
Socioeconomic Impacts of Nuclear Generating Stations

Surry Case Study

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Mountain West Research, Inc.
with
Social Impact Research, Inc.

Prepared for
U.S. Nuclear Regulatory
Commission

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ABSTRACT

This report documents a case study of the socioeconomic impacts of the construction and operation of the Surry nuclear power station. It is part of a major post-licensing study of the socioeconomic impacts at twelve nuclear power stations. The case study covers the period beginning with the announcement of plans to construct the reactor and ending in the period, 1980-81. The case study deals with changes in the economy, population, settlement patterns and housing, local government and public services, social structure, and public response in the study area during the construction/operation of the reactor.

A regional modeling approach is used to trace the impact of construction/operation on the local economy, labor market, and housing market. Emphasis in the study is on the attribution of socioeconomic impacts to the reactor or other causal factors. As part of the study of local public response to the construction/operation of the reactor, the effects of the Three Mile Island accident are examined.

TABLE OF CONTENTS

	PAGE
CHAPTER 1: INTRODUCTION	1
1.1 The NRC Post-Licensing Studies	1
1.1.1 Objectives of the Post-Licensing Studies	1
1.1.2 Components of the Post-Licensing Studies	2
1.1.3 Three Mile Island	4
1.2 Overview of the Case Study Organization	4
CHAPTER 2: OVERVIEW AND DESCRIPTION OF THE PROJECT	11
2.1 Introduction	11
2.2 Location	11
2.3 The Utility	11
2.3.1 Corporate Background	11
2.3.2 Service Area	13
2.3.3 Generating Capacity and Production	13
2.4 The Project	15
2.4.1 The Project Site	15
2.4.2 The Plant	16
2.5 Construction	16
2.5.1 Announcement	16
2.5.2 Schedule and Cost	16
2.5.3 Construction Period Work Force	17
2.5.4 Construction Experience	19
2.5.5 Units 3 and 4	20
2.6 Operations	21
2.6.1 Schedule and Costs	21
2.6.2 Operating Phase Work Force	21
2.6.3 Operating Phase Experience	21
2.6.4 Refueling and Major Repairs	23
2.7 Taxes	24
2.8 Corporate/Community Programs	24
2.8.1 Emergency Planning	24
2.8.2 Visitors' Center	25
2.9 Chronology of Major Events	26

TABLE OF CONTENTS (Continued)

	PAGE
CHAPTER 3: IDENTIFICATION OF THE STUDY AREA	28
3.1 Introduction	28
3.2 The Region	28
3.2.1 Description of the Region	28
3.2.2 Identification of Places within the Region	30
3.3 Distribution of Workers	31
3.3.1 Introduction	31
3.3.2 Peak Construction, 1970	31
3.3.3 Operations Period	32
3.4 Distribution of Purchases	33
3.5 Distribution of Taxes	34
3.6 Selection of the Study Area	34
3.6.1 The Study Area	34
3.6.2 Rationale	34
3.6.3 Summary	36
CHAPTER 4: ECONOMY OF THE STUDY AREA	37
4.1 Introduction	37
4.2 Economic History of the Study Area	37
4.3 Economic Changes during the Study Period	40
4.3.1 Employment and Income in the Local Economy	40
4.3.2 Employment and Income of Local Residents	43
4.3.3 Summary	48
4.4 Economic Changes in the Study Area due to the Project	48
4.4.1 Estimation of Project-Related Employment and Income Effects	50
4.4.2 Effects of the Project on the Study Area Economy, 1967-1978	61
4.4.3 Effects of the Project on the Residents of Surry County	62
CHAPTER 5: POPULATION	68
5.1 Introduction	68
5.2 Demographic Trends	68
5.3 Changes in the Population during the Study Period	72
5.4 Population Effects due to the Project	73

TABLE OF CONTENTS (Continued)

	PAGE
5.4.1 Introduction	73
5.4.2 Population Effects in 1970	74
5.4.3 Population Effects in 1977	75
5.4.4 Summary	77
CHAPTER 6: SETTLEMENT PATTERNS AND HOUSING	80
6.1 Introduction	80
6.2 Settlement Patterns	80
6.2.1 Factors Influencing Settlement Patterns of the Study Area	80
6.2.2 Population Distribution	81
6.3 Housing	83
6.3.1 Housing Prior to Construction of the Surry Power Station	83
6.3.2 Changes in the Housing Stock during the Study Period	85
6.3.3 Effects of the Surry Power Station on Housing in the Study Area	86
6.4 Summary	90
CHAPTER 7: LOCAL GOVERNMENT AND PUBLIC SERVICES	92
7.1 Introduction	92
7.2 Governmental Structure	92
7.3 The County Budget During the Study Period (1967-1979)	95
7.3.1 The County Budget	95
7.3.2 Revenues	95
7.3.3 Expenditures	98
7.4 Selected Public Services	99
7.4.1 Education	100
7.4.2 Transportation	105
7.4.3 Public Safety	106
7.4.4 Social Services	108
7.5 Summary	111
CHAPTER 8: SOCIAL STRUCTURE	113
8.1 Introduction	113
8.2 Social Structure at the Beginning of the Study Period	113

TABLE OF CONTENTS (Continued)

	PAGE
8.2.1 Caste and Class in Surry County	113
8.2.2 Identification of the Social Groups	116
8.2.3 Group Profiles	116
8.2.4 Interaction Among the Groups	124
8.3 New Groups in the Study Area during the Study Period	127
8.4 Distribution of Project Effects to the Groups	128
8.4.1 Economic	128
8.4.2 Demographic	128
8.4.3 Government and Public Services	133
8.5 Changes in the Social Structure and the Role of the Effects of the Project	135
8.5.1 Changes in the Profiles of the Groups	135
8.5.2 Changes in the Relationships among the Groups	138
CHAPTER 9: PUBLIC RESPONSE	140
9.1 Introduction	140
9.2 Public Response during the Pre-Construction Period	140
9.2.1 Announcement	140
9.2.2 Siting	140
9.2.3 Permits and Hearings	141
9.3 Public Response during the Construction Period	142
9.4 Public Response during the Operations Period (1972-1979)	143
9.5 Public Response during 1979-1980	145
9.5.1 The Accident at Three Mile Island	145
9.5.2 The Fuel Assembly Sabotage Case	145
9.6 Summary	146
9.6.1 Role of Study Area Residents in Public Response	146
CHAPTER 10: EVALUATION AND SIGNIFICANCE OF THE SOCIOECONOMIC EFFECTS OF THE SURRY POWER STATION	148
10.1 Introduction	148
10.2 Summary of the Socioeconomic Effects	148
10.2.1 Economic Effects	148
10.2.2 Population Effects	149
10.2.3 Housing and Settlement Pattern Effects	149

TABLE OF CONTENTS (Continued)

	PAGE
10.2.4 Government and Public Service Effects	149
10.2.5 Effects on Groups and Group Interaction	150
10.3 The Significance of the Project to the Study Area	151
BIBLIOGRAPHY	155
PERSONAL COMMUNICATIONS	163

LIST OF FIGURES

FIGURE NUMBER	TITLE	PAGE NUMBER
1-1	United States Nuclear Regulatory Commission Post-Licensing Study, Case Study Sites	3
1-2	Case Study Organization	5
2-1	Location of Surry Nuclear Power Station	12
2-2	Virginia Electric and Power Company Service Area	14
2-3	Average Daily Construction and Operations Work Force, Surry Nuclear Power Station	18
3-1	Study Region	29
3-2	Surry Nuclear Power Station Study Area	35
4-1	Estimation of Project-Related Employment and Income Effects	51
4-2	Project-Related Employment by Place of Work in Surry County, 1967-1978	63
5-1	Population of Surry County, 1968-1980	70
7-1	Election District Boundaries, 1970 and 1978	94

LIST OF TABLES

TABLE NUMBER	TITLE	PAGE NUMBER
2-1	Surry Construction Work Force, Average Annual Employment, 1967 to 1972	17
2-2	Average Annual Operating Work Force, Surry Power Station, 1973-1980	22
2-3	Daniel Construction Company Work Force, September 1978 to June 1980	24
2-4	Surry Power Station Taxes Paid to Surry County, 1967 to 1978	25
2-5	Chronology of Major Events	27
3-1	Surry Power Station Work Force, by Place of Residence, 1970	32
3-2	Surry Work Force by Place of Residence, 1977	33
4-1	Surry County Employment by Place of Residence, 1940-1970	39
4-2	Surry County Employment by Place of Work, 1967-1978 (Full- and Part-time)	41
4-3	Personal Income by Place of Work, Surry County, 1967-1978	42
4-4	Average Annual Income Per Worker by Place of Work, Surry County, 1967 to 1978	44
4-5	Surry County Labor Force, 1966 and 1970 to 1977	45
4-6	Surry County Labor Force Participation, 1960, 1970	46
4-7	Derivation of Personal Income by Place of Residence, Surry County, 1967-1978	47
4-8	Surry County Per Capita Income, 1967 to 1978	49
4-9	Distribution of Basic Employment and Income, Surry County, 1970	55
4-10	Distribution of Basic Employment and Income, Surry County, 1977	59

LIST OF TABLES (Continued)

TABLE NUMBER	TITLE	PAGE NUMBER
4-11	Estimated Effective Basic Income, Surry County, 1977	60
4-12	Total Employment and Income due to the Project, Surry County, 1977	61
4-13	Estimated Annual Employment Effects, Surry County, 1967-1980	64
4-14	Estimated Annual Employment and Income Effects on the Residents of Surry County, 1967-1980	65
4-15	Income Per Employee, Residents of Surry County, 1967, 1970, 1977	67
5-1	Surry County Population, 1900 to 1980	69
5-2	Surry County Age Distribution: Percent of Total Population, 1960 and 1970	72
5-3	Population Effects due to Surry Power Station Project, Surry County, 1970	76
5-4	Population Effects due to Surry Power Station Project, Surry County, 1977	77
5-5	Population Increase due to Surry Power Station Project, Surry County, 1967 to 1980	78
6-1	Population by Minor Civil Divisions, Surry County, 1960, 1970, 1980	82
6-2	Selected Farm Characteristics, Surry County, 1959-1974	82
6-3	Selected Housing Characteristics, Surry County, 1960 and 1970	84
6-4	New Housing Units Authorized, Surry County, 1970-1979	86
6-5	Surry Power Station, Surry County Housing Requirements of Project-Related Population, 1967 to 1980	88
7-1	Surry County Budget, Fiscal Years 1967-1979	96

LIST OF TABLES (Continued)

TABLE NUMBER	TITLE	PAGE NUMBER
7-2	Surry County Tax Base, Rate, and Revenues, 1967 to 1978	97
7-3	Surry County Public School Information, 1966-1967 to 1976-1977	102
7-4	Surry County School Costs, 1971-1979	104
7-5	Annual Budget for Surry County Department of Social Services, 1972-1973 to 1978-1979	110
8-1	Surry Power Station Employment and Income Effects by Group, 1970	129
8-2	Surry Power Station Employment and Income Effects by Group, 1977	130
8-3	Surry Power Station Population Effects by Group, 1970 and 1977	131

NRC POST-LICENSING STUDY

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CHAPTER 1: INTRODUCTION

1.1 The NRC Post-Licensing Studies

This report--the case study of the Surry Nuclear Power Plant located in Surry County, Virginia--is one of a series of reports that are being prepared as part of the NRC Post-Licensing Studies. The purpose of this chapter is to describe the objectives of the NRC Post-Licensing Studies, the major components of the studies, and the relationship of research concerning Three Mile Island to the overall study plan, and the organization of this case study report.

1.1.1 Objectives of the Post-Licensing Studies

The Post-Licensing Studies have four main objectives: to determine the socio-economic effects of nuclear power stations; to ascertain the significance of these effects to individuals and groups affected; to identify the determinants of the effects and their significance; and to determine whether currently available assessment methodology could have been used to anticipate the most significant of these effects.

Each of the latter three objectives depends upon clear identification of the effects of the nuclear station--the difference in the socioeconomic conditions as they occurred with the station and those that would have prevailed had the station not been built. Once the effects have been identified and their incidence among groups established, they must be placed in the context of the values of the individuals affected by them to determine their significance. The explication of the effects, the evaluation of those effects, and their significance to local residents permits an analytic consideration of the overall evaluation and the response of local residents to the presence of the nuclear facility in or near their communities.

After determining the patterns of effects caused by the facilities and the meaning of the effects to local residents across sites, the Post-Licensing Studies will turn to an examination of the causes of the documented effects. It is necessary to know what combination of site, project, or other circumstantial determinants appears to be responsible for the effects that ensued and for the levels of significance attached to them by local residents. In short, some plausible explanation for the consequences of constructing and operating the stations must be developed.

The final objective of the Post-Licensing Studies is somewhat different from the preceding three in that it is directly concerned with the methodology of the socioeconomic-assessment process. The central question is whether there are assessment methods currently available that could have been used to foresee the most significant of the socioeconomic effects associated with the nuclear plant. Based on the answer to this question, recommendations will be developed with respect to the assessment methods that can most appropriately be applied to anticipate the effects of the construction and operation of nuclear generating stations.

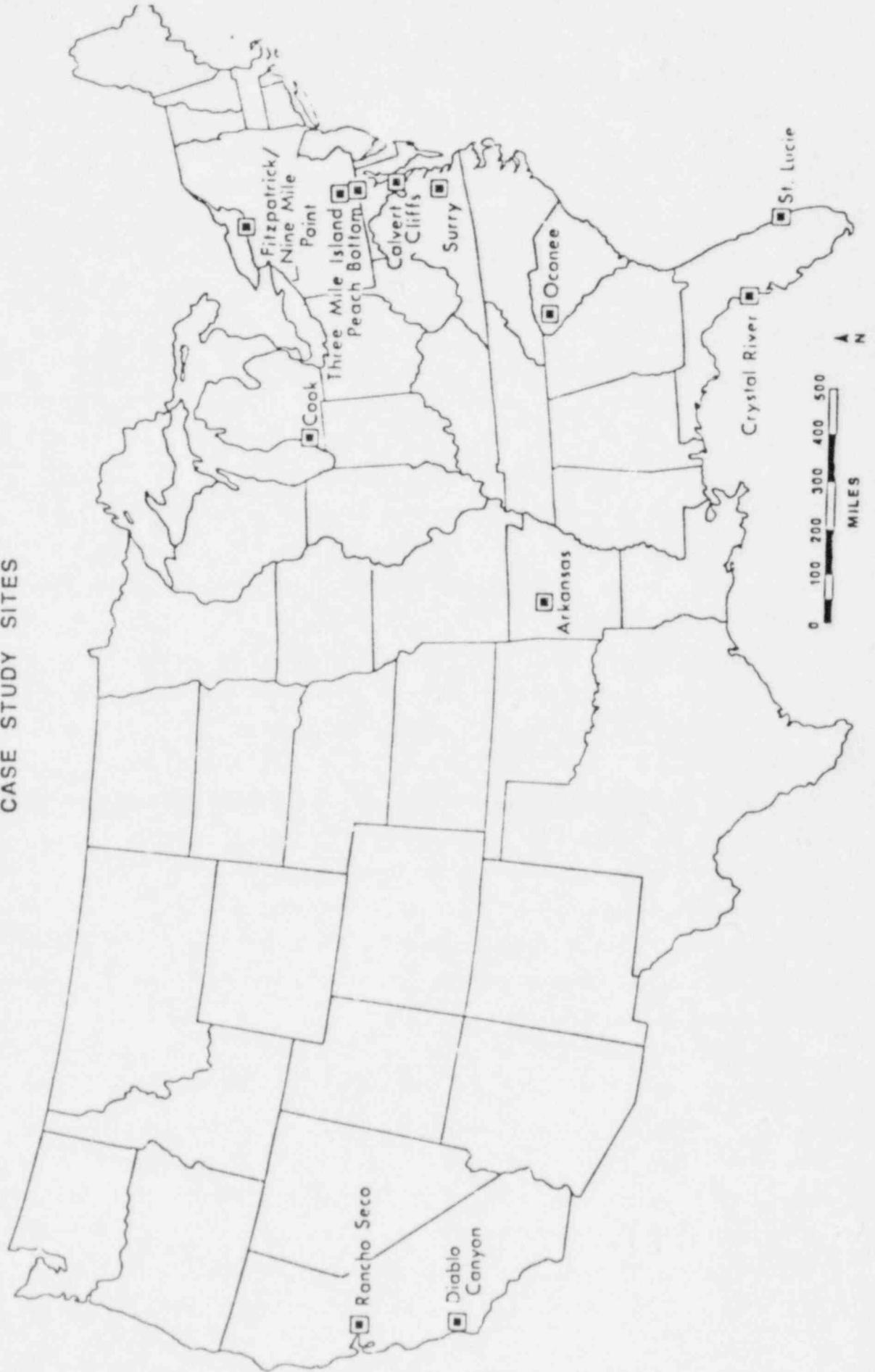
1.1.2 Components of the Post-Licensing Studies

The Post-Licensing Studies have three distinct components: the individual case studies, the cross-site analysis, and the methodological recommendations. The individual case studies are being conducted at twelve sites, as listed in Figure 1-1. The twelve case study reports will meet the first two objectives of the study. They will establish the social and economic effects of the nuclear station, and they will determine the significance of the effects for those persons affected by them.

Once the twelve case studies have been completed, work will begin on the part of the study referred to as the cross-site analysis. The results from all twelve case studies will be utilized to identify more specifically the causal mechanisms responsible for the effects that occurred. Of particular importance will be the establishment of the relative roles of site characteristics, project characteristics, and external forces in determining the consequences of constructing and operating a nuclear plant. The objective is to understand why effects occurred as they did and what was responsible for the significance they assumed. It must be remembered that twelve case studies is a very small sample and will not support rigorous statistical analysis of postulated causal relationships. At the same time, twelve comparable observations are more than have heretofore been available, and it is anticipated that the cross-site analysis will contribute substantially toward an understanding of why the socioeconomic effects occurred as they did and what determined the significance of the effects for the individuals affected by them.

The final component of the study will develop recommendations for methods to be applied in assessing the social and economic effects of proposed projects. The recommendations will be based on an evaluation of the relative success that various assessment methods would have had in anticipating the most significant effects of the twelve

FIGURE 1-1. UNITED STATES NUCLEAR REGULATORY COMMISSION
POST - LICENSING STUDY
CASE STUDY SITES



nuclear stations. Based on these results, methodological recommendations will be made, with an attempt to indicate the relative strengths and weaknesses of the alternatives.

1.1.3 Three Mile Island

Since Three Mile Island was one of the case-study sites, the scope of the Post-Licensing Studies was expanded to include an analysis of the social and economic effects of the accident on the residents of south-central Pennsylvania. Because a reliable data base was necessary to support this effort, the NRC Telephone Survey of 1,500 households was conducted in late July (Flynn, 1979). Since that time, an additional report was prepared. This report described the social and economic consequences of the accident during the six-month period from the end of March through September (Flynn and Chalmers, 1980).

Because of the unique circumstances surrounding the accident, the research at Three Mile Island will culminate in an individual report with two major parts. Part I will describe the pre-construction, construction, and operating experience of the station from late 1966 through 27 March 1979. This part will be based on the same methodology being used at the other eleven nuclear station sites and will be directly comparable to those case study reports. Part II will describe the emergency and the post-emergency periods covering the period from 28 March through the summer of 1981.

In addition to the expanded effort at the Three Mile Island site itself, the accident will affect the Post-Licensing Studies in one other way. Each of the case study sites will be examined for consequences of the Three Mile Island accident. There are two possibilities: the accident may have directly affected social or economic conditions at other sites, or the accident may have caused recognized effects to be evaluated in a different way and, therefore, to assume increased significance in the eyes of local residents. Both possibilities will be investigated.

1.2 Overview of the Case Study Organization

As was explained above, the purposes of the individual case study reports are to describe the socioeconomic effects of the construction and operation of the nuclear station that were experienced by residents of the area being studied and to indicate the significance of those effects to the individuals and groups affected. Each report contains ten chapters, the contents of which are summarized in Figure 1-2.

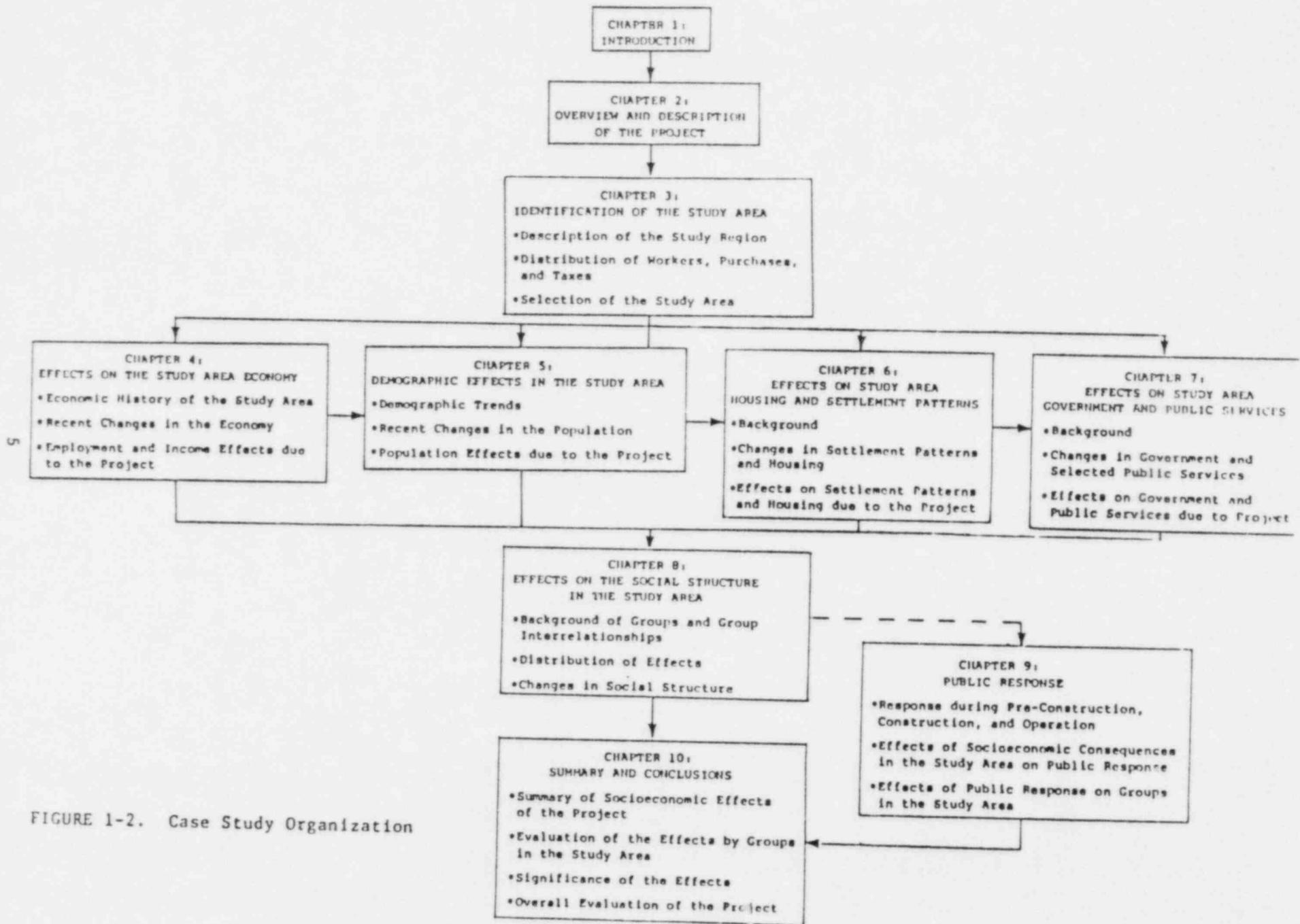


FIGURE 1-2. Case Study Organization

Following this introduction, Chapter 2 describes the project with emphasis on those project characteristics that are important determinants of socioeconomic effects. Chapter 3 then provides a general description of the region in which the project is located, both as an orientation and as a prelude to selecting the smaller study area that will be intensively analyzed in the remainder of the case study. Actual selection of the study area relies on the spatial distribution of project consequences and on the geographic extent of the major social, economic, and political systems that function in the vicinity of the plant. The consequences of the project that are examined in this context are the spatial distribution of the persons directly employed in constructing or operating the nuclear station, the distribution of direct purchases of goods or services made by the utility in order to build or operate the facility, and the spatial distribution, by jurisdiction, of the tax payments from the utility due to the nuclear station. The study area is then defined with reference both to the spatial distributions of these major consequences of the project and to the spatial distribution of the functional, social, economic, and political systems that operate in the vicinity of the station.

