems" variables focus on land use, zoning, recreation and transportation in the Region. Several composite overlay maps were generated during the analysis to identify the most significant resource areas in the Region. The inventory information provides a basis for a discussion of future land use trends in the Region, and a foundation for sound land use decisions regarding resource conservation, land use and the provision and timing of public facilities and housing.

Transportation and the Tourist Industry

The growing population and the tourist industry are placing increasing demands on the Region's transportation systems. Commuter services to major commercial centers has improved, but transportation in outlying areas and within the Region is often inadequate. Revitalization of the Narragansett Pier railroad would serve the Region well.

The tourist industry in combination with the campus traffic from the University of Rhode Island result in critical traffic problems in some areas. Tourist traffic may actually increase during the recession as the tourist population is drawn from closer to home and stays for shorter periods. It is important for the towns to keep track of seasonal variations in traffic demand

since these predominate and will continue to predominate transportation problems.

3. Volume 3 - Case Studies and Mitigation of Nuclear Facilities.

Introduction

The two case studies contained in Volume 3 identify the social, economic and governmental impacts of a nuclear power plant siting in Waterford, Connecticut and Seabrook, New Hampshire. The studies examine what, if anything, has been done to mitigate adverse effects or capitalize on beneficial effects. A broader perspective on mitigation strategies as these apply to Rhode Island is also presented in Volume 3.

Mitigation Perspective

The mitigation of adverse impacts associated with power plant construction is dependent in part on the socio-economic characteristics which are present in the host community and on the municipal infrastructure which is in operation. Successful mitigation of impacts relies on the coordination and identification of information from the five following functional areas:

- information requirements;
- state/local participation in decision-making;
- planning and management;
- coordination of assistance programs; and
- financing.

The advancement of a close working relationship between affected communities, as well as working agreement with federal, state and power company officials are important mitigation considerations.

Case Studies - Methods

In preparation for the case studies, an initial literature search of material relating to impacts of nuclear power plant sitings was undertaken. Based on the literature search, a candidate list of potential siting impacts and the various interactions which appeared to be involved in their occurrence was prepared. A series of 17 questionnaires for some 17 categories of municipal officials were prepared and employed in gathering information for the case studies.

The Effects of Time and Place

It was the author's suspicion upon completion of the Waterford study that a unique combination of time and place influenced the predominantly benign impacts that construction of the Millstone nuclear station had on the Town of Waterford, Connecticut. Construction in 1968, after all, was begun well before birth of the anti-nuclear power movement, the plant was sited in an area with a long-term tradition of employment in the nuclear industry, and for these and other reasons town-utility relations had always been cordial.

It was our belief that these conditions would not be duplicated in Seabrook, New Hampshire with a plant that has been plagued with anti-nuclear demonstrations and poor utility-town relations since construction began and that therefore the experiences of the two communities would be radically different. This has not proved to be the case, however. The experiences of these two very different communities in very different times and places have in most important respects been remarkably consistent. One must then look to other factors to explain why this has apparently been the case.

Shared Experience

Conceptually, the non-health and safety impacts of nuclear power plant siting and construction in Waterford and Seabrook flow from two broad sources. On the one hand are impacts related to the construction of the facility, principally generated directly and indirectly by the construction work force. On the other are those stemming from the massive infusion of tax wealth into the coffers of the host community. In both cases, with very few exceptions, the Towns of Seabrook and Waterford experienced comparable impacts and non-impacts for the reasons noted below.

Construction and Work Force Impacts:

Inmigration: Neither Waterford nor Seabrook experienced significant levels of worker inmigration during plant construction.

The Seabrook experience was somewhat different from the Milstone situation, however, in the relatively large number of transient workers drawn to the plant site. Transient workers include those moving into rental lodgings in the general vicinity of the plant on a weekly basis and commuting to their homes on days off. These workers apparently created tensions in their new environment through differences in race and life style.

Population Levels: The construction of nuclear generating units in Seabrook and Waterford has had few impacts on pre-existing growth patterns, although the reasons why this has been the case differ considerably. Waterford curbed growth primarily through effective and rigorously enforced land use controls, while Seabrook relied in large part on the limited capacity of its water system and on practical obstacles to private well drilling.

Population Characteristics: Seabrook and Waterford are again alike in that inmigrant workers had few appreciable impacts on the characteristics of the pre-existing population either through racial, income or educational differences. However, both towns experienced changes to or stresses on their resident populations attributable at least in part to plant construction. In the case of Millstone, plant related tax advantages further inflated housing costs already inflated by a highly restrictive zoning ordinance and thereby contributed to displacement of young adults and low income families. Seabrook's transient work force, through their general rowdiness and flagrant abuse of drugs and alcohol, assaulted established community values and created considerable resentment.

Employment Opportunities: While a facility employing several thousand workers even for a relatively short time has substantial impacts on local job opportunities, it is all too easy to overstate its impact on the economy of the heavily populated labor sheds affected by the Millstone and Seabrook plants. With regional work forces numbering in both instances in excess of 100,000 and strong and diversified industrial bases, it has proved difficult to trace any significant impact on regional employment or unemployment levels to the Millstone and Seabrook plants.

Local Government and Service Impacts:

Revenue Windfall: For the Towns of Waterford and Seabrook, the construction of a nuclear plant within their borders represented a revenue windfall of unparalleled proportions.

The impact of such revenues on towns hard-pressed to meet operating expenses hardly requires elaboration, although it is interesting to note the

differing attitudes this windfall has engendered in Waterford and Seabrook town fathers. Despite recent nuclear plant incidents, Waterford officals remain confident of their plant and are hard-pressed to suppress their glee at the taxes it pays. By contrast, Seabrook's Chairman of Selectmen recently stated that "Plant taxes aren't worth all the grief that have and will go with it (the plant)".[1] An aura of foreboding hovers over Seabrook which does not exist in Waterford at this time.

The Taxpayer: The individual taxpayer in both Seabrook and Waterford has been the principal direct beneficiary of the plant tax windfall even though municipal spending has also increased.

Overall Non-Education Spending: While spending levels in both communities have increased since plant construction began, Waterford has experienced greater increases over a longer time frame with spending up eight-fold overall. Seabrook spending, however, has doubled in only three years. While spending has been subsidized in both communities, it is interesting to note that the availability of such a large revenue source has not significantly changed the "character" of municipal government or the extent of services provided. Waterford was already expanding its administrative apparatus prior to plant construction while Seabrook retains a small-town government atmosphere with many public officials serving in part-time capacity.

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1. James Falconer, Chairman of Selectment, Town of Seabrook; telephone interview of March 21, 1980.

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