The next four chapters trace the effects of the plant on the study area economy, on the size and composition of the area's population, on housing and settlement patterns in the study area, and on government and the provision of public services in the study area. There are several organizing principles used to present this information. First, an attempt is made to describe conditions as they existed in the study area prior to the start of construction and as they changed from that time to the present. An explicit attempt is then made to identify that part of the change, or lack of change, due to construction and operation of the nuclear station. The temporal focus of the attribution of changes to the nuclear facility is on two points in time: the peak year of construction and a recent year during which the station was in full operation.

The second major organizing principle concerns the way in which effects are attributed to the nuclear station. There are two basic approaches to this problem. The first is to identify and control the effects of all other exogenous forces acting on the study area and, after their effects have been isolated, to attribute remaining effects to the nuclear station. The second approach is to make explicit causal arguments that directly tie postulated effects back to some known aspect of the construction or operation of the station. Both approaches require use and acceptance of the same kinds of behavioral hypotheses. Using the first approach, it is necessary to define the direct and indirect effects of other exogenous forces acting on the study area so that the effects

due to the station can be determined as a residual. Using the second approach, the same kinds of hypotheses and behavioral relationships are used to directly argue the nature and extent of socioeconomic effects stemming from the construction and operation of the station. The most convincing case for attributing effects to the nuclear station results from use of both approaches—control of other exogenous influences and identification of direct causal links to the plant. Where possible, both approaches are pursued in the case studies. In general, however, the social and economic changes that have taken place in the areas examined in this study over the ten- to fifteen-year period of investigation are so complex that the second general approach is relied upon more heavily than the first.

Chapter 4 begins with a description of the jobs and income directly associated with the station and then establishes other employment, income, and labor force effects experienced in the study area. Chapter 5 works directly from these estimates of employment change to examine effects on the size and composition of the study area's population, both from the in-migration of workers and their families and from reduced out-migration of local persons induced to remain in the area due to opportunities offered by the construction or operation of the station. Once population change due to the station has been established in Chapter 5, Chapter 6 examines the effects of the combined economic and demographic changes on housing and settlement patterns in the study area. The emphasis is principally on changes in the number, type, and spatial distribution of residences, although, where relevant, effects on patterns of commercial and industrial activity are also described.

Chapter 7 summarizes the major consequences of the station and of its economic, demographic, and housing effects on the local government in the study area. It begins by examining the major local jurisdictions in the study area for evidence of change in organization or structure due to the station. The effects on the revenues of local jurisdictions are then described. Finally, there is a discussion of the combined influence of changed revenues and changed levels of demand for public services on the provision of services in the study area. It was decided that these effects could be shown most clearly by focusing on a smaller number of important services rather than by trying to examine the provision of all public services in the study area. The services chosen are education, transportation, public safety, and social services.

Chapters 4, 5, 6, and 7 proceed in sequence, therefore, to trace the economic, demographic, housing, and governmental implications of constructing and operating a

nuclear station. The geographic focus is the study area defined in Chapter 3. The temporal focus is on the change from pre-construction to the construction peak and on the change from pre-construction to a recent year of full operation. Finally, the attribution of the effects to the nuclear station is achieved primarily through the establishment of direct causal relationships that are linked to effects directly associated with the station.

Chapter 8 examines the social structure of the study area and the ways in which it has been affected by the construction and operation of the nuclear station. The social structure is defined by the groups that exist in the area, their principal characteristics, and their social, political, and economic interrelationships. The chapter begins by identifying a set of functional groups into which the study area population is divided. A profile of each group is then developed. Each group is characterized in terms of livelihood, size, outstanding demographic characteristics, location, property ownership, values and attitudes, and patterns of intragroup interaction. The economic, political, and social interrelationships of the groups are then identified and described. An appreciation of these group characteristics and interrelationships helps to understand the way in which the effects of the project were evaluated and to explain group response to these effects. In addition, the characterization of groups and their interrelationships prior to the project serves as the basis for assessing the degree to which groups and social structure were altered as a consequence of the project.

The final step in the analysis of social structure is to determine the distribution of the economic, demographic, housing, and governmental effects of the station. The distribution of effects across groups provides explanatory information concerning the changes in group structure and characteristics and provides data for interpreting and understanding the group evaluations of the project.

Chapter 8 is designed, therefore, to accomplish two very important objectives. First, it makes operational the concept of social structure so that its constituent parts can be described and so that the effects of the construction and operation of the plant on social structure can be assessed. Second, the approach permits the examination of the effects of the plant on each group. The information on group characteristics and on the project effects accruing to each group provides the basis for determining the project's impact on the groups, discussed in Chapter 10.

Chapter 9 provides another perspective on the socioeconomic effects of constructing and operating the nuclear station by examining the public response to the project. The emergence and expression of public concerns and the issues that arose over the plant during the three study periods—pre-construction, construction, and operations, including post-Three Mile Island—are described and assessed. The issues are described in terms of topic, time of occurrence, actors, positions, and resolution. Unlike the previous five chapters of the case study, which focused on the effects of the nuclear station within the study area defined in Chapter 3, the analysis of public response is regional in scope. The principal sources of information concerning public response are the local and regional press, transcripts of hearings, and key informants.

The analysis of public response focuses on three questions: the extent to which the socioeconomic effects of the station on individuals and groups in the study area played a causal role in the public response to the project; the level of the direct participation of study area residents in publicly responding to the project; and the effects of the public response itself on the residents of the study area. The latter question involves the degree to which issues and confrontations that arose in the course of building and operating the nuclear station were responsible for changes in social or economic conditions within the study area. The strategy of Chapter 9, therefore, is to identify public response to the nuclear project and then sort out the reciprocal causal links from local socioeconomic effects to public response and from public response to local socioeconomic effects.

The overall objectives of the individual case studies are to establish the socioeconomic consequences of constructing and operating a nuclear power station on the residents of the local area in which a station is located and to provide a perspective on the significance of these effects to the people who experienced them. Chapter 10 will focus on the evaluation of the major socioeconomic consequences of the project by each group in the study area. The next step in Chapter 10 is to combine the information on group characteristics, effects, and group-specific evaluations to reach conclusions about the impacts and significance of the effects of the project. Absolutely large effects combined with strong positive or negative evaluations would imply strong significance. Similarly, absolutely small effects would tend to offset strong positive or negative evaluations, or indifferent evaluations could offset large effects and produce low levels

of significance. This process leads to a summary of the significance of the effects of the project.

CHAPTER 2: OVERVIEW AND DESCRIPTION OF THE PROJECT

2.1 Introduction

Chapter 2 describes the major characteristics of the Surry Nuclear Power Plant. The plant location, size, type, and site characteristics are described. Information is also provided on the duration and magnitude of the construction effort, and on the project's operation characteristics. The purposes of these data are to provide the information needed to understand the socioeconomic impacts on the local areas and to facilitate cross-site comparisons with other sites. This chapter is principally descriptive, and is based upon information provided by the utility, contractors, newspaper files, NRC docket materials, other reports, and interviews with a variety of informed people.

2.2 Location

The Surry Nuclear Power Plant, owned by the Virginia Electric and Power Company (VEPCO), is located on a small peninsula that juts into the James River, in Surry County, Virginia, as shown in Figure 2-1. The site is about eight miles south of Williamsburg, Virginia, and only a few miles from Jamestown Island. It is about 25 miles upstream from the Chesapeake Bay and the urban centers of Newport News, Hampton, Norfolk, Portsmouth, Suffolk, Chesapeake and Virginia Beach. Petersburg is less than 40 miles to the west while Richmond is about 50 miles to the northwest.

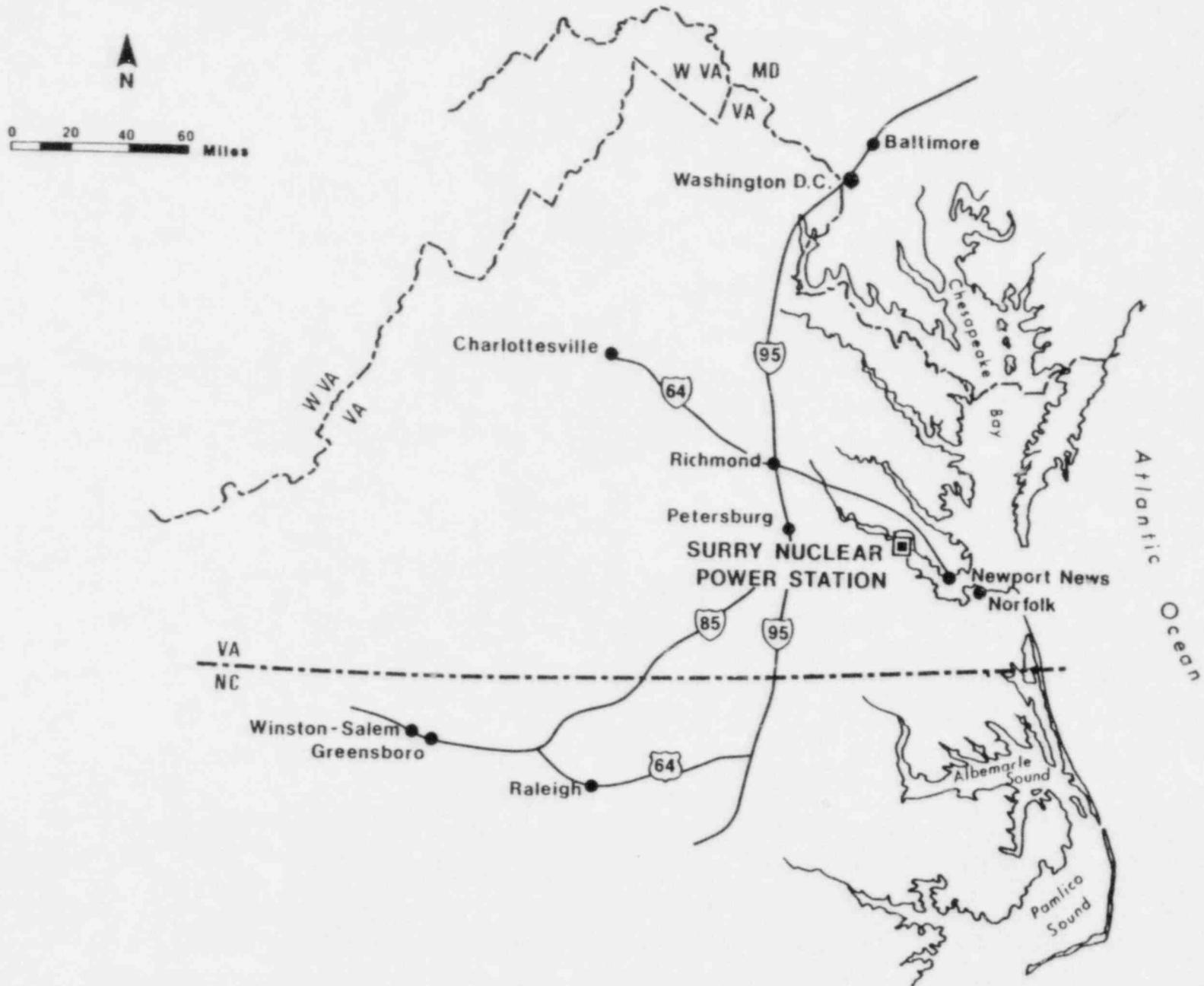
Access to the site and to the Hog Island Wildlife Preserve which adjoins it, is by State Highway 650, a secondary road. Highway 650 connects to Virginia Highway 10, which is a primary (two lane) road and serves as the main road in Surry County. The county has ferry service across the James River from Scotland Neck to James City County, and a bridge connects Isle of Wight County, down river, to Newport News. During the original plant construction there was a \$.90 toll charge on the bridge; this has since been removed.

2.3 The Utility

2.3.1 Corporate Background

The Virginia Electric and Power Company (VEPCO) adopted its present title on 27 October 1925. The original company was incorporated 29 June 1909, under the laws of the Commonwealth of Virginia, as the Virginia Railway and Power Company. Through a series of mergers, acquisitions, sales, and formation of subsidiary companies, VEPCO has reached its present configuration. The company business is predominantly involved in the

FIGURE 2-1. LOCATION OF SURRY NUCLEAR POWER STATION



generation and distribution of electrical energy, although it also distributes gas in the Norfolk area. (Moody's, 1977: 2051-2053)

VEPCO currently operates two nuclear powered stations, a two-unit Surry facility and the North Anna facility. The North Anna facility has been designed as a four-unit station and is located adjacent to a 9,600 acre manmade reservoir, named Lake Anna, approximately 37 miles northwest of Richmond. (Moody's, 1977: 2053.) North Anna-1 began commercial operation in 1978; North Anna-2 was authorized to begin commercial operation in August 1980, the first license approved by the NRC subsequent to the Three Mile Island accident (NUS, 1979:51; VEPCO, personal communication, August, 1980). Two additional units are under construction at North Anna and the final four-unit station will have a rated capacity of 3,744 Mw (Moody's, 1979:2094).

VEPCO's experience in nuclear steam generation dates back to its participation in the experimental project at Parr, South Carolina, in 1956 (Richmond News Leader, 24 January 1967).

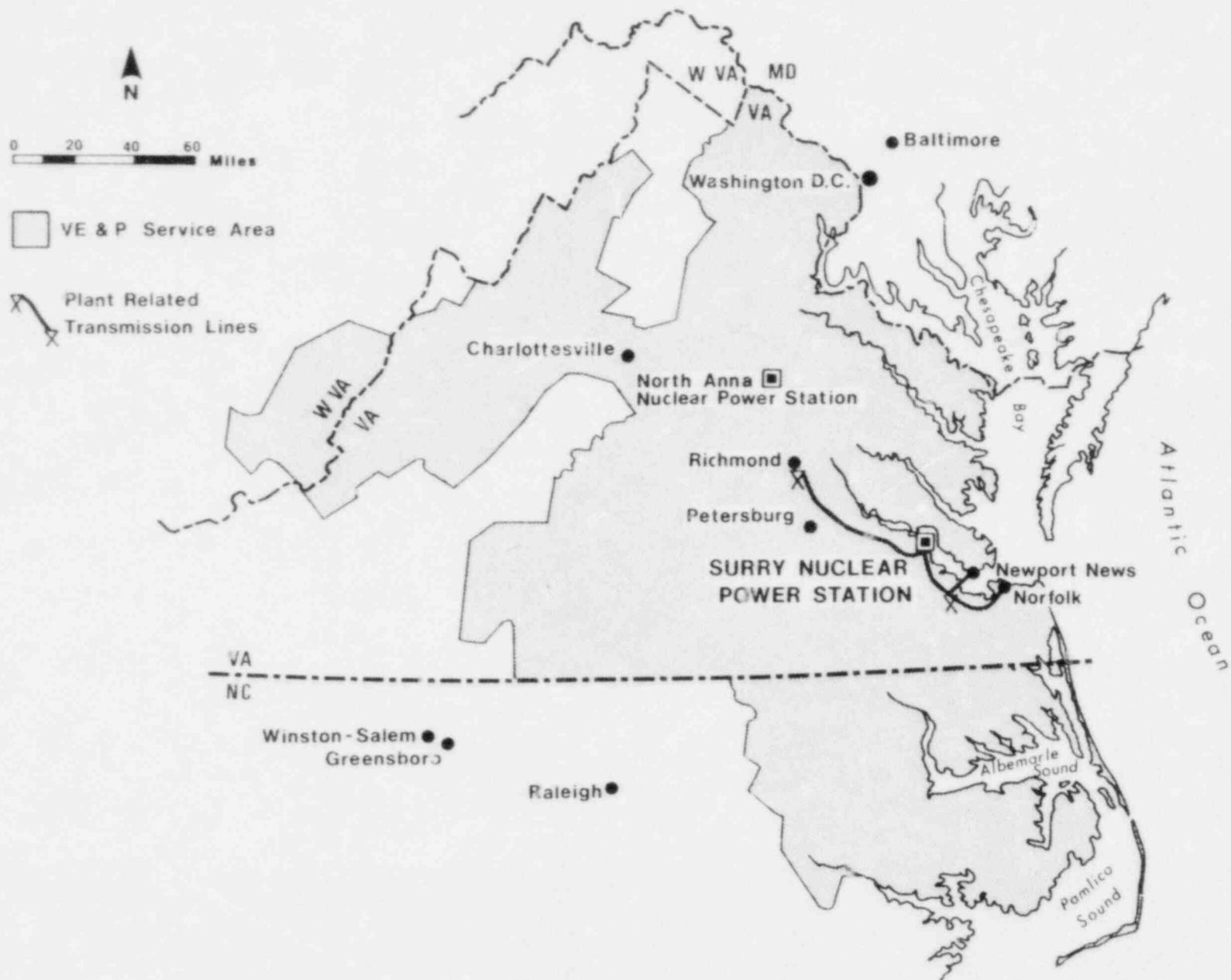
2.3.2 Service Area

The Virginia Electric and Power Company provides service in three states: Virginia, North Carolina, and West Virginia. The company serves about 75 percent of the Virginia population, the northeast corner of North Carolina, and a small segment of West Virginia, as shown in Figure 2-2. The land area is about 32,000 square miles and the population is in excess of 3.5 million. The major industrial and manufacturing customers of the electrical service are firms associated with tobacco products, chemicals, textiles, wood and paper products, electrical and mechanical equipment, petroleum products, food products, and shipbuilding. Twenty-one municipalities and 19 cooperatives purchase power from VEPCO for resale. Heavy demands for service come from the urban areas around Washington, D.C., Richmond, Petersburg, and the Tidewater urban complex (Norfolk-Virginia Beach-Hampton-Newport News).

2.3.3 Generating Capacity and Production

The company's electric generating capacity on 31 December 1978, totaled 10,172 megawatts (Mw). Of this total, the nuclear-fueled capacity was 2,675 Mw (26.3 percent) supplied by Surry Units 1 and 2, and North Anna Unit 1. The Surry units have been scheduled for a major refit of the steam generators during the period 1978-1981, so

FIGURE 2-2. VIRGINIA ELECTRIC AND POWER COMPANY SERVICE AREA



their availability has been severely limited. The refit of Surry-2 was completed in the summer of 1980, and Surry-1 was scheduled to be taken out of service for repairs in September 1980. Therefore, in the last quarter of 1980, three nuclear-powered units were operational in the VEPCO system. These units had a total capacity of 2,675 Mw. The refit of Surry-1, scheduled to be completed in 1981, would increase this capacity to 3,655 Mw. For 1980, the nuclear-powered capacity would reach 2,675 Mw (Surry-2, plus North Anna-1 and -2) or about 26.3 percent of the system total, rising to 32.2 percent in 1981. The completion of North Anna Units 3 and 4 would also increase the nuclear-powered share of the total electric production capacity produced by VEPCO to about 41.8 percent. (Moody's, 1979:2094-2096; VEPCO, personal communications, 1980).

2.4 The Project

2.4.1 The Project Site

The final selection of the Surry site involved an evaluation of six alternatives and an assessment of the cost/benefit comparison between coal and nuclear fuel (NRC, 1972:1-2). The 840 acre property was purchased on 30 November 1966 from the Halifax Lumber Company for \$250,000, a cost of just under \$300 per acre. (Surry County Records of Deed, Book 64, page 745). The land was flat, low-lying, heavily wooded, and used in timber operations.

The site extends completely across a small peninsula which juts into the James River. At the extension of the peninsula formation is Hog Island Wildlife Preserve, a collection of 4,285 acres of sand spits and marshes. Dirt removed during excavation of the cooling-water canals and station construction was used by the State of Virginia to develop levees and roads at Hog Island. These developments were designed to prevent saline water intrusion into freshwater ponds and to improve access to the preserve. The area is a bird sanctuary having numerous corn and rice fields which help feed the large number of migratory birds which stop there.

About 453 acres of the Surry Power Station site were cleared for the construction. The remainder was left in woodlands with the exception of the corridor cleared for the transmission line rights-of-way. Surrounding areas are primarily woodlands and croplands with a sparse population.

2.4.2 The Plant

In the summer of 1966, Stone and Webster were named as the engineers and prime contractors for the Surry project (VEPCO, personal communication, 1980). The plant is a two-unit steam generating station powered by nuclear fuel. Each unit is rated at 788 Mw (NUS, 1979:51). The units use identical pressurized water reactors designed and fabricated by Westinghouse. The turbine generators for both units were also supplied by Westinghouse.

Cooling for the units is once-through, using water from the James River. There are no cooling towers at the site. The reactor containment structures were sunk about 50 feet below grade to reduce the overall plant profile, (NRC, 1972:31). To link the plant to the company service areas, two 350 foot rights-of-way were cleared through the county. One right-of-way has a single 500-kilovolt (kV) line and three double-circuit 230-kV lines; the other has two 500-kV lines and one double-circuit 230-kV line.

2.5 Construction

2.5.1 Announcement

The first formal announcement of the Surry Nuclear Power Station project was made to the Surry County Board of Supervisors on 24 June 1966 at the county courthouse (Richmond Times-Dispatch, 5 July 1966). The company estimated the cost at \$90 to \$95 million. The construction workforce was expected to reach 1,500, with a permanent operating workforce of "less than 100." (Richmond Times-Dispatch, 5 July 1966; Sussex-Surry Dispatch, 28 July 1966). The company asked for an industrial access road to the site at an estimated cost of \$600,000.

In 1967, when work at the site was underway, the cost of the plant was estimated at \$200 million (Virginia-Pilot, 28 April 1967). Commercial operation of Surry-1 was expected in 1971, with Surry-2 scheduled for the spring of 1972.

2.5.2 Schedule and Cost

Excavation at the site began in early 1967 with the first Stone and Webster (S&W) construction personnel on-site by November 1967. Construction permits were issued on 25 June 1968 for both units. Commercial operation of Surry-1 began 22 December 1972, with Surry-2 coming on-line on 1 May 1973. Final costs for the plant were about \$409 million (VEPCO, personal communications, 1979). The cost and time overruns were

attributed to construction delays, regulatory requirements, design modifications, inflation, and labor problems (VEPCO, personal communications, 1980).

2.5.3 Construction Period Work Force

The monthly construction work force peaked at 1,934 in November 1970, according to the Monthly Progress Reports (Stone and Webster, 1 December 1970). Of this number, 176 were subcontractor employees and an additional 70 to 80 were on-site VEPCO personnel (VEPCO, personal communications, 1980). Table 2-1 shows the average annual employment for the years 1967 to 1972. The peak construction year in average annual employment was 1970, when an average 1,740 workers were on site. Average annual employment of both construction and operations workers from 1967 to 1979 is shown in Figure 2-3.

TABLE 2-1

SURRY CONSTRUCTION WORK FORCE
AVERAGE ANNUAL EMPLOYMENT
1967 TO 1972

Year	Average Annual Employment
1967	72
1968	415
1969	1,247
1970	1,740
1971	1,538
1972	855

Source: Stone and Webster, "Monthly Progress Reports to Virginia Electric and Power Company for Surry Station," 1 October 1966 - 1 December 1972.

The construction work was scheduled at 50 hours per week in 1969 in order to cover shortages of workers and attract workers to the site. Iron workers and carpenters were in especially short supply during the early construction phases. Electricians and pipefitters were recruited later. Turnover of craftsmen was high in 1969, and the new help was considered "extremely poor" (Stone and Webster, Monthly Report, 1 February 1969). A night shift was scheduled in the last half of 1969, but it was never very large—between 150-200—and it was discontinued at the end of the year. The project was a union job, with most of the workers coming from the Newport News and Norfolk area.

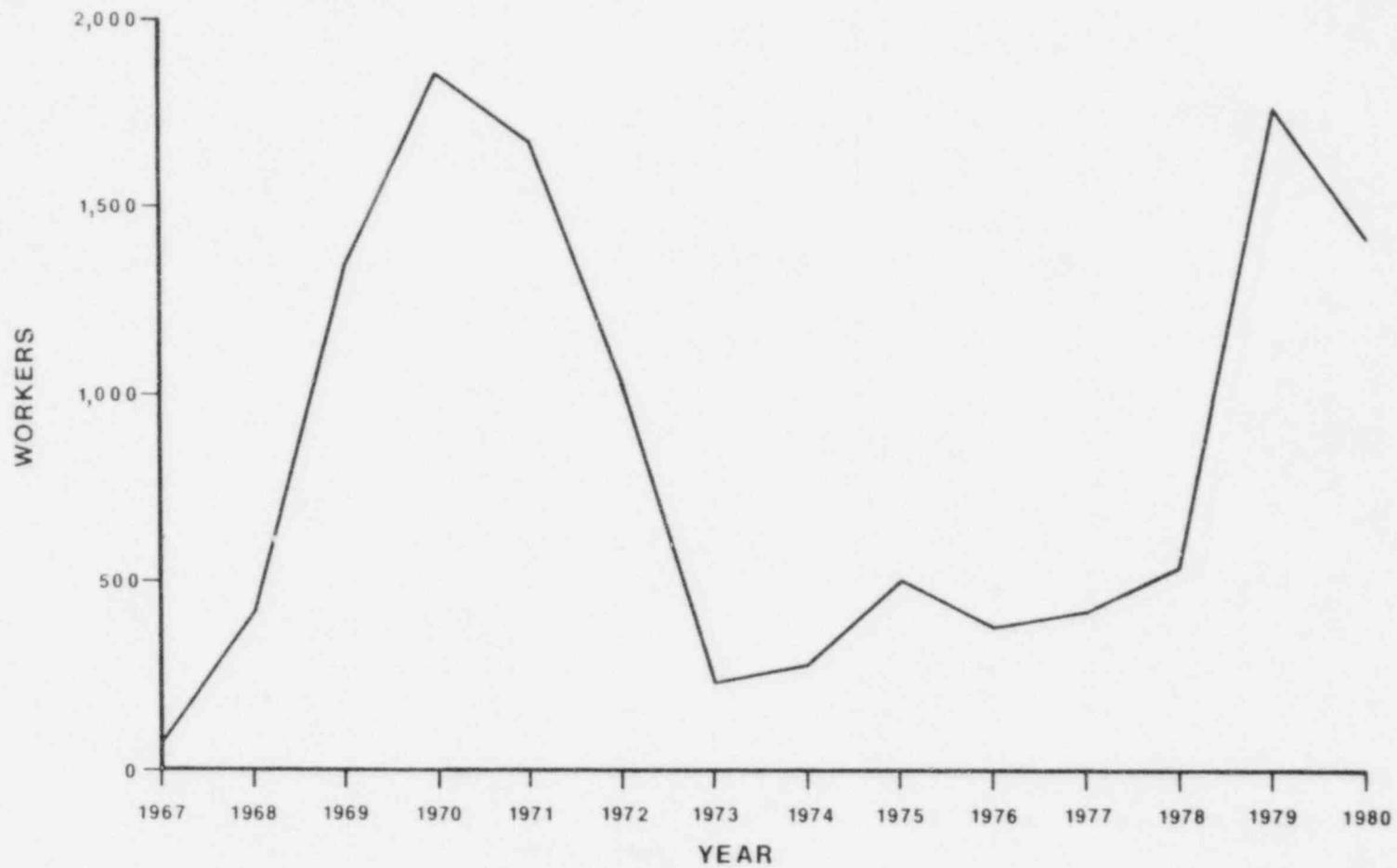


FIGURE 2-3. Average Daily Construction and Operations Work Force, Surry Nuclear Power Station.^o

^oThe sharp increase in 1979 is due to the presence of 1249 workers for refitting Unit 2.

2.5.4 Construction Experience

Excavation at the site began in early 1967 and included work on the cooling canals as well as removal of extensive fill in order to lower the profile of the containment buildings. A total of 453 acres was cleared, and more than 1.5 million cubic yards of earth were removed. Most of this earth fill was transported to the Hog Island Wildlife Preserve where the State of Virginia used it to construct levees and roads. The levees were primarily designed to reduce salt water intrusion into the preserve and thereby improve the habitat for migratory birds. (NRC, p.64).

Construction of the Information Center was begun in March 1967 and completed in November 1967. Construction of the station began in early 1968; the construction permits for both units were issued on 25 June 1968, eighteen months after site preparation began (VEPCO, personal communication, 1979; NRC, p.3).

The project experienced a number of short term work stoppages, most of which involved jurisdictional disputes between unions. In August 1970, Stone and Webster filed suit against Norfolk Local 79 of the International Association of Bridge, Structural and Ornamental Iron Workers, asking for \$200,000 damages and an order prohibiting jurisdictional strikes. The four-day work stoppage idled almost 2,000 workers and was listed as the 13th such incident at the site since site preparation began in 1967. (Newport News, 28 August 1970.) The case was later dropped.

Seven additional work stoppages after 1970 are listed in the Stone and Webster monthly reports (Stone and Webster, Monthly Reports, 1970-1972). In addition, craft shortages and absenteeism were persistent problems, especially in 1969 and 1970. Absenteeism was reported to have been 13.5 percent for May 1969 with Mondays being the days most seriously understaffed. (Stone and Webster, Monthly Report, 1 June 1969.)

The delivery of the reactor vessels for both units was delayed by about six months. The Surry-1 reactor vessel was delivered in the late spring of 1970 and the Surry-2 vessel in the fall of 1970. The original schedule was for November 1969 (Surry-1) and February 1970 (Surry-2). These delays were caused by production difficulties and involved a complex set of negotiations between Westinghouse, Babcock and Wilcox, and the Rotterdam Dockyard (Letter, VEPCO to AEC, NRC Docket, 27 June 1969).

Between June 1969 and August 1970, a series of deficiencies in quality control and welding were identified at the Surry plant. In July 1970, a former welding supervisor wrote to the Atomic Energy Commission and charged that Stone and Webster had not met the appropriate standards for training, supervision, production, or inspection of welding work done on the cooling systems. (Washington Post, 19 August 1971). VEPCO hired Southwest Research Institute to investigate the charges by conducting an audit of the records. Several of the charges were substantiated by the VEPCO-initiated audit and an AEC investigation. This resulted in a review of the construction and inspection processes and implementation of more stringent standards for the project.

The completion of Surry-1 was extended from 1 July 1971 to 1 July 1972; commercial operation began in December 1972. Part of the delay between first-time critical operation and commercial operation was because of an accident on 27 July 1972. Two workers were killed when a steam vent system malfunctioned and scalded them. The commercial operation of Surry-2 was begun on 1 May 1973, about one year later than the original schedule for the spring of 1972.

2.5.5 Units 3 and 4

On 11 April 1973, VEPCO announced it intended to build two additional units at the Surry site. Units 3 and 4, also Babcock and Wilcox designs, were expected to produce 882 Mw each, cost about \$608 million, and be available for commercial operation in 1980 and 1981. (Washington Post, 12 April 1973.) AEC construction permits were issued in December 1974 for Units 3 and 4, at which time the operational target dates were set at "1983 and 1984, respectively." (Daily Herald, 30 December 1974.)

VEPCO announced in March 1977 that it was cancelling Units 3 and 4. At the time of the cancellation, the cost for completing the two additional units was put at \$1.8 billion and the operational dates were identified as 1986 and 1987. The reasons for cancelling Units 3 and 4 were reported to be "uncertainty over federal energy policy, rising construction costs and . . . a reduced (service area) growth rate." (Richmond News-Leader, 4 April 1977). The utility reported that \$53 million had already been spent on Unit 3 and 4 projects, and the total cost, due to contractual obligations for equipment and services, could add another \$93 million (Daily Press, 19 March 1977). The final cost of the Surry Unit 3 and Unit 4 projects was about \$70.8 million (VEPCO, personal communication, 1980).

J.A. Jones, Company was selected as the prime contractor for the Units 3 and 4 project with Stone and Webster as the engineer/designers. Actual on-site work was limited due to a series of delays in starting on-site work. Jones, therefore, never employed a large work force for the two-unit addition. It did perform about 18 months of work at the Surry site on equipment that was installed at the VEPCO North Anna Station. This work employed as many as 165 workers at its peak in 1975. The combined work force for the Surry Units 3 and 4, and the North Anna project work done at Surry, reached a peak of about 215 in 1975 with an average annual employment of 190. Some work was also done in early 1976 but the annual average employment was only about 20 workers. (J.A. Jones, Company, personal communication, 1980).

2.6 Operations

2.6.1 Schedule and Costs

The commercial operation of Surry Unit 1 began on 22 December 1972, and Unit 2 began 1 May 1973. The operating cost for both units for 1977 was \$11.8 million. Taxes, an additional expense, were about \$1.7 million in 1978, including property taxes of almost \$1.5 million and personal property taxes of just over \$0.2 million. These taxes are paid to Surry County.

2.6.2 Operating Phase Work Force

During the period the plant has been in operation, the operations work force has increased from 222 workers in 1973 to 553 workers in 1980. Table 2-2 shows the approximate average annual figures.

2.6.3 Operating Phase Experience

The operating record of the plant has not been as good as expected. The major problem limiting operating time has been leakage in the steam generator systems, a generic condition that has occurred in all similarly-designed generators. Steam leaks were repaired on a temporary basis several times by plugging the leaking tubes. This eventually resulted in over 20 percent of the tubes being plugged. VEPCO decided to replace the steam generators for both units, a major repair project which began in 1978 and is still in progress. The Surry-2 steam generators were replaced and the unit went back into production in August 1980. Surry-1 was scheduled to be taken out of service in September 1980 for a lengthy period, perhaps as much as a year.

TABLE 2-2

AVERAGE ANNUAL OPERATING WORK FORCE
 SURRY POWER STATION
 1973-1980

Year	Work Force
1973	222
1974	226
1975	238
1976	272
1977	307
1978	327
1979	480
1980	553

Source: VEPCO, personal communications, 1979 and 1980.

Another area of operating experience that has received considerable public notice through news media reports has been the company's administration of federal regulations at the Surry station. Generally, the items of noncompliance involved minor infractions such as filing late/incomplete reports, improper plant procedures, or failing to conduct required inspections. On two occasions, however, VEPCO was fined for violations of the federal regulations. In 1972, the company was fined \$38,000 for 28 violations, most of them involving plant safety evaluations, design control measures, and implementation of required plant procedures. A fine of \$10,000 was levied in 1975 for four violations, including an inadequate alarm system and failure to implement required plant security measures (Richmond Times-Dispatch, 22 April 1979; NRC Docket, 1972 and 1975).

Both Surry units have been removed from service numerous times for a variety of reasons: refueling and maintenance, steam generator leak repairs, inspection and modification of electrical and cooling system components, and earthquake stress tests (NRC Docket, 1972-1979). During 1978, the annual plant capacity factors were 68.5 percent for Surry Unit 1 and 78.8 percent for Surry Unit 2; both units were above the average for all U.S. plants which was 61.7 percent (Nucleonics Week, 25 January 1979:18).

2.6.4 Refueling and Major Repairs

The refueling, maintenance, and repair work at the station required additional personnel for the "outage" periods. Because of the special maintenance and repair requirements for each outage, there has been a wide range of time and manpower needed for each occasion. Generally, however, the outages are scheduled for about six weeks, and require about 650 workers. VEPCO supplies about 500 of the workers, with an additional 125 to 150 being supplied by contractors, principally Atlantic Nuclear Services. (VEPCO, personal communication, 1980.) Surry-1 has been refueled five times and Surry-2 has been refueled four times.

The retrofitting of the steam generators for both units has been a major repair project. VEPCO maintained control of project management with the Daniel Construction Company being a major contractor. Work on Unit 2 began in February 1979, and was completed in June 1980. Unit 2 was put into operation in August 1980, and Unit 1 was scheduled to undergo a similar refit with work beginning in September 1980. The work on Unit 1 is expected to take less time than was the case for Unit 2 since much of the work outside the containment structure has been done for both units, and VEPCO expects to achieve significant economies due to the experience gained in the last year and a half.

The cost of refitting Unit 2 and completing other major maintenance work at the same time is currently estimated at \$135 million. Unit 1 will cost an additional \$45-50 million (VEPCO, personal communication, 1980). Table 2-3 shows the Daniel Company work force engaged in the refit projects between September 1978 and June 1980.

Additional personnel were supplied by Atlantic Nuclear Services for support and security. These personnel numbered as many as 300 during the refit project. VEPCO also assigned engineering, supervisory, and administrative personnel to the refit project. The peak total employment for the project was between 1,600 - 1,700 in March 1979. (VEPCO, personal communication, 1980). Average annual employment for the refit project was: 167 in 1978; 1,249 in 1979; and 821 in the first six months of 1980.

TABLE 2-3

**DANIEL CONSTRUCTION COMPANY WORK FORCE
SEPTEMBER 1978 TO JUNE 1980**

Year	<u>Period</u>	Month	Number	Year	<u>Period</u>	Month	Number
1978		September	279	1979		September	847
		October	341			October	732
		November	396			November	638
		December	488			December	593
1979		January	1,041	1980		January	613
		February	1,039			February	571
		March	1,274			March	579
		April	1,087			April	599
		May	1,007			May	661
		June	1,095			June	681
		July	1,040				
		August	882				

2.7 Taxes

Surry County receives the bulk of the taxes paid by VEPCO for the Surry Power Station. The assessment of property taxes is made by the State Corporation Commission of Virginia. The taxable valuation is adjusted to equal the current valuation of other real property in the county. The county tax rate then applies equally to all real property. The county also collects personal property taxes on certain properties located at the station. The most important items taxed as personal property are the leased nuclear fuel and the leased gas turbines. The Surry County Commissioner of Revenue assesses the value of personal property, and the Board of Supervisors assigns the tax rate, traditionally the same rate as that applied to real property. Table 2-4 shows the annual tax payments made by VEPCO to Surry County on behalf of the Surry Power Station during the period 1967-1978.

2.8 Corporate/Community Programs

2.8.1 Emergency Planning

VEPCO has made a number of agreements with local, state, and federal agencies as part of the emergency planning for the Surry Power Station. The most essential agreements have been made with local police, fire and rescue agencies, the Medical College of Virginia (Richmond), local county governments (especially emergency

preparedness personnel), and state emergency response organizations such as the state police and the state Office of Emergency Services.

The emergency plan was originally adopted before the operation of Unit 1 began in 1972. It was revised and updated several times after that, most notably in 1979 after the Three Mile Island accident. Following the accident, the Virginia Office of Emergency and Energy Services developed a plan for evacuation of parts of five counties and two cities that were within 10 miles of the site. Plans for individual counties were begun and some are still under development, including the Surry County evacuation plan.

2.8.2 Visitors' Center

The Surry Visitors' Center was built in 1967 and operated until 1974. The facility recorded visits by about 300,000 visitors during the time it was open. The center is now used as a training facility for VEPCO personnel and has been utilized in preparing operators for the North Anna units which began operations in 1978 and 1980. (VEPCO, personal communications, 1979 and 1980).

TABLE 2-4
SURRY POWER STATION TAXES PAID TO SURRY COUNTY
1967 TO 1978

Year	Property Tax	Personal Property Tax	Total
1967	\$ 3,658	—	\$3,658
1968	14,854	—	14,854
1969	45,719	—	45,719
1970	198,205	—	198,205
1971	409,783	—	409,783
1972	560,686	—	560,686
1973	841,186	\$ 53,852	895,038
1974	1,129,683	95,300	1,224,983
1975	975,908	166,793	1,142,701
1976	1,151,260	269,022	1,420,282
1977	1,021,804	323,419	1,345,223
1978	1,485,648	239,972	1,725,620

Source: State Corporation Commission of Virginia, 1967-1978; Surry County Commissioner of Revenue, 1980.

2.9 Chronology of Major Events

The major milestones of the Surry Power Station are shown in Table 2-5. The period covered is from the formal announcement of intent to build to the present.

TABLE 2-5
CHRONOLOGY OF MAJOR EVENTS

Year	Month	Day	Event
1966	June	24	Surry Power Station project announced.
1967	March	20	VEPCO files license application with AEC.
1968	June	25	Construction permits for Units 1 and 2 issued.
1970	November	1	Peak on-site construction work force of 1,934 recorded.
1972	May	25	Operating License for Unit 1 issued.
1972	December	22	Commercial Operation of Unit 1 begins.
1973	January	29	Operating License for Unit 2 issued.
1973	May	1	Commercial Operation of Unit 2 begins.
1973	April	11	VEPCO announces plans to build Surry Units 3 and 4.
1977	March	18	Surry Units 3 and 4 cancelled.
1979	February	—	Work begins on refitting steam generators for Unit 2.
1979	March	1	Peak construction employment on refit project reached at about 1,700 workers.
1980	August	—	Unit 2 resumes commercial operation.
1980	September	—	Unit 1 removed from service for refit of steam generators.

CHAPTER 3: IDENTIFICATION OF THE STUDY AREA

3.1 Introduction

Chapter 3 describes the region where the Surry Power Station is located and derives a study area for the remainder of the case study. Three direct project effects are traced: the residential location of workers, the places where purchases for the project were made, and the political jurisdictions that received tax revenues. There were two major considerations in selecting the study area: the direct effects of the project must have been great enough to identify and study, and the area must correspond as much as possible to the spatial boundaries of functional social and economic systems that operate in the region.

The preliminary site visit examined a five-county region (Mountain West Research, Inc., 14 February 1979). The distribution of direct project effects was calculated for two periods, 1970, the construction peak, and 1977, the most current year of full-scale commercial operation. The direct effects that took place during these representative periods were analyzed in terms of their scope, magnitude, and distribution. They were then compared to social and economic structures of the five-county region and served as the basis for selecting the study area.

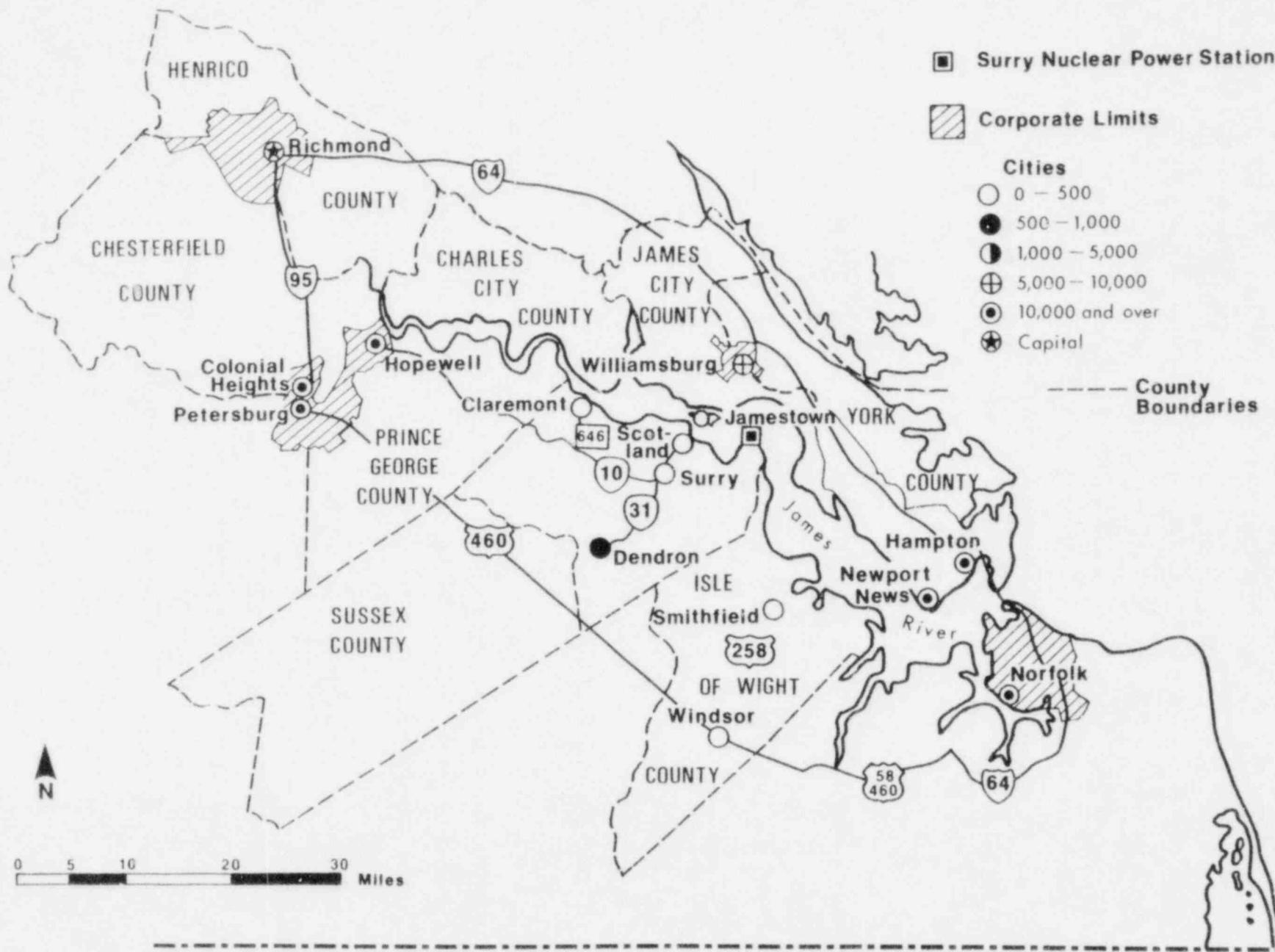
3.2 The Region

3.2.1 Description of the Region

The region shown in Figure 3-1 was examined and described in the preliminary study of the Surry Power Station. The region included: Surry, Sussex, Prince George, Isle of Wight, and James City counties. Two Standard Metropolitan Statistical Areas (SMASs), the Newport News-Hampton area and the Norfolk area, were also considered. The most rural areas in the region are located south of the James River in Surry, Sussex, and Isle of Wight counties. This rural area is bracketed by the Tidewater and the Petersburg-Colonial Heights-Hopewell urban areas. The Tidewater urban area had a total population of over one million in 1977 (Virginia Facts and Figures 1978, p.3). The Petersburg-Colonial Heights-Hopewell area had a population in excess of 125,000.

The area immediately surrounding the Surry Power Station is rural in character and was one of the first sections of the country to be colonized. Historically, the economic base of the nearby counties has been agriculture and timber, with peanuts the main cash crop, especially in Surry County. Corn, soybeans, and hogs are also

FIGURE 3-1. STUDY REGION



Source: Department of Highways and Transportation, 1979, "Virginia"; Social Impact Research, Inc., 1980.

important to the local economies, and meat processing, most notably Virginia hams, employs a considerable number of workers in the Smithfield area of Isle of Wight County.

The populations of the two counties nearest the Surry power plant, Surry and Isle of Wight, were 5,882 and 18,286 respectively, at the time of the 1970 Census. The overall trend for the region has been a population increase in the areas affected by the larger urban centers and a continuation of the historical decline in the most rural areas. Surry and Sussex Counties declined in population between 1960 and 1970, while the Isle of Wight County population increased slightly. The urban areas recorded substantial growth during this period.

Transportation in the region includes a combination of highway, rail, water, and air traffic. The Tidewater area economy depends heavily upon water transportation and shipbuilding. It also has a well-established rail system. The highway system has been extensively upgraded in the past 25 years, and air travel facilities have improved in the last decade with noticeable increases in air service in the last few years. Water transportation on the James River was historically important, but declined gradually during the 1920s and 1930s and is no longer important for either freight or passenger travel to the rural areas. One exception to this trend is the ferry service from Jamestown to Scotland in Surry County, the only such service operated by the State of Virginia. In the area immediately surrounding the Surry power plant, transportation is limited. Surry County has no railroad, airport, or four-lane highway system. These facilities are available only in neighboring areas. Isle of Wight County is connected with the Newport News area by the James River Bridge, now toll-free, and to the Norfolk area by four-lane highways; the county also has rail service at Windsor and an airport. The area's major airports are the Patrick Henry International Airport located in Newport News and the airports at Norfolk and Richmond.

3.2.2 Identification of Places within the Region

Although a number of areas and towns were considered, the information on the location of workers, purchases, and taxes led to examination of sub-county areas only within Surry and Isle of Wight counties.

Isle of Wight County has two incorporated towns, Smithfield and Windsor, with 1970 populations of 2,713 and 685 respectively. The Surry County towns were considerably smaller: Surry, 269; Claremont, 383; and Dendron, 336. Smithfield serves

as a shopping center for a large surrounding area including part of Surry County. It is the nearest major shopping area to the Surry plant site.

Although the urban areas surrounding Newport News, Norfolk, and, to the west, Petersburg, had the necessary work force, housing, transportation, and service facilities to support the major needs of the project and its workers, none of these places received a great enough concentration of effects to warrant separate consideration. The large populations of these areas, and the massive amount of ongoing business activity, made the effects of the Surry power plant project untraceable in the larger context of socioeconomic activity. In addition, only Surry County received any substantial tax benefits from the project.

3.3 Distribution of Workers

3.3.1 Introduction

The principal purpose of allocating workers to the local areas is to determine the size of the effects relative to the size of the areas in which they occurred. Employment and income both are considered to be important effects in themselves and the cause of further, secondary effects.

Two time periods were used in evaluating the employment and income effects: peak construction and full scale operation. The differences between these periods are noticeable in the numbers of workers, residential patterns, pay, and commitment of the project workers to the local community. Because no recorded data were available to show where the construction personnel lived, information on this subject was obtained through interviews with key informants. These interviews focused on the peak construction year, 1970. The current residential location of operations workers was supplied by VEPCO; the information on the refit work force came from Atlantic Nuclear Services, Daniel Construction Company, and VEPCO. The year of commercial operation that was focused on was 1977, the most recent year of full-scale operation.

3.3.2 Peak Construction, 1970

The estimated distribution of workers is shown in Table 3-1 for the five counties and three SMSAs surrounding the Surry power plant site.

Several factors were particularly influential in the distribution of workers. Most of the union locals were headquartered in the Newport News or Norfolk areas. The

number of workers that commuted from the Williamsburg and James City County areas was rather small since the only direct route was the ferry service. The housing and schooling limitations in Surry County were perceived as so serious by most workers that a number of workers located outside the county. Adequate housing was also in short supply in the Smithfield area and throughout Isle of Wight County. The total number shown in the table includes 1,740 persons employed by Stone and Webster and 110 people employed directly by VEPCO and other on-site employers.

TABLE 3-1
SURRY POWER STATION WORK FORCE
BY PLACE OF RESIDENCE
1970

Location	Number	Work Force Percent
Surry County	175	9.5
Isle of Wight County	260	14.1
Southampton County	55	3.0
Sussex County	25	1.4
Petersburg-Colonial Heights- Hopewell SMSA	90	4.9
Newport News-Hampton SMSA	560	30.3
Norfolk-Virginia Beach- Portsmouth SMSA	275	14.7
James City County (including Williamsburg City)	60	3.2
Other (Virginia and North Carolina)	350	18.9
Total ^a	1,850	100.0

^aTotals may not add exactly due to rounding.

Source: Stone and Webster, file documents, 1967-1972; key informant interviews, 1979 and 1980; U.S. Department of Commerce, Bureau of the Census, 1970 (unpublished tabulations based on 15 percent sample).

3.3.3 Operations Period

The residential location of the operations work force was provided by VEPCO. These data are shown in Table 3-2. In addition to the 307 operating personnel, the company provided an additional 300-500 workers for refueling, maintenance, and repair. Problems with steam generator operations increased this number in 1977. These short-

term workers were assigned for periods ranging from less than two weeks to more than three months, depending upon the jobs they filled. Some were weekly commuters but the majority were long distance daily commuters.

TABLE 3-2
SURRY WORK FORCE BY PLACE OF RESIDENCE
 1977

Location	Number	Work Force Percent
Surry County	62	20.2
Isle of Wight County	51	16.6
James City County (including Williamsburg)	17	5.5
Norfolk SMSA	67	21.8
Newport News-Hampton SMSA	85	28.0
Other (Virginia and North Carolina)	25	8.1
TOTAL^a	307	100.0

^aTotals may not add exactly due to rounding.

Source: VEPCO, personal communications, 1979.

3.4 Distribution of Purchases

Almost all purchases associated with the construction and operation of the station were made outside the immediate area. The company constructed a dock at the site and barged most of the construction materials. Some purchases were made in the Newport News and Norfolk areas where large-scale construction, especially shipbuilding, is a major component of the local economy. These purchases could not be traced, however, and key informants estimate that they were only a small portion of the day-to-day economic activities of these SMSAs. Some local purchases of lumber were made during construction, but these sales were never more than a few thousand dollars in any year. During the recent refit of the steam generators, concrete was purchased from an Isle of Wight County firm. During construction of the station, however, a batch plant was built on the site and materials were barged. Since the purchases for the construction and operation of the station were quite small, no significant employment or income effects could be attributed to local purchases for the Surry project.

3.5 Distribution of Taxes

VEPCO pays taxes for the Surry Power Station to Surry County. Taxes are assessed for the land, improvements, and personal property. The assessed valuation of the property increased annually once construction began. In 1973, taxes on the Surry Station provided 86.1 percent of the property taxes paid in the county. Depreciation of the station improvements, along with reassessments of other county properties, have reduced the plant share of county property tax payments to 72.4 percent in 1978. There are no substantial tax payments made on behalf of the plant to any local jurisdiction other than Surry County.

3.6 Selection of the Study Area

3.6.1 The Study Area

The study area selected for the Surry case study was Surry County, Virginia. A detailed map of the Study Area is provided in Figure 3-2.

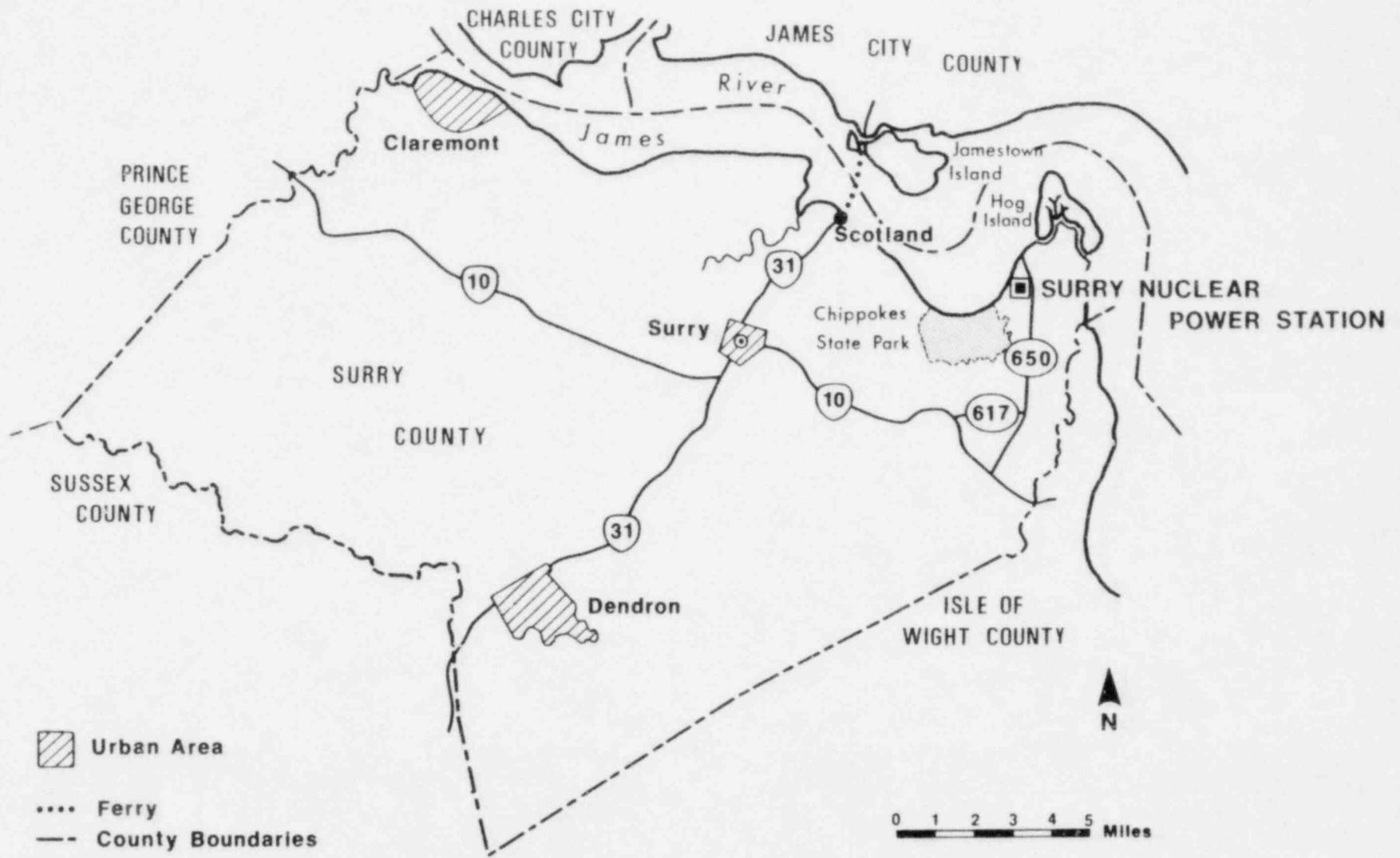
3.6.2 Rationale

The distribution of the work force for 1970 showed that a majority of the workers commuted to the site from some distance, with only 9.5 percent located in Surry County and about 14.1 percent in Isle of Wight County. Approximately 45 percent of the workers were from the Tidewater urban areas with the rest coming from other Virginia locations. Some workers were daily commuters from as far away as North Carolina. The distribution of the 1977 work force was not substantially different, with a slightly larger percentage located in Surry and Isle of Wight counties and fewer long distance commuters. The significance of the Surry plant employment on the urban areas is very small due to the large work force and populations which make up these economies. Although Isle of Wight County recorded more Surry Power Station workers than did Surry County in both 1970 and 1977, the proportion of the Isle of Wight County work force at the plant is much smaller because the work force and population of that county are approximately three times as large as Surry County.

The purchases within the region were only estimated but no reports of a significant quantity of expenditures were recorded. This variable was not a significant factor in determining the study area.

A clear distinction does result from consideration of the distribution of taxes. Surry County is the only local jurisdiction to receive significant tax payments.

FIGURE 3-2. SURRY NUCLEAR POWER STATION STUDY AREA



Source: Division of State Planning and Community Affairs, 1975, "Surry County, Virginia".

Throughout the term of the project, these tax payments have increased with the value of the property and rising tax rates. VEPCO now pays about \$1.5 million annually to the county.

3.6.3 Summary

Surry County was clearly a potential study area due to the employment and tax effects. Isle of Wight County, and specifically the Smithfield area, was another possibility. However, the larger economic and population base of Isle of Wight County, along with the lack of tax revenues and purchases, made the selection of that area less attractive than Surry County. The distinctive social, political, and economic characteristics of Surry County made it an interesting and productive choice as a study area, given the time/cost limitations of the study and the overall goals of the entire research project.

CHAPTER 4: ECONOMY OF THE STUDY AREA

4.1 Introduction

The purpose of this chapter is to define the effects of the construction and operation of the Surry Power Station on the economy of Surry County. Emphasis is placed upon changes in employment, income, and labor force status. Attempts are also made to assess the impacts of the station on the standard of living of the county's residents.

The analysis begins with an overview of the economic history of the county. The historical discussion is oriented toward the major components of the economy—agriculture, manufacturing, local government, and services.

A more detailed examination of changes that occurred in the economy of the Study Area over the 1967 to 1978 period then is made. This period begins with the start of construction at the Surry plant site and continues through the last year for which much of the relevant economic data are available. The discussion centers on three topics: employment and income changes, labor force changes, and standard-of-living changes. Throughout this discussion, changes in the relevant data are described without attempting to attribute the changes to the construction and operation of the Surry Power Station.

The next sections of the chapter trace the employment and income effects associated with both the construction and operation of the station. The analyses of the construction effects center on 1970 (the peak construction year), and the analyses of operation effects focus on 1977 (the most recent year of full-scale operation). The approach used in the case study identifies three categories of basic employment and income that together determine nonbasic employment and income. The chapter ends by first summarizing the effects on the local economy due to the station, and then summarizing the effects on local residents.

4.2 Economic History of the Study Area

The area now known as Surry County was an intrinsic part of Jamestown Colony, the first permanent English settlement in America, founded in 1607. From 1634 to 1652, when Surry County was formed, it was a part of James City County. (Kornwolf, 1977:1). The county economy was based upon a plantation system that was established

between the early 17th century and the time of the Civil War when the plantation economy was destroyed. The plantation economy was self contained, and various attempts to establish towns or manufacturing were not successful. (Kornwolf, 1977:4.)

Following the Civil War, agriculture was gradually reestablished. This was a very slow process, however, since the plantation economy had been essentially bankrupted. The major remaining natural resource was lumber, which had been produced and shipped from the county since colonial times. The major lumber operation following the Civil War was conducted by the Surry Lumber Company of Dendron. At its peak in 1905, the company employed nearly 1,800 people and owned 60,000 acres. (The county reached its population peak of 9,000 at approximately the same time.) The lumber company closed in 1927 and by 1942 had sold all its lands (Kornwolf, 1977:4). Extensive reforestation of the county began in the 1930s, and today about 75 percent of the county is woodland. This growth of woodland and forests makes the county distinctively different from its plantation period appearance when much of the land was cleared for farming. Currently, most of the actual lumbering operations are conducted by firms located outside the county. There is only one small, locally-owned lumber mill still in operation.

Between 1950 and 1970, employment in the county remained at about the same level, but with significant changes in the composition of the work force. Table 4-1 shows the employment numbers and percentages by category.

These data clearly show the abrupt and continuing decline in agricultural employment in the county. However, total county employment remained fairly constant at about 2,000 for the twenty year period. The loss in agricultural employment was absorbed by the other sectors, most of which doubled in size during this time. Services showed the lowest rate of increase, and even in this case there was a 50 percent rise recorded. The small base for each industry meant that relatively small increases in employment produced noticeable changes in the labor force composition. Also, the agricultural sector retained an important place in the local economy due to the number of farm proprietors who operated both full- and part-time. Although farm sizes increased, the number of farms decreased. Between 1964 and 1969, for example, the number of farms decreased from 396 to 347 but the average size increased from 177.7 acres to 206.9 acres. There was an increase of about 1,500 acres in cropland during this period. (Division of State Planning and Community Affairs, 1975:22.)

TABLE 4-1

SURRY COUNTY EMPLOYMENT BY PLACE OF RESIDENCE
1940-1970

	1950		1960		1970	
	Number	Percent	Number	Percent	Number	Percent
Agriculture	1,099	53.7	859	44.6	370	17.5
Mining	1	.1	0	.0	14	.7
Contract						
Construction	102	5.0	110	5.7	223	10.6
Manufacturing	326	15.9	359	18.7	585	27.7
TCPU	44	2.2	59	3.1	100	4.7
TRADE	152	7.4	181	9.4	272	12.9
FIRE	13	.6	15	.8	49	2.3
Services	248	12.1	272	14.1	385	18.2
Government	60	2.9	69	3.6	115	5.4
TOTAL ^a	2,045	100.0	1,924	100.0	2,113	100.0

^aTotals may not add exactly due to rounding.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Employment by Industry, 1940-1970: Decennial Series for United States, Regions, States, Counties. Washington, D.C.: U.S. Government Printing Office, 1975.

As might be expected, the trade and services sectors of the county economy have remained relatively undeveloped. In 1963, Surry County residents had a per capita retail sales figure of \$461, only 40.8 percent of the state figure of \$1,130. This was the result of the low per capita income of county residents and goods and services purchases outside the county. (Division of Planning, 1968:17.)

The Surry County economy prior to construction of the plant was primarily agricultural, with peanuts and hogs the main cash components. In manufacturing, there were two timber operations, all that remained of a once flourishing lumbering industry. A local meat processing company was also active, but altogether there were only 59 employees listed in the manufacturing sector in 1966. About 518 workers (28 percent) commuted out of the county to work, while only 52 persons commuted in from neighboring areas. (Division of Planning, 1968:3 and 1968:14.)

4.3 Economic Changes during the Study Period

The annual changes in Surry County employment by place of work for the period 1967 to 1978 are shown in Table 4-2. The income data are shown in Table 4-3, which includes adjustments for workers who lived outside the county and commuted to jobs in Surry County.

4.3.1 Employment and Income in the Local Economy

During the period 1967 to 1976, agriculture, government, and services were the principal sources of employment aside from the Surry project. The construction sector, almost entirely employed at the Surry Power Station, dominated the overall employment and income figures during the building of the plant (1967-1972). About half the total employment in the county was in contract construction for the three year period, 1969 to 1971.

The combination of farm proprietors and farm wage and salary employment make agriculture the largest constant source of employment in the county. In 1967, 38.5 percent of the county work force was engaged in agriculture. The general trend in agricultural employment seems to have been downward, although there is considerable annual variation. The 1978 wage and salary employment in agriculture was only 71.7 percent of the 1967 figure.

Government employment has shown a steady annual increase, entirely due to more workers in the state and local sector. Federal employment has fluctuated somewhat but has generally remained near 50 workers. State and local government employment has increased from 239 in 1967 to 599 in 1978, an 8.7 percent annual rate of increase.

Both manufacturing, and finance, insurance, and real estate (FIRE) have remained fairly constant, while trade and services have shown slight declines. The transportation, communication, and public utilities (TCPU) sector has been deleted from the BEA data but has grown rapidly due to employment at the Surry Power Station. According to state data, employment in TCPU has increased from 36 workers in 1970 to 418 workers in 1977. (State Planning, 1971:11; Surry Comprehensive Plan, 1980:34.)

The income figures in Table 4-3 are shown in constant 1972 dollars. The dominance of the construction sector was even greater in terms of income by place of

TABLE 4-2
 SURRY COUNTY EMPLOYMENT BY PLACE OF WORK
 1967-1978
 (Full- and Part-time)

Item	1967 ^a	1968 ^a	1969 ^a	1970 ^a	1971 ^a	1972 ^a	1973 ^a	1974 ^a	1975 ^b	1976 ^b	1977 ^b	1978 ^b
Total Employment ^c	1,663	2,080	2,956	3,562	3,464	2,608	1,751	1,890	2,077	2,052	1,993	2,278
Number of Proprietors	548	539	561	543	503	491	456	436	439	429	420	421
Farm Proprietors	453	445	435	416	396	376	357	336	332	323	312	307
Nonfarm Proprietors	95	94	126	127	107	115	99	100	107	106	108	114
Total Wage and Salary Employment	1,115	1,541	2,395	3,019	2,961	2,117	1,295	1,454	1,638	1,623	1,573	1,857
Farm	187	189	179	163	183	173	162	165	138	178	123	134
Nonfarm	928	1,352	2,216	2,856	2,778	1,944	1,133	1,289	1,500	1,445	1,450	1,723
Private	637	1,033	1,876	2,506	2,407	1,557	692	788	946	848	834	1,081
Construction	98	509	1,415	2,003	1,797	894	27	110	269	110	38	(D)
Manufacturing	58	56	52	53	53	56	57	56	50	52	52	51
Nondurable Goods	(L)	11	11	13	(D)							
Durable Goods	49	45	41	40	(D)							
Transportation and Public Utilities	(L)	(L)	17	(D)								
Wholesale Trade	(L)	(L)	0	0	0	0	(L)	(L)	28	28	26	29
Retail Trade	142	133	127	142	172	126	125	124	96	103	111	106
Finance, Insurance, and Real Estate Services	(L)	10	10	11	10	11	13	13	13	13	12	13
Government and Government Enterprises	291	319	340	350	371	387	441	501	554	597	616	642
Federal, Civilian	19	22	24	21	31	26	28	25	24	24	20	21
Federal, Military	33	31	32	32	32	32	29	25	22	23	22	22
State and Local	239	266	284	297	308	329	384	451	508	550	574	599

^aEstimates based on 67 SIC.

^bEstimates based on 72 SIC.

^cConsists of wage and salary jobs plus number of proprietors.

(D) Not shown to avoid disclosure of confidential data. Data are included in totals.

(L) Less than ten wage and salary jobs.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Employment by Type and Broad Industrial Sources, 1967-1978 (Unpublished data), 1980.

TABLE 4-3
PERSONAL INCOME BY PLACE OF WORK
SURRY COUNTY
1967-1978
 (Thousands of Constant 1972 Dollars)

Item	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Total Wage and Salary	4,097	8,788	22,289	34,808	34,685	22,624	6,979	8,778	11,401	9,151	8,663	12,983
Proprietors Income	2,470	1,726	1,786	2,157	1,475	2,712	4,129	3,678	2,740	1,369	1,351	3,201
Farm	1,938	1,111	989	1,301	514	1,510	2,996	2,652	1,837	383	392	2,223
Nonfarm	532	615	798	856	960	1,202	1,133	1,027	903	986	959	978
By Industry												
Agriculture	68	83	96	76	81	87	(D)	(L)	(D)	(D)	(L)	35
Construction	1,036	5,560	19,095	31,418	30,341	16,826	537	1,960	4,526	1,511	494	(D)
Manufacturing	316	350	363	355	391	461	447	467	356	364	404	380
TCPU	(L)	98	270	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Trade	601 ^a	668 ^a	764	916	990	1,014	1,017	1,026	956	929	881	904
FIRE	79	84	85	94	91	105	104	101	105	110	106	117
Services	541	613	727	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1,133
Government	1,603	1,806	1,956	2,085	2,261	2,394	2,669	2,674	2,715	2,864	2,898	3,057
Federal	224	246	277	256	350	343	366	322	300	309	278	312
State/Local	1,379	1,560	1,679	1,829	1,911	2,051	2,303	2,352	2,415	2,555	2,620	2,745

^aExcludes wholesale trade which is deleted.

(D) Not shown to avoid disclosure of confidential data. Data are included in totals.

(L) Less than ten wage and salary jobs.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, unpublished data, April 1980.

work than it was for employment because earnings for construction workers were considerably higher than for the rest of the work force.

Table 4-4 shows the total income (by place of work) divided by total employment (by place of work). This yields an estimate of the average earnings for people employed in the Study Area and thus provides an indication of the standard of living in the Study Area. As employment and income increased in the construction sector (see also Tables 4-2 and 4-3), the average wage for the Study Area increased rapidly, more than two and a half times for 1970-1971. When construction activity slackened, average earnings decreased rapidly to \$5,522 in 1977.

Farm proprietors income shows considerable variation from year to year, which reflects the relative success of the peanut crop and its markets. Hog production and market conditions are also an important income factor in this sector of the local economy. Nonfarm proprietors income showed a steady rise from just over half a million dollars in 1967 to more than \$1.2 million in 1972. It then declined annually to \$900 thousand in 1975 and has increased somewhat since that year.

The wage and salary income increased in the state and local government sector and in services (the annual figures for services have been deleted for 1970-1977 by BEA, however, so the progression of increase is not demonstrated). The income to the FIRE sector also showed a steady pattern of increase, rising from \$79 thousand in 1967 to \$117 thousand in 1978. Manufacturing and trade sectors recorded increases in 1972 and 1974, respectively, with declines after that time.

4.3.2 Employment and Income of Local Residents

Total 1967 employment in Surry County, just prior to the start of the Surry Power Station project, was 1,663. (BEA, 1980). As can be seen in Table 4-5, the county unemployment rate was 3.7 percent in 1966, compared to 4.4 percent for the state. The Surry County rate dropped to 1.5 percent in 1970, but was 11.1 percent in 1977; the rates for Virginia were 2.7 and 7.0 percent, respectively. Historically, Surry rates had been 25-30 percent above the state rates. The county labor force is not highly skilled, and much of the labor force commutes to jobs out of the county, especially to the shipyards at Newport News. Out-migration of young people for education, training, and employment is common.

TABLE 4-4

AVERAGE ANNUAL INCOME PER WORKER, BY PLACE OF WORK
 SURRY COUNTY
 1967 to 1978
 (Constant 1972 Dollars)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Employment	1,663	2,080	2,956	3,562	3,464	2,608	1,751	1,890	2,077	2,052	1,993	2,278
Earnings ^a	\$6,681	\$10,777	\$24,780	\$38,151	\$37,432	\$26,310	\$11,559	\$13,068	\$14,991	\$11,565	\$11,006	\$17,609
Average Income	\$4,017	\$5,181	\$8,383	\$10,711	\$10,806	\$10,088	\$6,601	\$6,914	\$7,218	\$5,636	\$5,522	\$7,730

^aRecorded in thousands of constant 1972 dollars.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, unpublished data, April 1980.

TABLE 4-5

SURRY COUNTY LABOR FORCE
1966 AND 1970 TO 1977

	1966	1970	1971	1972	1973 ^a	1974	1975	1976	1977
Population ^b	6,081	5,882	5,816	6,400	5,700	5,600	6,000	6,000	5,900
Civilian Work Force	N/A	N/A	N/A	N/A	2,174	2,253	2,286	N/A	2,411
Unemployment ^c	48	54	68	62	137	189	261	N/A	267
Employment ^a	1,379	3,433	3,839	2,976	2,037	2,064	2,025	2,084	2,144
Unemployment Rate	3.7	1.5	1.7	2.0	6.3	8.4	11.4	N/A	11.1
Virginia/Rate	4.4	3.4	3.7	3.6	3.6	4.5	6.4	5.9	5.6

^aData on employment were changed from "place of work" to "place of residence" beginning with 1973.

^b1970 from U.S. Census of Population; other years are estimated (July 1) by Tayloe Murphy Institute, University of Virginia, and U.S. Department of Commerce, Bureau of the Census.

^cBy place of residence.

N/A Not available.

Source: Virginia Employment Commission, unpublished data, 1966 and 1970-1977; U.S. Department of Commerce, Bureau of the Census, 1970.

Labor force participation rates, shown in Table 4-6, were slightly above the state and national figures for males. In 1960, the county rates were substantially less for females (Surry, 21.0 percent; Virginia, 34.0 percent; U.S., 34.5 percent). By 1970, however, the rate for females in Surry County had risen to 35.3 percent. This figure was much closer to the state (42.4 percent) and national (39.6 percent) figures, which had also risen sharply during the 1960s.

TABLE 4-6
SURRY COUNTY LABOR FORCE PARTICIPATION
 1960, 1970

	1960 ^a		1970 ^b	
	Male	Female	Male	Female
Surry County	78.7	21.0	79.3	35.3
Virginia	77.8	34.0	78.8	42.4
United States	77.4	34.5	72.9	39.6

^aFourteen years of age and older.

^bSixteen years of age and older.

Source: U.S. Department of Commerce, Bureau of the Census, 1960; 1970.

Personal income by place of residence (earned by residents of the county) showed a steady pattern of increase to 1975, slight decreases in 1976 and 1977, and a strong increase in 1978, as shown in Table 4-7. The labor and proprietors' income peaked somewhat earlier, in 1971, and generally declined to 1977, with a sharp increase for 1978. The transfer payments increased by almost three times during this period and the dividends, interests, and rents more than doubled.

The residency adjustment has two major components. The vast majority of the wages and salaries paid for construction of the Surry Power Station went to commuters outside Surry County. This is shown in the very large negative adjustments made between 1969 and 1972. At the same time, the proportion of the Surry County work force that commuted out of the county to work increased from 28.1 percent in 1960 to 48.1 percent in 1970 (State Planning, 1971:13; 1975:16). This trend is thought to have continued during the 1970s, but probably not at the same rate. Although firm data on the

TABLE 4-7

DERIVATION OF PERSONAL INCOME BY PLACE OF RESIDENCE
 SURRY COUNTY
 1967-1978
 (Thousands of Constant 1972 Dollars)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Total Labor & Proprietors Income, Place of Work	6,681	10,777	24,780	38,151	37,432	26,310	11,559	13,068	14,991	11,565	11,006	17,609
Less: Social Insurance	199	402	1,119	1,724	1,794	1,216	402	534	693	579	554	808
Net Labor & Proprietors' Income, Place of Work	6,482	10,375	23,661	36,427	35,638	25,094	11,157	12,534	14,297	10,986	10,452	16,800
Plus: Residence Adjustment	3,502	323	-11,585	-23,574	-22,446	-10,102	3,547	1,599	61	2,784	3,104	-492
Net Labor & Proprietors' Income, Place of Residence	9,984	10,697	12,076	12,853	13,192	14,992	14,704	14,133	14,358	13,770	13,557	16,308
Plus: Dividends, Interest, and Rent	1,087	1,242	1,299	1,364	1,468	1,486	1,574	1,756	1,975	2,034	2,100	2,235
Plus: Transfer Payments	1,276	1,407	1,459	1,778	1,940	2,147	2,359	2,774	3,382	3,408	3,486	3,505
Personal Income by Place of Residence	12,346	13,346	14,834	15,996	16,599	18,625	18,638	18,663	19,715	19,212	19,143	22,048
Per Capita Personal Income ^a	2,025	2,225	2,513	2,685	2,637	2,904	3,286	3,321	3,247	3,190	3,290	3,886

^a1972 dollars (not thousands of dollars)

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, unpublished data, April 1980.

current proportion of Surry County residents who commute out of the county to work will not be available until results of the 1980 census are released, local informants believe that it may be in the range of 55 to 60 percent.

The agricultural base of the Surry County economy and the limited employment in both the private and public sectors meant that the income and standard of living in the county were low in comparison to the state or nearby urban areas. The data for 1970 show a poverty incidence of 27.7 percent for Surry County, compared to the Virginia rate of 15.5 percent. The county rate was more than twice as high as the national figure of 13.7 percent. The county's per capita income was about 81.5 percent of the state figure and only 59.6 percent of the U.S. average. (U.S. Department of Commerce, Bureau of the Census, 1970). Measured in these terms, the standard of living in Surry County was the lowest in that region of the state.

This low standard of living is corroborated by per capita income data from the Bureau of Economic Analysis, shown in Table 4-8 in constant 1972 dollars for the 1967 to 1978 period. However, this table shows that the general trend has been for Surry County per capita income to rise, relative to the state figure, up through 1974, with a slight decline since that time.

4.3.3 Summary

The period from 1967 to 1978 was one of noticeable change for Surry County. Employment and income increased in the county despite the declining employment and ownership in the agricultural sector. This was due to two factors: the direct and indirect effects of the Surry Power Station construction, and the indirect effects of residents commuting to jobs outside the county. The general pattern of income of county workers and residents was a rise during construction and a decline afterward. The decline was modified by the operating force employment and continuing refueling, repair, and maintenance work at the site.

4.4 Economic Changes in the Study Area due to the Project

The purpose of this section is to describe the effects of construction and operation of the Surry Power Station on the Surry County economy. Three elements of economic activity will be presented: (1) employment and income by place of work; (2) changes in the labor force status of county residents; and, (3) project effects on the standard of living of county residents.

TABLE 4-8
 SURRY COUNTY PER CAPITA INCOME
 1967 TO 1978
 (Constant 1972 Dollars)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Surry County	2,025	2,225	2,513	2,685	2,637	2,904	3,286	3,321	3,247	3,190	3,290	3,886
Virginia	—	—	3,841	3,975	4,113	4,386	4,598	4,565	4,558	4,741	4,862	—
County/State (%) ^a	—	—	65.4	67.5	64.1	66.2	71.5	72.8	71.2	67.3	67.7	—

^a Percentage of county per capita income to state per capita income.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, 1980; Tayloe Murphy Institute, University of Virginia, 1979

An economic base analysis, supplemented with an input-output analysis, is used to describe these economic changes. The analyses assume that the economic activities of the Surry project—employment, purchases, and taxes—affected the economic activities in the county. In order to determine the total economic effects of the project, both the direct project effects and their resulting additional activities in the Study Area economy must be quantified. When these total economic effects of the project have been estimated, a summary will be made of the impacts on the county labor force and standard-of-living.

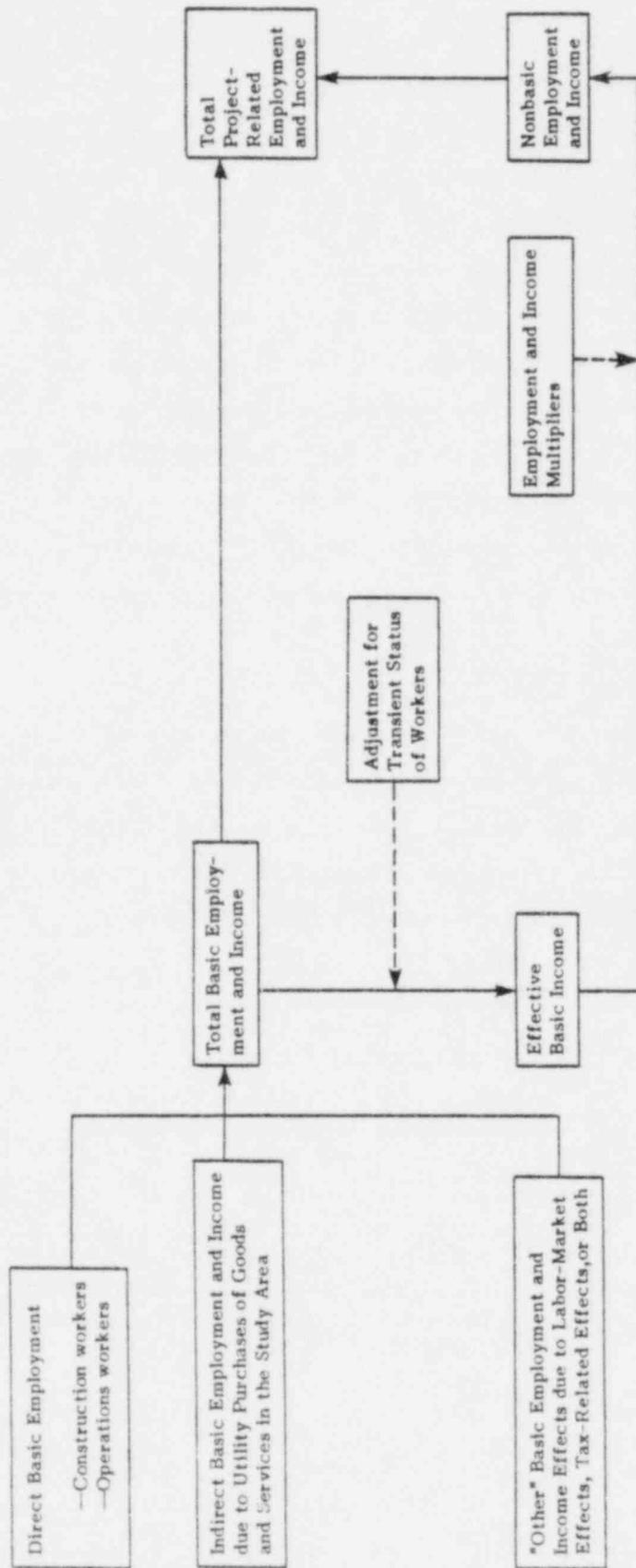
4.4.1 Estimation of Project-Related Employment and Income Effects

This analysis will begin by describing the work force and the purchases of goods and services required to construct and operate the generating station. Persons directly employed for the construction of the plant are called "direct" basic employees, and the income they earn is counted as "direct" basic income at their place of residence.

In addition to direct employment and income, local income and employment may have resulted from the purchase of goods and services for the construction and operation of the plant. If, for example, \$1,000 of materials were purchased locally, some fraction of the purchase would accrue as income to local residents. For materials produced locally, the ratio of locally-generated-income-to-total-purchases could be quite high. Materials produced elsewhere and only distributed locally would result in a lower ratio of local-income-to-purchases, reflecting only the distributor's margin. Income and employment generated in these ways in response to the purchases of goods and services by the utility are referred to as "indirect" basic income and employment.

A third group of income and employment effects is referred to as "other" basic income and employment. This category includes labor market effects due to labor shortages, higher wages, or changes in activity that are a response to the favorable fiscal impacts of the station. To the extent that such responses changed the income or employment of local residents, the change would be categorized as "other" basic income and employment. Figure 4-1 summarizes the three major sources of change in basic income and employment: direct basic, indirect basic, and "other" basic.

FIGURE 4-1
ESTIMATION OF PROJECT-RELATED EMPLOYMENT AND INCOME EFFECTS



A significant portion of the direct basic income was earned by workers who lived outside the county or who only resided in the county during the work week. As a result, less of this income was spent in the county than was the case for county residents. To account for these differences, the total project-related basic income was adjusted in terms of its effect on the local economy. The adjusted income total is referred to as effective basic income. For example, if one group of project workers spent only 25 percent as much time in the county as local residents earning comparable incomes, only 25 percent of that group's income would be designated as effective basic income.

"Nonbasic" income and employment is that which results when the basic income is spent and respent in the local economy. In general, the larger the local economy, the smaller the income leakages due to imports, and the larger the multiplier. Once a multiplier appropriate to the size of the local economy has been estimated, the change that direct basic income produces in nonbasic income and employment can be calculated. Nonbasic employment can then be added to the three categories of basic employment to arrive at an estimate of the total employment effect of the construction of the Surry Power Station.

The method for estimating the nonbasic employment and income response to an increase in effective basic income is based on the Regional Interindustry Multiplier System (RIMS) developed by Ronald Drake (for the Regional Economic Analysis Division of the U.S. Department of Commerce, Bureau of Economic Analysis). The RIMS approach is well documented elsewhere (U.S. Water Resources Council, 1977; Anderson, 1980) and, therefore, is not described in detail here.¹

¹In general, the RIMS technique develops industry-specific input-output types of multipliers based on national interindustry relationships at the 496-sector level of disaggregation, adjusted to reflect the availability of required inputs from suppliers in the county. In the simplest case, if an industry does not exist in the county economy, any requirements from that industry are assumed to be supplied by imports from outside the county economy. If an industry does exist in the county at the same, or greater, proportion to the county economy as the industry is to the national economy, the county demands from that industry are assumed to be met within the county economy. If an industry represents a smaller proportion of the county economy than it did of the national economy, some of the county demand is assumed to be supplied from in the county and some is assumed to be imported.

4.4.1.1 Employment and Income Effects of the Project in 1970

Direct basic employment and income effects of the project in 1970

The direct basic employment and income due to the project is determined by recording data on those workers employed for the construction or operation of the plant. Direct basic employment and income can be counted either at the place of work or at the place of residence. The determination of direct basic employment and income by place of work is straight forward and is derived from project employment and wage data.

The Surry Power Station is located entirely in Surry County. Consequently, in terms of employment and income by place of work, all the effects accrued to the county. At peak construction in 1970, the average annual direct basic employment was 1,850 and direct basic income was \$29.0 million.

Determination of direct basic employment and income by place of residence requires information about commuting patterns and the residential location of direct basic employees. Only a small proportion of the direct basic employees working at the plant site in 1970 were Surry County residents. It is estimated that about 175 direct basic employees, earning \$2.7 million in income from the project were residents of Surry County. The majority of the direct basic workers were daily commuters from outside the county.

Indirect basic employment and income effects of the project in 1970

The second component of basic employment and income is the indirect basic, defined as the profits, earnings, and employment resulting from purchases of goods and services made for the construction and operation of the plant. In the case of Surry County, no purchases were made in the local economy because there were no goods or services available which could be used for the plant construction or operation.

"Other" basic employment and income effects of the project in 1970

The "other" basic employment and income effects would be those that resulted from measurable changes in local work force availability or cost due to the plant, and employment and income generated by tax payments made on behalf of the plant.

There were no apparent wage-induced effects on county employment and income due to construction of the plant in 1970. Employment and wages in agriculture, usually

considered to be the sector most vulnerable to such effects, show wide annual variations due to the small number employed in the county, and the dependence of that sector on weather, market conditions, and other factors involved in farm production. Interviews with local key informants—the county extension agent, farmers, and other employers—did not reveal any wage-induced "other" basic effects.

The possibility of tax-induced effects due to increased county revenues resulting from the Surry project was examined for the year 1970. The increase in tax payments to the county by VEPCO for 1970 when compared to 1969 was \$152,486. (Tax payment for 1970 was \$198,205; for 1969 it was \$45,719. See Table 2-5.) The one-year increase in revenues amounted to 44.4 percent of the total county property taxes. Altogether, VEPCO tax payments accounted for 57.7 percent of the property taxes collected in Surry County in 1970. However, the BEA data (Table 4-2) shows that the increase in state and local government employment was only 13 persons greater in 1970 than in 1969. This was consistent with the annual increase since 1967 and cannot be attributed directly to the increased tax revenues. For the peak construction year, therefore, no "other" direct basic employment and income effects have been attributed to Surry County as a result of the Surry Power Station project.

Total basic employment and income effects of the project in 1970

The total basic unemployment and income effects due to the Surry Power Station project consist only of the direct basic component. The indirect and "other" basic components are not a factor in evaluating the plant effects upon the county economy.

The total average annual basic employment by place of work for 1970 was 1,850 jobs; estimated direct basic income was \$29.0 million. Most of these jobs were filled by workers who lived outside the county. In 1970, approximately 175 workers earning \$2.7 million were residents of Surry County.

Nonbasic employment and income due to the project in 1970

Nonbasic employment and income result from the expenditure and re-expenditure of basic income in the local economy. The amount of nonbasic employment and income generated by the project in the local economy depends on two factors: (1) the amount of "effective" basic income created by the project, and (2) the size of the nonbasic-to-basic employment and income multipliers in the local economy.

Effective basic income. In order to account for the income that was available to be spent in Surry County, four groups of workers were identified. These workers were grouped according to their residential location and their financial commitments outside the Study Area. These groups were:

1. Nonmovers—employees who were residents of the Study Area prior to their employment on the project and who did not move because of this employment;
2. Movers accompanied by families—employees who moved into the Study Area because of their employment on the project and were accompanied by families;
3. Movers unaccompanied by families—employees who moved into the Study Area because of their employment on the project and were not accompanied by families (including single employees); and,
4. Daily long-distance commuters—employees who lived outside the Study Area but commuted daily to the project site.

Table 4-9 shows the distribution of the project-related basic employment and income for these four groups. In 1970, about 175 (9.5 percent) of the 1,850 project-related jobs in the Study Area were held by workers residing in the county. The majority of the remaining job holders lived in Virginia, but a small number, perhaps 150 or so, lived in northeastern North Carolina.

TABLE 4-9
DISTRIBUTION OF BASIC EMPLOYMENT AND INCOME
SURRY COUNTY
1970

	Direct Basic ^a	Basic Income ^b
Nonmovers	95	\$1,490
Movers Accompanied by Family	10	157
Movers Unaccompanied by Family (and Singles)	70	1,098
Daily Long-Distance Commuters	<u>1,675</u>	<u>26,272</u>
TOTAL	1,850	\$29,017

^aNo indirect or "other" basic employment was identified for Surry County.

^bIn thousands of constant 1972 dollars; based on average annual earnings of \$15,685.

Source: Social Impact Research, Inc., 1980.

The basic income of each group was weighted to reflect the average proportion of earnings available to be spent in the local economy. The weighted factor calculations were based on interviews with workers, examination of shopping patterns, and outside financial commitments. The total weighted income was considered to be "effective" in the local economy. Nonmovers served as the standard for weighting the effective income of the remaining groups with a designated factor of 1.0. Movers with families were also weighted at a 1.0 factor. Movers unaccompanied by families (and singles) were estimated to spend only about 40 percent as much as nonmovers and, therefore, were assigned a weighted factor of 0.4. The daily long-distance commuters, who purchased almost nothing in the county, were not assigned a weighted factor.

The effective income for each group (actual income times weighted factor) was: nonmovers, \$1,490 thousand; movers accompanied by family, \$157 thousand; and, movers unaccompanied by family, \$439 thousand. No effective income was assigned to the daily long-distance commuters. The total effective income for Surry County in 1970 was estimated to be \$2,086 thousand.

Nonbasic-to-basic multipliers. The effective basic income served as the basis for determining the nonbasic employment and income effects of the project. Based on the RIMS analysis,¹ the following multipliers were determined for Surry County: each \$1,000 of effective basic income was estimated to produce 0.0171 nonbasic jobs and \$103 in nonbasic income in the county. (Drake, personal communications, 1980.) When applied to the project-related effective basic income (\$2,086 thousand), these multipliers indicate that the project resulted in 36 nonbasic jobs and \$215 thousand in nonbasic income in Surry County in 1970.

The majority of the nonbasic workers were estimated to be local residents (nonmovers) based upon the considerations of labor force availability, commuting patterns, local wage scales, and key informant estimates. Approximately 90 percent of the jobs, 32 positions, were estimated to have been filled by nonmovers with the remaining 4 going to commuters from outside the county.

¹These figures are in constant 1972 dollars and are based on the 1976 national input-output table. Since the structure of the Surry County economy did not change substantially between 1970 and 1976, the 1976 relationships are considered appropriate for this analysis.

Total employment and income due to the project in 1970

The total employment and income effects of the project on Surry County in 1970 resulted from direct basic employment at the plant site and nonbasic employment in the local economy. The total employment effect of the project in 1970 for Surry County was about 207 workers; the income from the project was estimated at \$2.9 million. In 1970, this level of employment was 13.3 percent of the non-construction employment in the county; the income provided by the project was 18.2 percent of the personal income by place of residence.

4.4.1.2 Employment and Income Effects of the Project in 1977

Direct basic employment and income effects of the project in 1977.

The direct basic employment by place of work in 1977 was 414 and the total direct basic income was \$5.4 million. The majority of the direct basic employees resided outside Surry County. It is estimated that only about 70 direct basic employees were residents of the county, and they earned somewhat less than \$920 thousand in 1977. (Local residents tended to hold lower paying jobs and, therefore, earned somewhat less than the average wage earned by plant workers.)

Indirect basic employment and income effects of the project in 1977.

No indirect basic employment was recorded for the operations period of the Surry Power Station.

"Other" basic employment and income effects of the project in 1977.

Surry County collects a large proportion of its revenues from the plant; in 1977 the Surry Power Station paid 76.7 percent of the total assessed valuation of the county and paid taxes in excess of \$1.3 million (including personal property taxes on the nuclear fuel and the leased gas turbines at the site). The addition of these monies to the local government could be expected to result in "other" basic employment that would not otherwise exist. It is important to distinguish this "other" basic employment in the government sector from nonbasic governmental employment because of the multiplier effect of basic income.

In estimating the number of other basic jobs due to the effect of the plant, it is recognized that government employment is quite variable according to local conditions, political values and attitudes, and public expectations. However, changes in population and income generally result in changes in public services. Recent work done by Mountain

West Research, Inc. on small counties in the United States has been used as a general guide in estimating the expected increase in nonbasic employment due to economic growth. Generally, in the smallest class (first order) of counties, we would expect an increase of 10.5 nonbasic employees in the state and local government sector for each \$1 million (constant 1972 dollars) increase in personal income in the county (Anderson, 1980).

From 1967 to 1977, there was an increase of \$6.8 million in personal income to residents of the county, calculated in 1972 dollars (Table 4-7). We would expect, therefore, an increase in state and local government employment of about 71 workers. The actual increase in employment was 335, a difference of 264 workers. The greatest annual increases came in the mid-1970s when more than 50 employees were added for three years in a row (1972-1973, 55 workers; 1973-1974, 67 workers; 1974-1975, 57 workers). During this period, the taxes paid by Surry Power Station accounted for over 80 percent of the total county property taxes, reaching a peak of 86.1 percent in 1973. Due to depreciation of improvements made at the station and reassessment of other county properties, this share of the assessed tax base has declined since 1973.

An examination of data for the neighboring counties of Isle of Wight and Sussex showed that their average increase in state and local government employment was 14.5 workers per \$1 million increase in personal income (in constant 1972 dollars). These figures imply that state and local government services increased more rapidly in this section of rural Virginia than was the case nationwide. In applying the figure of 14.5 workers per \$1 million of increase in personal income to Surry County, the expected increase in state and local government employment would be 99 employees. The difference between this estimate and the actual employment increase of 335 was 236 workers. About 20 to 25 state employees (full- and part-time) were added to the employment figures when Chippokes Plantation was developed as a state park. The 1,400 acre property was bequeathed to the state in 1969 (Kornwolf, 1976:36).

Taking into account the Chippokes Plantation State Park, and the accelerated growth in the rural areas of Virginia, and allowing for the special needs of the schools and other public services of Surry which had been delayed for years, there is still a considerable increase beyond all expectations in the state and local government employment. Therefore, a conservative estimate of 150 local government workers have

been assigned as "other" basic employees. Their average income (in constant 1972 dollars) was estimated at \$4,564, producing a total income of \$685 thousand.

Total basic employment and income effects of the project in 1977

The total basic employment and income due to the project in Surry County is shown in Table 4-10. These figures are much smaller for the commuters and the movers unaccompanied by families than was the case for 1970, the year of peak construction. The number of nonmovers and movers with families is larger, however, due to the "other" basic employment in the public service sector. The total number of basic employees residing in Surry County was estimated to be 160 in 1977, and their total earnings were \$1.3 million (constant 1972 dollars)

TABLE 4-10

DISTRIBUTION OF BASIC EMPLOYMENT AND INCOME
SURRY COUNTY
1977
(Thousands of Constant 1972 Dollars)

	Direct Basic		"Other" Basic		Total	
	Employment	Income ^a	Employment	Income ^b	Employment	Income
Nonmovers	48	\$631	58	\$265	106	\$896
Movers, Accompanied by Family	12	158	20	91	32	249
Movers, Unaccompanied by Family (or Singles)	10	131	12	55	22	186
Daily Outside Commuters	344	4,521	60	274	404	4,795
TOTAL	414	\$5,441	150	\$685	564	\$6,126

^aAverage salary was \$13,141, in constant 1972 dollars.

^bAverage salary was \$4,564, in constant 1972 dollars.

Source: Social Impact Research, Inc.

Nonbasic employment and income effects of the project in 1977

The income from each category of workers—nonmovers, movers accompanied by families, movers unaccompanied by families (and singles), and outside commuters—were weighted in the same manner as was done for 1970 in order to determine the total effective basic income for the county. Table 4-11 shows the basic income, weighted factor, and effective basic income for each category and for the county. Of the total basic income produced by the project, only about 20 percent is applied to the county as effective basic income. The remainder is assigned to commuters who reside outside the Study Area.

TABLE 4-11
ESTIMATED EFFECTIVE BASIC INCOME
SURRY COUNTY
1977
(Thousands of Constant 1972 Dollars)

Basic Income Category	Basic Income	Weighted Factor	Effective Basic Income
Nonmovers	896	1.0	896
Movers, Accompanied by Families	249	1.0	249
Movers, Unaccompanied by Families (and Singles)	186	0.4	74
Daily Outside Commuters	<u>4,795</u>	<u>0.0</u>	<u>—</u>
TOTAL	6,126	0.2	1,219

Source: Social Impact Research, Inc., 1980.

Conversion of the effective basic income to nonbasic employment and income was done as for the 1970 data. The same RIMS multipliers were used for Surry County. The estimated nonbasic employment was 21 jobs and nonbasic income was \$126 thousand (in constant 1972 dollars).¹

Total employment and income effects of the project in 1977.

The total employment and income effects due to the project in Surry County for 1977 are shown in Table 4-12. The total number of new jobs created by the project in Surry County was 181, including 70 direct basic, 90 "other" basic and 21 nonbasic. Total income generated by the project in the county was just under \$1.5 million.

TABLE 4-12
TOTAL EMPLOYMENT AND INCOME DUE TO THE PROJECT
SURRY COUNTY
1977
 (Thousands of Constant 1972 Dollars)

	Employment	Income
Direct Basic	70	920
Indirect Basic	—	—
"Other" Basic	90	411
Nonbasic	<u>21</u>	<u>126</u>
TOTAL	181	1,457

Source: Social Impact Research, Inc., 1980.

4.4.2 Effects of the Project on the Study Area Economy, 1967-1978

The Surry project produced change through the on-site employment of workers, payments of taxes to Surry County, and the nonbasic employment and income resulting from expenditures of effective basic income. These effects have been estimated for the

¹RIMS multipliers for Surry County estimates that each \$1,000 of effective basic income will produce 0.0171 nonbasic jobs and \$1.03 in nonbasic income.

year of peak construction, 1970, and the most recent year of full scale operation, 1977. Additional employment at the site resulted from work on two projects in 1975 and early 1976 (assistance on the North Anna project and work on the proposed Surry Units 3 and 4). Between 1978 and 1980, a major construction effort was required to complete work on the refit of the steam generator systems for Surry Unit 2. In the fall of 1980, similar work was started on the Surry Unit 1 steam generators with completion scheduled for 1981.

Table 4-13 outlines an estimate of the annual employment effects of the project for Surry County. These figures are intended to present a sense of the magnitude and duration of the Surry Power Station project's effect on the county economy. When site preparation for the plant began in 1967, the 72 workers at the site accounted for only 4.3 percent of the 1,663 employees in the county. By 1969, however, the Surry project had become a significant employer in the county, employing over 45 percent of the 2,956 workers in the county. In 1970, the year of peak construction, 52 percent of the employees in the county were working on the nuclear plant. This rate declined gradually over the next two years, then dropped sharply to 12.7 percent in 1973, by which time both units were on line. The contribution of the Surry plant to county employment has been slightly higher since then, fluctuating between 15 percent and 24 percent. In 1977, the year of operation focused on in this study, employment at the Surry plant was still significant in the county with 20.1 percent. The significance of employment at the Surry project for the county from 1967-1978 is illustrated in Figure 4-2.

4.4.3 Effects of the Project on the Residents of Surry County

The Surry project has had a significant effect on the employment of county residents since 1969 as shown in Table 4-14. Although the actual percentage of employed Surry County residents working in project-related jobs is difficult to determine prior to 1973,¹ it appears that by 1969, about 7 percent of the county's residents were working in project-related jobs. (About 6 percent were working on the project itself.) By 1970, 10 percent of the county residents were working in project-related jobs and about 80 percent of them were working on the project itself. In 1973, once Units 1 and 2 were both on line, the percentage of residents in project-related jobs fell sharply to 3 percent,

¹The Virginia Employment Commission did not collect employment data on a place-of-residence basis until 1973.

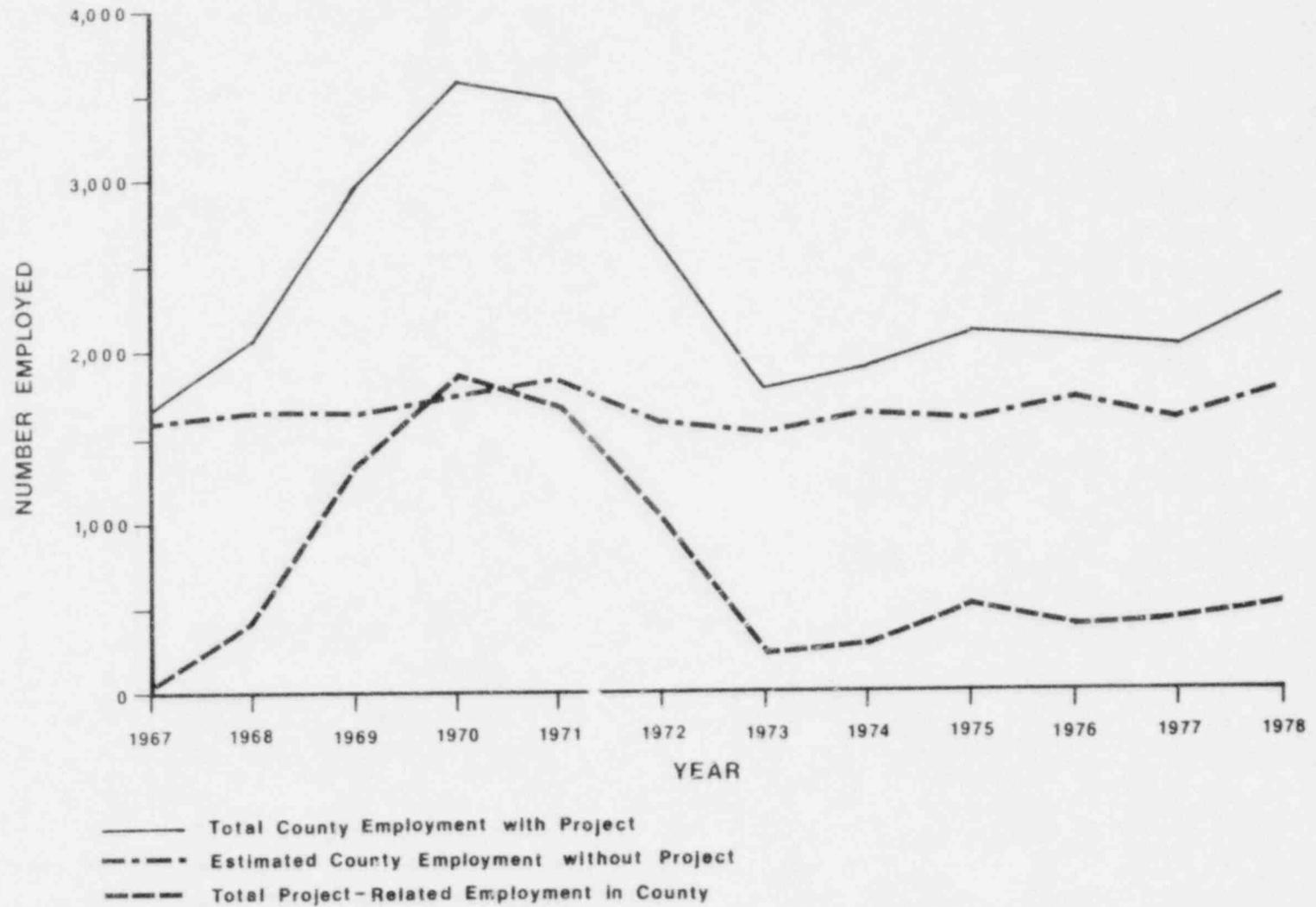


FIGURE 4-2. Project-Related Employment by Place of Work in Surry County, 1967-1978.

reflecting the out-migration of construction workers from the Study Area. By 1975, the percentage of Surry residents employed as a result of the project rose to about 8 percent. This rise was brought about by: (1) increased numbers of direct basic employees, (2) increased "other" basic employment because of the property taxes paid by the utility to the county, and (3) change in the control of the public administration of the county that went into effect in 1972 (see Chapter 7). This percentage of county residents in project-related jobs remained constant until 1979, when work on the refitting of Unit 2 began.

TABLE 4-13

ESTIMATED ANNUAL EMPLOYMENT EFFECTS
 SURRY COUNTY
 1967-1980

Year	Employment (by Place of Work)
1967	72
1968	422
1969	1,333
1970	1,850
1971	1,659
1972	1,015
1973	222
1974	287
1975	501
1976	376
1977	414
1978	535
1979	1,755
1980	1,402

Source: Social Impact Research, Inc., 1980

Although the construction work force required for refitting the Unit 2 steam generators in 1979 was smaller than it was for the peak year (1970) for the original construction, a somewhat larger proportion of on-site workers are estimated to have lived in the county due to local hiring for operations employment and movers with families.

TABLE 4-14

ESTIMATED ANNUAL EMPLOYMENT AND INCOME EFFECTS ON THE RESIDENTS OF
 SURRY COUNTY
 1967-1980
 (Thousands of Constant 1972 Dollars)

	Direct Basic		"Other" Basic		NonBasic		Total	
	Employment	Income	Employment	Income	Employment	Income	Employment	Income
1967	7	109	--	--	1	9	8	\$118
1968	40	627	--	--	8	49	48	676
1969	126	1,976	--	--	26	155	152	2,131
1970	175	2,745	--	--	36	215	211	2,960
1971	157	2,463	--	--	33	198	190	2,661
1972	96	1,506	--	--	21	125	117	1,631
1973	38	499	20	91	8	50	66	640
1974	49	644	40	183	12	72	101	899
1975	71	978	65	297	19	114	155	1,389
1976	62	819	80	365	18	109	160	1,293
1977	70	920	90	411	21	126	181	1,457
1978	78	1,276	92	420	27	161	197	1,857
1979	204	2,889	93	425	52	314	349	3,628
1980	176	2,511	94	429	41	278	311	3,218

Source: Social Impact Research, Inc., 1980.

The effects of the Surry Power Station project upon the county's employment and unemployment figures are shown in Table 4-5. These data show that unemployment for the county dropped from 3.7 percent in 1966 to 1.5 percent in 1970, the peak construction year. As the construction was completed in 1972-1973, the unemployment rate increased abruptly to 6.3 percent in 1973. As the work force dropped and the number of unemployed increased, the rate rose to more than 11 percent for 1975 to 1977.

The labor force participation rates remained about the same for males in 1960 and 1970 (Table 4-6). The increase for females, however, was dramatic, rising from 21 percent in 1960 to 35.3 percent in 1970, an increase of 68 percent. The increase for Virginia was about 25 percent and for the United States it was less than 15 percent. The increase in employment by women is due to the clerical jobs at the Surry project, increased nonbasic jobs in the service and trade sectors, and the increased willingness of women to commute outside the county to work.

Average annual income per worker by place of work is shown in Table 4-4, for 1967 to 1978. These data show a rapid increase in per worker income as the Surry project employment increased. For the years 1970 to 1972, the average wage was more than \$10,000 compared to \$4,017 in 1967, an increase of about two and one-half times. Much of this increase went to commuting workers, however, and did not affect the Surry economy or the resident labor force. In order to account for these commuters, the income per employee was calculated for 1970 with the movers and commuters for the Surry project excluded (Table 4-15). These figures show a clear pattern of increased income per employee from 1967 to 1970 and a slight decline to 1977. The increase from \$4,017 in 1967 to \$5,780 in 1970 represents a rise of 43.9 percent. In comparison, the decline from 1970 to 1977 was slight, less than 5 percent. This is probably accounted for by the fact that operating wages are lower than construction wages, although considerably higher than the county's other wage rates.

Key informants believe there were significant changes in the labor force during the construction and operations period, many of which were associated with the Surry project. Increased nonbasic employment, along with the clerical jobs at the project site, have increased the women's labor force participation. Residents now commute in greater numbers to jobs outside the county, especially to the Newport News area. Some of these commuters are former agricultural workers or other unskilled laborers who obtained work on the Surry project's construction. This experience contributed to some job mobility of local residents.

TABLE 4-15

INCOME PER EMPLOYEE
RESIDENTS OF SURRY COUNTY
1967, 1970, 1977
(Constant 1972 Dollars)

	1967	1970 ^a	1977
Total County Income, Place of Residence (\$000)	6,681	10,341	11,006
Employment, Place of Work	1,663	1,789	1,993
Income Per Employee	4,017	5,780	5,522

^aSubtracts employment and income for movers and commuters working at the Surry plant at peak construction: 1,773 workers; \$27,809,505 income.

The employment of local people during the operation phases of the plant was limited to the lower-paid positions such as clerical, maintenance, and security workers. There were no county residents who qualified for the highly-trained administrative and operating positions. The "other" basic employees who were hired by local county administrators include many more local residents, but even in these cases most of the skilled positions had to be filled by movers or commuters.

The county economy was not able to provide most of the goods and services required to build and operate the Surry Power Station. In addition, the condition of the schools, housing, and retail shopping were major deterrents to the relocation of movers in the county. As a consequence, the nonbasic response in terms of employment and income was minimized. Altogether, the socioeconomic effects of direct basic and nonbasic employment and income were important to the county but very limited. The greater impacts appear to have come from the tax revenues and the "other" basic employment. This is discussed in more detail in Chapters 7 and 8, which deal with local government, public services, and social structure.

CHAPTER 5: POPULATION

5.1 Introduction

The purpose of Chapter 5 is to describe the effects of the Surry Power Station on the population of Surry County. The historical background of the county population is described first. The demographic implications of the basic and nonbasic employment due to the project are then addressed. Two sources of project-related population increase are considered: those due to the in-migration of workers and their family members, and those due to diminished out-migration of local residents. These estimates are expressed in terms of an annual series and evaluated as a percentage of the total county population. Further demographic effects are addressed in Chapter 8 where the project impacts on groups in the Study Area are analyzed.

5.2 Demographic Trends

The population count for Surry County has been remarkably constant over time; the difference between the first federal census in 1790, when the count was 6,227, and the 1950 and 1960 figure of 6,220 (the same for both census years) was only 7 persons. Between 1885 and 1920 there was an abrupt increase in population associated with the development of the Surry Lumber Company at Dendron; the peak year was 1910 when the census reported 9,715 people in the county. The decline of the lumber business and its eventual closure in 1927 resulted in a return to the agriculturally based levels. By 1940, the county population was 6,193.

There was a slight decline in the county population during the 1960s, and the 1970 census count was 5,882, a decline of 338 for 0.6 percent annual rate of decrease. This decrease took place despite the Surry Power Station construction project which reached peak construction in 1970. There were several causes for this decline, the two most important being the trend toward out-of-county employment, which encouraged many people to move closer to their jobs, and the public schools situation. The court order to integrate the public schools took effect in the fall of 1964 and resulted in the establishment of white private schools. The white students left the public schools and attended the private schools. The added costs of private education resulted in some white families moving from the county in the following years.

During the 1970s, the annual estimates forecast a rising county population based upon modest increases in housing and generally improving economic conditions. The first

count 1980 census report (5,967 persons), however, indicated a very small net growth for the county—85 persons or about a 0.14 percent annual rate of increase.

The population figures are shown in Table 5-1 and Figure 5-1 for the period 1900 to 1980, with annual estimates for 1968 to 1980. There is considerable annual variation in the estimates which makes them somewhat suspect for population impact analyses.

TABLE 5-1
SURRY COUNTY POPULATION
1900 TO 1980

Year	Population	Average Annual Rate of Change (%)
1900	8,469	
1910	9,715	1.38
1920	9,305	-0.43
1930	7,096	-2.67
1940	6,193	-1.35
1950	6,220	0.04
1960	6,220	0.00
1968	6,000	-0.45
1969	5,900	-1.67
1970	5,882	-0.30
1971	6,300	7.11
1972	6,400	1.59
1973	5,700	-10.93
1974	5,600	-1.75
1975	6,100	8.93
1976	6,000	-1.64
1977	5,800	-3.33
1978	5,700	-1.72
1979	5,800	1.75
1980	5,967	2.88

Sources: Andriot, Population Abstract of the United States, 1980:852; 1980 population is first count report to Surry County. Intercensus years are official estimates for State of Virginia provided by the Tayloe Murphy Institute, The University of Virginia: Selected Population Characteristics of Virginia, 1970 (August 1971); Estimates of the Population of Virginia Counties and Cities, May 1979.

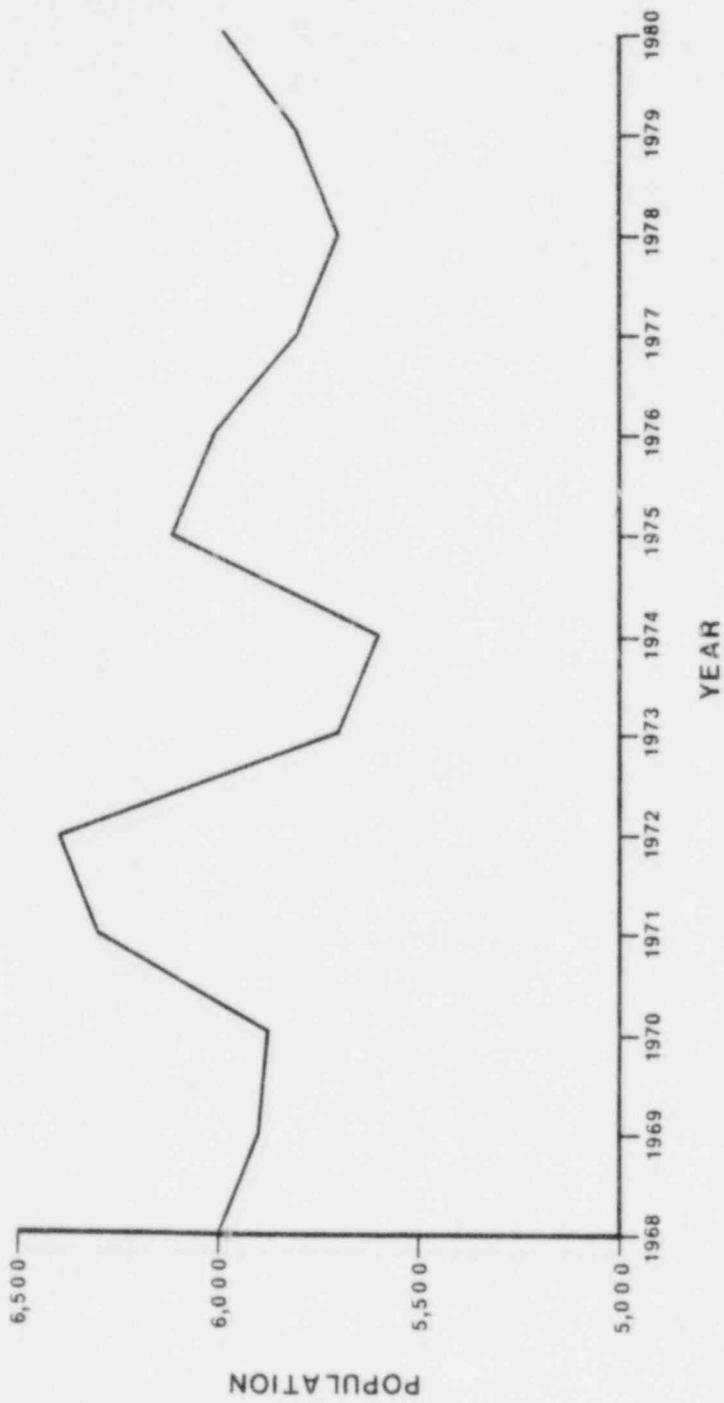


FIGURE 5 -1. Population of Surry County, 1968 - 1980.

Migration

During the period 1950 to 1960, Surry County recorded 1,631 births and 725 deaths—a net natural increase of 906. The population count for both these census years was exactly the same, however, which implies an out-migration of -906 for the decade. For the period 1960 to 1970, all population change factors decreased. The county recorded 1,160 births and 699 deaths for a net natural increase of 461. The 1970 population of 5,882 was substantially lower than it had been for 1950 and 1960. The net out-migration was 799. (U.S. Department of Commerce, Bureau of the Census, 1960; 1970).

During the period 1970 to 1977, 683 births and 476 deaths were recorded for Surry County. The Tayloe Murphy Institute's estimate of population for 1977 was 5,900, a very slight increase of 18 persons over the 1970 figure. Therefore, the institute estimated a net out-migration of 189 for the first seven years of the 1970s.

Both the rate of natural increase and the rate of net out-migration have decreased since 1950. The average annual rate of natural increase was 1.4 percent in the 1950s, declined to 0.8 percent for the 1960s, and dropped to 0.5 percent for the period 1970 to 1977. The net out-migration rate declined from 1.6 percent (1950-1960) to 1.5 percent (1960-1970) to 0.5 percent (1970-1977). (Tayloe Murphy Institute, 1977.)

Race and Age

Black slaves were first brought to Surry County in the early eighteenth century as agricultural laborers and domestic workers. By the time of the 1790 census, blacks made up 55.6 percent of the population with 10 percent classified as free negroes. The proportion of free blacks rose to 33 percent by 1860, coinciding with the inception of the Civil War. The proportion of blacks gradually increased during the nineteenth century from 55.6 percent to about 65 percent of the population, a figure that has remained fairly constant. At the time of the 1970 census, blacks made up 65.2 percent of the county population, up slightly from the 64.7 percent recorded for 1960. These proportions are more than three times higher than for Virginia as a whole which recorded a black population of 20.6 percent in 1960 and 18.6 percent in 1970. (U.S. Department of Commerce, Bureau of the Census, 1960; 1970).

The age distribution for Surry County is similar to other rural counties that have experienced declining local employment. Table 5-2 shows the Surry County and Virginia

figures for 1960 and 1970. The birth rate has been somewhat higher than the state average which has resulted in a slightly greater proportion of residents under 17 years of age. The 18-44 age group percentages show the effects of out-migration for employment opportunities and is proportionately smaller than the state figures. The 45-64 age group is about the same for both the county and the state, while Surry has had a greater proportion of elderly residents. In 1960, the median age in Surry County was 24.1 years; for Virginia the figure was 27.1 years. For 1970, the figures were 26.3 years for the county and 28.8 for the state.

The average household size in Surry County was 4.30 persons in 1960 and had declined to 3.71 in 1970. The 1970 household sizes were substantially larger for black families than for white, 4.58 for the former and 2.72 for the latter. (U.S. Department of Commerce, Bureau of the Census, 1960; 1970.) The 1980 census, first count, reports an average household size of 3.09 persons for Surry County. The decline in household size for the two-decade period, 1960-1980, was more than 25 percent.

TABLE 5-2

**SURRY COUNTY AGE DISTRIBUTION:
PERCENT OF TOTAL POPULATION
1960 AND 1970**

Age	Surry County		Virginia	
	Percent of Total Population 1960	Percent of Total Population 1970	Percent of Total Population 1960	Percent of Total Population 1970
0-4	13.1	10.0	11.6	8.4
5-17	29.6	29.0	25.4	25.8
18-20	4.0	4.7	4.7	5.8
21-44	25.0	24.7	32.9	32.5
45-64	18.5	21.0	18.2	19.6
65+	10.0	10.8	7.1	7.9

Source: U.S. Department of Commerce, Bureau of the Census, 1960; 1970.

5.3 Changes in the Population during the Study Period

The study period began in 1966, the year the project was announced, and continued into 1980. Commercial operation of Unit 1 began on 22 December 1972 and Unit 2 came on line less than six months later, 1 May 1973. Construction commenced with site

preparation in 1967 and concluded in 1972. The peak on-site construction work force period was in November 1970.

The Tayloe Murphy Institute (University of Virginia) made annual population estimates for the State of Virginia and for the counties and cities. The figures for Surry County are shown in Table 5-1. The variations in these annual estimates are due to two factors: changes in the population and changes in the methods for estimating the population. It appears that the population estimates have been substantially affected by the use of revised methods during this period (1967-1980), and these data should not be used as accurate estimates of annual population change in the Study Area. The first count from the 1980 census makes it possible to do a preliminary evaluation of overall change during the 1970s, but these figures do not provide much assistance for annual population assessment. We can determine, however, that there was no dramatic population increase in 1970, the year of peak construction, nor was there any abrupt change in 1980 with one unit operating and the other unit undergoing steam generator replacement.

5.4 Population Effects due to the Project

5.4.1 Introduction

The population effects directly attributable to the construction and operation of the Surry Power Station have been considered in two categories: in-migration and diminished out-migration.¹ Employment due to the Surry Power Station was assumed to be the driving variable for population increase in both these categories.²

In Chapter 4, the number of plant-related workers in Surry County was estimated for both basic and nonbasic employment. These estimates included both in-migrants and local residents who obtained employment because of the Surry Power Station project. The following section presents estimates of the two categories of population effects due to construction and operation of the Surry project.

¹Although it is possible that a project could cause out-migration or prevent in-migration, neither case appears to apply to Surry.

²The possibility that unemployed people seeking work could contribute to population increase was considered but no evidence for such a change was found.

5.4.2 Population Effects in 1970

Population Change due to In-Migration

The effects of the Surry Power Station project employment on the county population due to in-migration of workers and their households was quite small. At peak construction in 1970, the project created 1,850 basic jobs and 36 nonbasic jobs in the county. The total employment effect for Surry County was about 207 jobs, of which in-migrants filled about 80 positions (Table 4-9). Approximately 70 of these in-migrants were movers unaccompanied by family (and singles), while 10 were movers accompanied by families. There is no evidence of in-migration to fill the nonbasic jobs which resulted from the project-induced employment and income.

An average household size for Virginia in 1970 was 3.2 persons, and this figure has been used to estimate the population effects of movers with accompanying families. (U.S. Department of Commerce, Bureau of the Census, 1970 Census of Housing, 1971.) In-migration to Surry County in 1970 due to the project included 10 workers with families, for a total of 32 persons (at a household size of 3.2) and 70 workers unaccompanied by families or single. The total in-migration due to the plant in 1970 was about 102 persons.

Population Change due to Diminished Out-Migration

Surry County has had a long history of out-migration due to a lack of employment opportunities. This section examines the possibility that employment of local residents at the project diminished the trend of out-migration and increased the county population more than it would have been otherwise. The maximum population effect from diminished out-migration would have occurred if all the local residents who were employed in plant-related jobs would have moved from the county if not employed. The minimum effect would have occurred if the locally-hired workers would have remained unemployed in the county without the project-related jobs, in which case no population increase due to diminished out-migration would have taken place.

The effect of diminished out-migration was estimated by examination of out-migration trends, employment and out-commuting trends, and interviews with key informants, including county residents who were construction workers at the Surry Power Station site. The gradual decline in the rate of out-migration since 1950 has been due to a diminishing birth rate and increased commuting to neighboring areas for work. The temporary nature of the available construction-period work was such that few who

commuted out of the Study Area were attracted to the site despite a pay scale that was often higher than their existing wages. Most of the local residents hired during the construction period were people working at lower paid jobs locally, new members of the county work force such as recent high school graduates, and household members who were otherwise underemployed or unemployed. In this latter category, some clerical jobs went to local women, and other jobs went to family members of local farmers or craftsmen who otherwise would have worked locally at a reduced rate of pay and for shorter periods of time.

Overall, key informants estimate that about 75 percent of the nonmovers hired for basic or nonbasic employment would have remained in the county regardless of their project-related work, and 25 percent would have out-migrated. These out-migrants were reported to be mostly younger and unmarried, and some left the county when their construction employment ended. Very few of this group were thought to represent households, perhaps only a quarter of the 25 percent of likely out-migrants. Therefore, the diminished out-migration has been estimated at 25 percent of the nonmovers employment in both the basic and nonbasic jobs. In addition, of this number, about one-fourth were assumed to have had households of the average size for Surry County in 1970, 3.71 persons. The number of basic nonmovers was estimated to have been 95 (Table 4-9) and the nonbasic workers totaled 32 nonmovers in 1970, for a total of 127. The addition to the population due to diminished out-migration at peak construction was about 32 workers and 22 household dependents for a total of 54 persons.

Total Population Effects in 1970

The total population effects of the Surry Power Station project on the county population is shown in Table 5-3. At peak construction, the total increase in the county population was about 156 persons more than it would have been otherwise. This was almost 2.7 percent of the county population in 1970.

5.4.3 Population Effects in 1977

Population Changes due to In-Migration

In 1977, as in 1970, the project increased the county population due to employment in project-related jobs. In Chapter 4 (Table 4-12) the employment of direct basic workers residing in Surry County was estimated at 70, "other" basic was 90, and nonbasic was 21; for a total of 181 employees in 1977. As shown in Table 4-10, there were 32 movers accompanied by families and 22 movers unaccompanied by families (and

singles). The population increase due to in-migration, using the Virginia average family size for 1977 of 3.0 persons, was 118 persons.

TABLE 5-3
POPULATION EFFECTS DUE TO SURRY POWER STATION PROJECT
SURRY COUNTY
1970

	Workers		In-Migration	Population Increase	
	Direct Basic	Nonbasic		Diminished Out-Migration	Total
Nonmovers	95	32	—	54	54
Movers					
Accompanied by family	10	—	32	—	32
Unaccompanied by family (and singles)	70	—	70	—	70
TOTAL	<u>175</u>	<u>32</u>	<u>102</u>	<u>54</u>	<u>156</u>

Source: Social Impact Research, Inc., 1980.

Population Change due to Diminished Out-Migration

Diminished out-migration, as defined previously for 1970, could apply in those cases where workers and their households stayed in the county due to employment in project-related jobs when they would have out-migrated without such employment. This category applies to the 127 nonmovers identified in 1977. The total number of nonmovers includes 48 direct basic, 58 "other" basic, and all 21 nonbasic (Table 4-10). The assumptions made in determining the 1970 diminished out-migration were also applied to 1977; about 25 percent of the nonmover workers were thought to reside in the county because of their employment and one-fourth of these workers represented households of 3.7 persons, the average size for Surry County in 1980. (U.S. Department of Commerce, Bureau of the Census, first count, 1980). Altogether then, the county population increase due to diminished out-migration in 1977 was approximately 49 persons.

Total Population Effects in 1977

The total population increase due to the project in 1977 was estimated to have been about 167 persons or 2.9 percent of the total county population. These figures are shown in Table 5-4.

TABLE 5-4

**POPULATION EFFECTS DUE TO SURRY POWER STATION PROJECT
SURRY COUNTY
1977**

	Workers			Population Increase		
	Direct Basic	"Other" Basic	Non- basic	In-Mi- gration	Diminished Out-Migra- tion	Total
Nonmovers	48	58	21	—	49	49
Movers						
Accompanied by family	12	20	—	96	—	96
Unaccompanied by family (and singles)	<u>10</u>	<u>12</u>	<u>—</u>	<u>22</u>	<u>—</u>	<u>22</u>
TOTAL	70	90	21	118	49	167

Source: Social Impact Research, Inc., 1980.

5.4.4 Summary

An annual series of project-related population effects has been prepared based upon the estimates for 1970 and 1977. This series applies the same assumptions about immigration and diminished out-migration as were used for the two targeted years. The results are shown in Table 5-5. The greatest effects were in 1979 and 1980 when population increases were the result of Surry Power Station operations, refit construction, "other" basic employment due to tax revenues from the plant, and nonbasic employment. These effects are expected to be reduced in late 1981 when the refit of the second steam generator system (unit 1) will be completed.

TABLE 5-5

POPULATION INCREASE DUE TO SURRY POWER STATION PROJECT
 SURRY COUNTY
 1967 TO 1980

	Workers			Population Increase				County Population ^a
	Direct Basic	"Other" Basic	Nonbasic	In-Migration	Diminished Out-Migration	Total	Percent of County	
1967	7	--	1	4	2	6	--	
1968	40	--	8	23	12	35	0.6	6,000
1969	126	--	26	73	39	112	1.9	5,900
1970	175	--	36	102	54	156	2.7	5,882
1971	157	--	32	92	48	140	2.2	6,300
1972	96	--	20	56	30	86	1.3	6,400
1973	38	20	8	43	19	62	1.1	5,700
1974	49	40	12	66	28	94	1.7	5,600
1975	71	65	18	100	42	142	2.3	6,100
1976	62	80	19	105	44	149	2.5	6,000
1977	70	90	21	118	49	167	2.9	5,800
1978	78	92	22	125	51	176	3.1	5,700
1979	204	93	39	219	91	310	5.3	5,800
1980	176	94	35	199	82	281	4.7	5,967

^aCounty populations are shown for each year in Table 5-1.

Source: Social Impact Research, Inc., 1980.

Overall, the population effects for most of the study period appear to have been quite small although they have been important to an area that has experienced a declining trend since the 1960s.

CHAPTER 6: SETTLEMENT PATTERNS AND HOUSING

6.1 Introduction

The purpose of Chapter 6 is to identify the effects of the Surry Power Station project on settlement patterns and housing in Surry County. In this chapter, the historical trends are examined with particular attention to the changes that took place during the study period, 1967-1980. Based upon the analyses made in the preceding chapters, estimates are made of the Surry project effects on new construction, upgrading of existing houses, and increased use of mobile homes. The effects on costs and availability of housing units, based upon key informant interviews and local housing research, are used to describe the project-related effects. The chapter concludes with a summary of project-related effects on the settlement patterns and housing in Surry County.

6.2 Settlement Patterns

6.2.1 Factors Influencing Settlement Patterns of the Study Area

The settlement patterns in Surry County have been determined by a number of factors: the location and nature of natural resources, transportation routes and facilities, and the historical social and economic trends. The county has about 20 miles of waterfront along the southern shore of the James River and contains about 280 square miles. Historically, the river provided the major transportation routes for travel to and from the county, and the ferry service from Scotland to a dock near Jamestown still provides an important link in the system. Sometime after the Civil War, there were two railroads built in Surry County. In the mid-1880s, the Atlantic and Danville Railway built a narrow-gauge line from Greenville County through Sussex and Surry Counties to Claremont. The Surry, Sussex, and Southampton Narrow Gauge Lumber Railroad was built somewhat later and ran from Scotland through Dendron and Wakefield. Both railroad lines stopped operations some years ago. The Surry, Sussex, and Southampton line continued operation after the Atlantic and Danville ceased service, but discontinued its services in the 1930s. Presently, rail service for the county is available in nearby Sussex County on the Norfolk and Western Railroad which has track at Wakefield and Waverly. (Patteson, et al, 1958: 16-18).

The road system in Surry County was designed to provide adequate service to a dispersed population and business establishments. There are three primary roads, Routes 10, 31 and 40, all two lane rights-of-way. The secondary road network serves the principal economic function of providing for the transportation of agricultural products

from farms to market. The Virginia Department of Highways and Transportation is responsible for building and maintaining the road system. The highway patterns have changed over the long history of the county as the agricultural, lumbering, and commercial sectors of the economy have developed.

The early plantation development of the county is still visible; the Chippokes Plantation State Park is the most obvious example. This 1400 acre property has retained its original boundaries since its establishment in the early seventeenth century. Numerous other plantation properties were developed during the same period (1616 to 1666), and many are still represented by residences such as Claremont Manor, Eastover, Four Mile Tree, Swann's Point, and Pleasant Point (Kornwolf, 1976: 181 ff). The administrative and economic structures of the plantations affected the growth of the county because they were designed for self-sufficiency and therefore minimized the growth of commercial or governmental centers. The towns in Surry County have always been small; their only growth period occurred with the exploitation of timber resources in the late nineteenth and early twentieth centuries.

6.2.2 Population Distribution

Claremont reached a population of nearly 1,000 by 1900; Dendron in 1906 had 1,513 residents (Kornwolf, 1976:3). The boom in lumbering and development subsided quickly, however, and, with the closure of the Surry Lumber Company at Dendron, the county returned to primarily an agricultural orientation. There has been some redistribution of population within the county as shown by the census data which was recorded for Magisterial Districts in 1960, 1970, and 1980, (see Table 6-1). Surry and Dendron Town populations have declined slightly and the Blackwater District has continued its trend of declining population. Cobham, which includes the areas surrounding the Surry Power Station site, has increased in population. Guilford and Claremont Town populations are about the same now as they were 20 years ago. These shifts are fairly small, however, and primarily have been the result of decreased agricultural labor, increased farm sizes, and the relocation of new homes by workers who commute out of the county to their jobs.

In the past twenty years, agricultural land use trends have been towards fewer operators, larger average farm size, and a decreasing proportion of county land devoted to farming. Table 6-2 shows data on these dimensions of land use for the period 1959 to 1974.

TABLE 6-1

**POPULATION BY MINOR CIVIL DIVISIONS
SURRY COUNTY
1960, 1970, 1980**

	1960	1970	1980
Blackwater District	1,802	1,440	1,165
Dendron Town	403	336	307
Cobham District	2,567	2,704	2,953
Surry Town	288	269	239
Guilford District	1,851	1,738	1,849
Claremont Town	377	383	378

Sources: U.S. Department of Commerce, Bureau of the Census, 1960; 1970; 1980.

TABLE 6-2

**SFLECTED FARM CHARACTERISTICS
SURRY COUNTY
1959-1974**

	1959	1969	1974
Number of Farms	538	347	241
Total Acres of Farmland	78,554	71,826	58,991
Percent of County Land	43.8	40.5	33.3
Average Size of Farm (acres)	146.0	207.0	245.0

Source: U.S. Department of Commerce, Bureau of the Census, Census of Agriculture, 1964; 1974.

The greatest proportion of county lands are categorized as "commercial forest and vacant land," with almost all the properties privately owned (Surry County Planning Department, 1974:20). There are fewer than 1,000 acres of public lands in this category. A few companies own large tracts of forest lands: Gray Lumber Company is a regional corporation with facilities in neighboring Sussex County. Other corporate owners include the Chesapeake Corporation, Continental Can Company, and Georgia Pacific. Some of these lands were purchased a number of years ago from the Surry Lumber Company which at its peak owned over 60,000 acres in Surry and the adjoining

counties (Kornwolf, 1976:4). The Surry County Planning Department placed the acreage in this category at 101,367 in 1970. This was 56.6 percent of the county total. According to the estimate of county officials, the assumption is that "companies will retain their holdings in commercial forest and not convert the land to development." (Surry County Planning Department, 1974:18).

Overall, the combined farm and forest uses of land in the county has remained fairly constant at around 171,000 acres, 95 percent of the total. There has been a shift from farm to forest use, but this is a trend that could be easily reversed if the demand for farm lands required it.

The commercial development in the county has been very limited historically and concentrated in the three incorporated towns. At present, Surry Town has the most developed business and professional facilities, probably because of its role as the center for county government and its central geographical location. Residential development historically has been dispersed due to the plantation system, and later the farming development of the county economy. There has been only one case of an industrial development that resulted in population concentration: the Surry Lumber Company operation at Dendron which was discontinued more than 50 years ago. Residential building has, therefore, been widely scattered throughout the county, and commercial facilities are quite limited.

6.3 Housing

6.3.1 Housing Prior to Construction of the Surry Power Station

The agricultural basis for much of the historical employment in the county has had a major influence on housing location and conditions. Although there are a number of impressive plantation and historical houses in the county, the majority of the housing units are considerably more modest. Adequate housing for both long-term residents and newcomers has been considered a county-wide problem for a number of years.

The county's housing stock is almost entirely single-unit houses; there are no apartment developments. Table 6-3 shows the basic data on housing from the 1960 and 1970 census reports. There was an increase of 107 housing units in the county between 1960 and 1970, a period when the population declined by 338 persons. The average annual rate of increase in housing units was 0.5 percent for the decade. In 1960, only 1,168 (60.4 percent) of the units were classified as "sound"; 436 were "deteriorating" (22.5 percent); and 330 (17.1 percent) were "dilapidated." Of the 14 units for sale, only five had all

plumbing facilities. Similarly, of the 29 rental unit vacancies, only 10 had all plumbing facilities.

Comparison between the 1960 and 1970 census years is difficult because substandard housing determinations were not based on the same criteria. The category "units lacking one or more plumbing facilities" is the best comparison possible. In 1960, 1,161 (60 percent) of year round units were classified as "lacking some or all plumbing." By 1970, this had declined to 776 (40.7 percent) of the 1,906 year round units. In 1970, for the owner-occupied units, 481 out of 1,074 were without all plumbing facilities (44.8 percent); for rental units, 295 out of 504 were without all plumbing facilities (58.5 percent).

Blacks comprised about 65 percent of the county population and occupied 69 percent of the substandard housing in 1970. There were 295 rental units identified as substandard, 88 percent occupied by blacks. Owner-occupied units identified as substandard numbered 481, with blacks owning 58 percent of these units. (Surry County Planning Department, 1978:22-23).

TABLE 6-3

SELECTED HOUSING CHARACTERISTICS
SURRY COUNTY
1960 and 1970

	1960	1970
Population	6,220	5,882
White	2,196	2,029
Black	4,023	3,853
Number of housing units	1,934	2,041
Occupied units	1,552	1,578
Owner occupied	940	1,074
White	523	541
Black	417	533
Renter occupied	612	504
White	203	201
Black	409	303
For sale	14	9
For rent	29	66
Trailers	12	122

Source: U.S. Department of Commerce, Bureau of the Census, 1960; 1970

The data on housing for the period 1970 to the present were obtained from several sources. The Surry County Planning Department produced a "Housing Assistance Plan" (1978) that included results of a housing survey conducted in 1976. The department also included a chapter on housing in the 1980 Comprehensive Plan for the county. Additional data from other reports and public records have also been used to describe the recent changes in county housing conditions.

6.3.2 Changes in the Housing Stock during the Study Period

Data on new housing units are available for the period 1970 to 1979 as shown in Table 6-4. The data on mobile home housing is incomplete but since 1960 it has been the most attractive type of new housing. The number of mobile homes increased from 12 in 1960 to 122 in 1970 (U.S. Department of Commerce, Bureau of the Census, 1960; 1970). The Surry County Planning Department estimated that mobile homes numbered 613 units scattered throughout the county by the end of 1979. Given the available figures, this implies that 313 mobile home units were added to the county housing stock during the five year period, 1970-1974. This would be an annual average of just less than 63 units, considerably higher than the average for 1975-1979. The 1980 Comprehensive Plan for Surry County notes that the increase in mobile homes from 12 in 1960 to 613 in 1979 was "astronomical." These mobile home units accounted for more than 22 percent of all dwelling units in the county (estimated 613 of about 2,700 total units).

There were very few multi-unit structures built during the construction and operation period; construction of four units is recorded in the past five years. The county housing stock is predominantly single family dwellings, with mobile homes the most common choice for new units in the last decade. The increase in mobile home occupancy is attributed to three separate groups of users for different reasons: (1) as an alternative housing choice for regular county residents; (2) as a seasonal or vacation unit for out-of-county residents; (3) as a temporary or rental unit for Surry Power Station workers. The use of mobile homes for Surry project workers has been confined mostly to trailer parks located between the town of Surry and the power station site. Seasonal or recreational units are located mainly along the James River, and the units obtained by the regular residents are scattered throughout the county.

TABLE 6-4

NEW HOUSING UNITS AUTHORIZED
SURRY COUNTY
1970-1979

Units	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Single Family	29	65	35	26	26	27	32	25	32	35
Multi-Unit Structures	—	—	—	—	—	2	—	2	—	—
Mobile Homes ^a	—	—	—	—	—	<u>33</u>	<u>28</u>	<u>24</u>	<u>31</u>	<u>62</u>
TOTAL	29	65	35	26	26	62	64	51	63	97

^aDoes not include mobile homes for 1970-1974. Data not available; estimated by Surry County Planning Department at 323 mobile home units for period 1970-1974.

Sources: Economic Research Associates, 1979:I-9; Surry County Planning Department, 1980:74.

At the time of the survey for the county's Housing Assistance Plan (1975-1976) about 14.5 percent of the housing units were located in the towns of Claremont, Surry and Dendron. The remaining 85.5 percent were fairly evenly distributed throughout the county with a somewhat lower density in the western part. The resort areas along the James River are characterized by clusters of housing units. Otherwise, the units tend to be located along existing county roads in a series of residential strip developments, often near long-established crossroads intersections.

6.3.3 Effects of the Surry Power Station on Housing in the Study Area

The effects of the Surry project on housing have been considered for three categories: (1) effects on the size of the housing stock due to project-related demand and construction of new housing units; (2) effects of upgrading or conversion of existing structures; and (3) effects on the cost and availability of housing units.

6.3.3.1 Effects on the Size of the Housing Stock Due to Project-Related Demand

The project-related housing demand estimates are based upon the characteristics of the workers and their accompanying household members as shown in Table 5-5. These figures show total in-migration and diminished out-migration estimates on an annual basis for the period 1967 to 1980. During construction, the vast majority of the in-

migrants were workers unaccompanied by families (and singles); these people made up about 70 percent of the total number of in-migrants. The remaining 30 percent were workers accompanied by families. Diminished out-migration was estimated for the average household size in Surry County which declined from 3.71 in 1970 to 3.09 in 1980.

Table 6-5 shows the estimated annual housing demand of project personnel for the years 1967 to 1980. These estimates are compared to the additions to the housing stock for the period 1970-1979 as shown in Table 6-4. The 1980 figure for housing units is obtained from the 1980 census first count and is less than the cumulative total. This may be due to the removal of old, deteriorating, and dilapidated units from the county housing stock.

The greatest demand for housing between 1967 and 1977 was in 1970 (peak construction) when 58 units (2.8 percent of the county housing stock) was estimated to have been used by project-related households. The refit project, which began in 1978 and has continued since, resulted in a maximum housing demand in 1979 due to the additional employment added to the operations work force. The demand of 107 units in 1979 and 97 in 1980 may be somewhat overstated due to the practice of two to four construction workers occupying the same housing unit. However, the demand for housing in Surry County has been strong since the late 1960s despite the fact that the overall population has tended to remain fairly constant while a steady addition of both conventional and mobile homes has been made to the county housing stock. Some of this demand has been due to the decreasing average household size, with a small but significant proportion of the demand resulting from project-related households.

A large proportion of the new housing units were mobile homes. Less than ten units were multi-family dwellings; most new rental properties were mobile homes set up in three trailer parks. The remaining construction of conventionally built houses, partially pre-constructed, and modular houses, was completed by local workers who resided mainly in the three-county area of Isle of Wight, Sussex and Surry. In many cases, major portions of the house-building work was done by the new owners, a practice that is common in such rural areas.

TABLE 6-5

SURRY POWER STATION
 SURRY COUNTY HOUSING REQUIREMENTS OF PROJECT-RELATED POPULATION
 1967 TO 1980

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Project-Related														
Population Increase ^a	6	35	112	156	140	86	62	94	142	149	167	176	310	281
Housing Demand (Units) ^b	2	13	42	58	52	32	23	35	53	55	57	61	107	97
County Housing Stock ^c	1,966	1,974	1,997	2,041	2,133	2,261	2,359	2,448	2,537	2,599	2,663	2,714	2,777	2,684
Project-Related Units as Proportion of Total County Housing Stock	0.1	0.7	2.1	2.8	2.4	1.4	1.0	1.4	2.1	2.1	2.1	2.2	3.9	3.6

^aShown in Table 5-5.

^b1970 household size for movers with family present estimated at 3.2 (average size for Virginia); movers without family present at 2.5 due to rooming together arrangements; diminished out-migration household size at 3.7 (average for Surry County); 1977 household sizes were based upon 1980 U.S. Department of Commerce, Bureau of the Census; 3.0 for movers with family; 2.5 movers without family; 3.09 nonmovers (diminished out-migration).

^cEstimated 1967-1970; 1970-1979 new units added; 1980, U.S. Department of Commerce, Bureau of the Census, first count report, accounts for structures removed from housing stock.

Source: Social Impact Research, Inc., 1980.

6.3.3.2 Effects on the Housing Stock Through Project-Related Upgrading or Conversion

The two areas in Surry County where recreational or seasonal housing units are concentrated are Scotland and Claremont. Both areas have beach access to the James River, and both experienced some upgrading of the housing stock during this time period. The project-related effects seem to have been small in both cases, but somewhat greater at Scotland due to its easy access to the project site. Key informants stated that as many as ten seasonal units at Scotland were upgraded and used by project-related persons on either a permanent or off-season basis during the study period.

Other upgrading was the result of nonmovers making expenditures of project-related income on their housing. Although mobile home or conventional home purchases were made in a number of cases, especially by younger workers who were starting families, several cases of upgrading existing houses were reported. The housing improvement needs met by nonmovers included plumbing (including water and sewer), minor home repairs such as painting, roofing, improving windows, doors and walls, and, in some cases, major structural repairs such as foundations and room additions. Key informants were reluctant to estimate the number of houses that might have been improved, but generally felt that some level of improvements was needed and undertaken in almost every case where nonmovers remained in the same dwelling that they occupied before their employment.

6.3.3.3 Effects on the Housing Market

Surry County does not have an active real estate office; most of the sales of property are handled either between individuals through local attorneys and the county bank, or by real estate professionals from neighboring areas. In practice, almost all rentals are handled on a word-of-mouth basis with a few well-known individuals being active as landlords and knowledgeable sources of rental information.

Almost all informants cited the lack of available housing as a serious restraining factor on the county's ability to attract newcomers during the study period. At the same time, rental rates had remained relatively low for conventional houses and were comparable to the rates charged in neighboring areas for mobile homes. There was more competition for housing units during peak construction, with a noticeable increase in rental rates in the area. Due to the fact that the area had experienced a population decline for some years (a condition typical of similar rural areas), rents had been depressed and the new demand was bound to increase the rental costs. In 1970 the

median monthly contract rent was \$30.00 (thirty dollars); at the time of the 1976 Surry County Planning Department housing survey, recorded rents were between \$15.00 (fifteen dollars) and \$90.00 (ninety dollars) per month. (Surry County Planning Department, 1980:28-29). No average or median rental cost was given in the Housing Assistance Plan. There is little evidence that the project-related demand increased rental costs for existing housing. The rental costs of mobile home units, especially those that catered to weekly commuters or workers not accompanied by families, were directed at a new market. The price schedule reflected the cost of the units and the high demand. These units were not occupied by local residents, however, and do not appear to have greatly influenced other rental schedules. Competition by other communities, especially in Smithfield and Isle of Wight County, was sufficient to prevent large cost increases due to the project-related demands for housing.

Some mention might be made of the Surry House Inn, an 11-unit motel which was constructed in the late 1960s. Although the motel can be considered as a commercial addition—it is the only such facility in the county—it also provided temporary housing for short-term workers at the Surry Power Station. The rooms were often taken by temporary site workers for periods ranging from a few days to several weeks. The first customer in 1968 was an engineer working on the Surry project, and up to the present day a large proportion of the customers are associated with the operation phase of the station.

6.4 Summary

The location of the Surry Power Station at the southeast corner of the county made access to the site possible from a number of nearby communities, especially Smithfield and Isle of Wight County. A majority of workers commuted from the Tidewater urban areas. The effects of the project upon the settlement and housing patterns of Surry County were limited due to a number of factors including a finite housing stock and an absence of a housing construction industry. The employment of nonmovers for basic and non-basic jobs had some influence on the housing stock through purchase of new units and upgrading of existing dwellings. The project-related households varied in number and in proportion to the county total, reaching 58 dwellings (2.8 percent) during peak construction in 1970, and 107 units (3.8 percent) in 1979 when the refit of the Unit 2 steam generators was at peak employment. The number of housing units in the county increased from 2,041 in 1970 to 2,684 in 1980 (U.S. Department of Commerce, Bureau of the Census, 1970; 1980). The increase of 643 units included many mobile homes used for

project-related households and for other county residents. The average household size in the county declined from 3.71 in 1970 to 3.09 in 1980, accounting for much of the increase. The population of the county rose only slightly, from 5,882 in 1970 to 5,967 in 1980, an increase of only 85 persons. While the project-related population has had a measureable effect upon the county housing stock, the impacts have been modest. Most of the change has taken place for other reasons, such as increased commuting, smaller household sizes, and a changing social-political environment.

Land use changes have also been modest. The 840 acre site on which the Surry Power Station was constructed is now an industrial rather than an agricultural-forestry property. There has been some increase in the number of housing units, especially in the three trailer parks, within easy commuting distance of the site. The town of Surry now has a motel, largely supported by personnel who have business or employment connections with the project. Other commercial or industrial development has been very small, and no significant change in these aspects of land use can be attributed to project-related effects.

CHAPTER 7: LOCAL GOVERNMENT AND PUBLIC SERVICES

7.1 Introduction

The purpose of Chapter 7 is to describe the basic structural components of local government in Surry County, indicate the level of services, and describe specific areas of services over the study period. The objective is to focus on changes in public services that have resulted from the construction and operation of the Surry Power Station. These discussions highlight changes associated with significant social or political consequences rather than providing a detailed fiscal analysis of the county government.

Following a background description of the county government, a summary of the budgets for the study period will be presented. An analysis of revenues and expenditures concentrates on the increased county revenues from the project. These analyses include consideration of the effects on the assessed tax base of the county, reduced tax rates, increased expenditures, and other results.

The discussion of public services focuses on employment and service trends in four areas: education, transportation, public safety, and social services. These areas have been chosen because they are thought to be responsive to socioeconomic change in the county, they are often cited as an impacted service in the literature, and they would be indicative of other public services effects experienced in the Study Area.

7.2 Governmental Structure

At the time of the 1970 Census, Surry County was classified as rural with three incorporated towns of less than 400 residents each. Consequently, the county provided the local government services for most of the county. In addition, the role of the towns was limited within their own jurisdictions, and the areas of public service analyzed for this chapter were primarily the responsibility of the county or the state. The towns did not receive any additional revenues from the Surry project and experienced little political or population change. Each town has a council and mayor which provides both legislative and executive oversight of town services such as water, sewers, roads, sidewalks, lights, and permits.

The county is divided into five election districts which were determined following the 1970 U.S. Census, and were in effect for the 1971 election. Before that time, the county had three election districts. Each election district sends one representative to

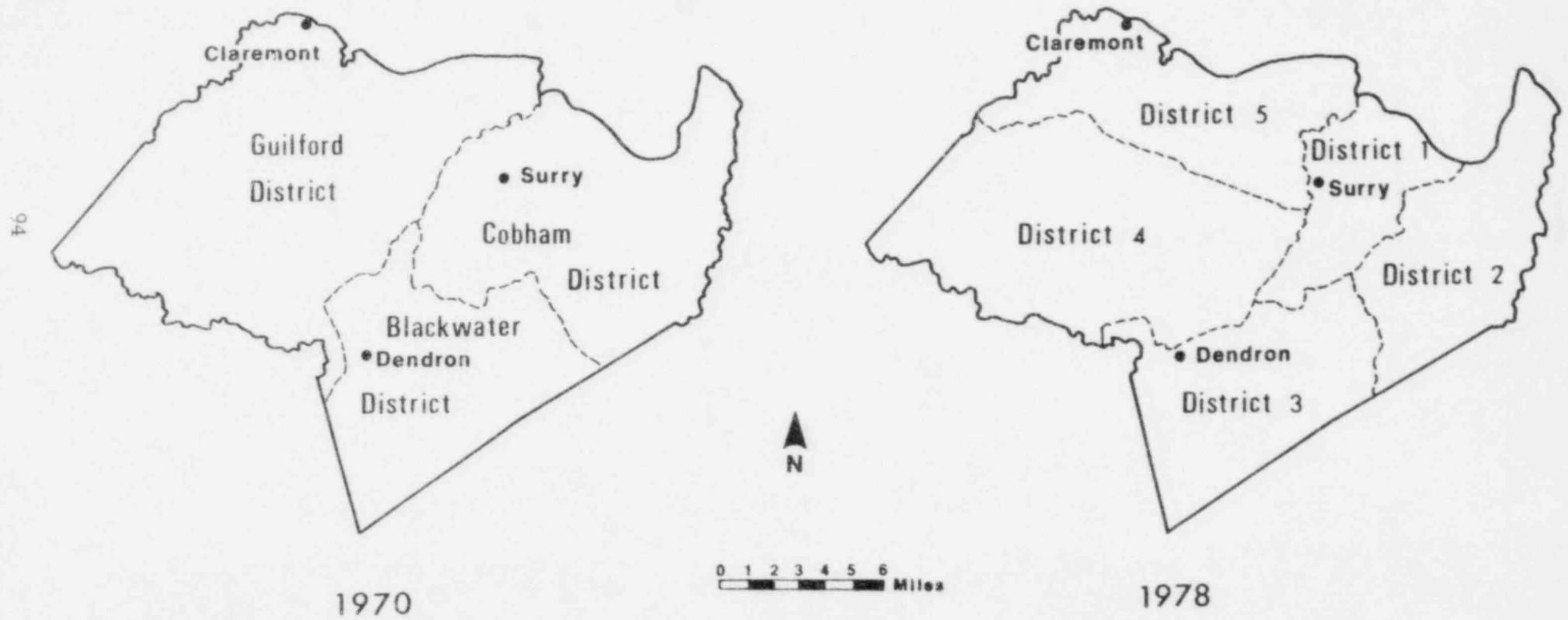
the county Board of Supervisors so that there are currently five county supervisors. The chair is selected by vote of the supervisors from among their own number. The current chair having been re-elected twice, has held office since the five-member board began service in January 1972. Aside from the functional duties involved in running meetings and certain ceremonial obligations, the chair's legal obligations are the same as other board members. The current and former election districts are shown in Figure 7-1.

During the study period, the scope and type of county services changed significantly. A number of services have been expanded and several departments have been created to provide services that formerly were not available. The county has added several administrative positions, including those of county administrator and county attorney.

New departments include the Department of Planning and Development and the Department of Parks and Recreation. Several commissions have been established to deal with development; the Planning Commission, Industrial Development Commission, Economic Development Commission, and the Industrial Authority. The position of building inspector has been created and filled. Other important services that have been expanded include education, health, social services, and solid waste.

The control and administration of county government underwent a significant change when the size of the Board of Supervisors was increased from three to five members. The three-member board has been made up of a businessman and two farmers, all white, and generally regarded as quite conservative--the main policy in county administration had been to maintain a low tax rate and provide only basic public services. The five-member Board of Supervisors, however, included three black members in addition to the two white farmers who served on the earlier commission. The election of the black majority was the result of more than a decade of effort to organize black residents to vote in local elections. It also resulted in numerous new policies for county government, especially a change in the perspective on public services. The new board was determined to provide a much higher level of public services, particularly in education, than had been the case previously. The emphasis turned toward the role of the county in community life and de-emphasized the maintenance of a minimal tax rate. These changes in county leadership and policies are shown clearly in the data on the budget, employment, and analyses of targeted service areas.

FIGURE 7-1. ELECTION DISTRICT BOUNDARIES, 1970 AND 1978



7.3 The County Budget During the Study Period (1967-1979)

7.3.1 The County Budget

The data available on the county budget for 1967 to 1979 are summarized in Table 7-1. The county records are incomplete in many respects, with the deficiencies of the earlier years being the most obvious. This is due to limitations in both the records systems and the availability of personnel.

The 1979 budget is 304.1 percent greater than the 1967 budget, in constant 1972 dollars. The changes in annual budgets were modest between 1967 and 1969, but began to increase with the 1970 budget. Between 1967 and 1975, the average annual rate of increase was 18.5 percent in constant 1972 dollars; since 1975 the budget has decreased at an average annual rate of 6 percent (in constant 1972 dollars). For the entire period (1967 to 1979) the average annual rate of change was 9.7 percent. The greatest increase was in 1975 when the county budget was almost four times as high as in 1967 (in constant 1972 dollars). These changes can be expressed in terms of the two controlling economic variables, revenues and expenditures. The revenue effects are outlined first.

7.3.2 Revenues

During the study period, the major source of revenue for the county has been the property tax. The methods for assessing the value of land improvements, personal property, public utilities, and corporations have changed over the study period under the direction of the state. Generally, assessment has been directed by the state with the tax rate being set by the Board of Supervisors. (An exception is that the County Commissioner of Revenues assesses certain classes of personal property.) Table 7-2 shows the assessed values and tax rates for the fiscal years 1968 to 1978.

The value of the Surry Power Station is set by the State Corporation Commission of Virginia and reported to the counties. The Corporation Commission also makes a determination of the current ratio of assessed property evaluation to full market value. For example, the Corporation Commission may determine that property in the county is assessed at 87 percent of its true market value. The county tax rate on real property must be the same for all classes—residential, commercial, industrial, and so forth. Therefore, the county rate, in the above example, would apply to 87 percent of the Corporation Commission evaluation of utility properties in the jurisdiction. Another difference is that, according to state law, industrial property is depreciated for purposes of evaluation while other types of property tend to appreciate substantially.

TABLE 7-1

SURRY COUNTY BUDGET
FISCAL YEARS 1967-1979
(Thousands of Dollars)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
General Administration					6.4	14.1	32.6	60.3	66.4	110.3	76.6	78.4	90.1
Public Safety					22.7	70.6	33.8	41.1	41.2	87.3	125.7	126.3	135.5
Public Works					0.9	1.2	2.1	21.3	26.1	85.0	113.1	131.1	119.3
Health					6.4	7.5	8.4	9.9	17.4	16.3	66.1	41.7	38.9
Social Services					115.3	129.8	144.0	238.9	374.8	395.0	443.4	265.9	280.9
Education	538.7	595.7	599.1	648.5	840.5	979.4	1,272.9	2,752.7	3,511.7	3,153.2	2,920.7	3,037.4	2,992.7
Parks and Recreation					—	—	—	—	—	7.7	14.3	11.7	17.3
Capital Outlays					25.2	12.2	84.7	25.0	110.0	56.8	171.3	121.4	337.9
Other ^a	180.4	202.9	204.7	371.2	88.7	108.0	137.8	150.7	206.9	210.5	274.9	442.8	424.9
Total Expenditures	719.1	798.6	803.8	1,019.7	1,106.1	1,322.8	1,716.3	3,299.9	4,354.5	4,122.1	4,206.1	4,256.7	4,437.5
Constant 1972 Dollars	884.5	944.0	908.2	1,102.4	1,145.0	1,322.8	1,626.8	2,822.8	3,442.3	3,094.7	2,989.4	2,832.1	2,689.4
Annual Rate of Change (in Constant 1972 Dollars)		6.7%	-3.8%	21.4%	3.9%	15.5%	23.0%	73.5%	21.9%	-10.1%	-3.4%	-5.3%	-5.0%

^a1967 to 1970, all county expenses except education.

Sources: 1967 to 1970, Surry County Board of Supervisor's Minutes; 1971 to 1979, Auditor of Public Accounts, Report of the Auditor of Public Accounts of Commonwealth of Virginia on Comparative Costs of County Governments (Annual), 1971 to 1979.

TABLE 7-2

SURRY COUNTY TAX BASE, RATE, AND REVENUES
1967 TO 1978
(Thousands of Current Dollars)

Fiscal Year	Assessed Value ^a			Taxes Paid					
	Property Tax Rate per \$100 ^a	Surry County Land and Improvements	Surry Power Station, 1 & 2 (Land and Improvements)	County Property Taxes	Surry 1 and 2	Total County Revenue	Percent Local Revenue	Percent State Revenue	Percent Federal Revenue
1967	2.30	5,587	159	128	4	719	N/A	N/A	N/A
1968	2.30	6,193	646	142	15	799	N/A	N/A	N/A
1969	2.30	6,259	1,988	144	46	804	N/A	N/A	N/A
1970	2.30	6,309	8,618	145	198	1,120	N/A	N/A	N/A
1971	2.00	6,354	20,489	127	410	1,106	45	42	13
1972	2.00	6,641	28,034	133	561	1,323	49	33	18
1973	2.00	6,763	42,059	135	841	1,716	51	30	19
1974	2.40	9,264	47,070	222	1,130	3,300	58	30	12
1975	2.40	9,199	40,662	221	976	4,355	60	27	13
1976	3.00	9,158	38,375	275	1,151	4,122	53	32	15
1977	3.35	9,250	30,502	310	1,022	4,206	53	29	18
1978	.42	134,290	353,256	564	1,486	4,257	52	24	24

^aLand and Improvements were assessed at 12 percent of full market value, 1967-1977; assessment was at 100 percent of market value for 1978 (equivalent tax rate \$3.50).

Sources: State Corporation Commission of Virginia, 1967-1978; Auditor of Public Accounts, 1971 to 1978; Surry County Commissioner of Revenue, personal communications, 1979 and 1980; VEPCO, personal communications, 1979 and 1980.

Consequently, the assessed evaluation and the amount of taxes paid by industrial properties tend to decrease over time while other properties increase in assessed evaluation and tax liabilities.

The increases in assessed value have been due to several factors including increased property values in the county. The most significant increases resulted from the construction of the Surry Power Station which added both real and personal properties to the county tax roles. Table 7-2 shows the abrupt increases in real property taxes paid by VEPCO on behalf of the Surry Power Station during the study period. In 1967, these payments were only 0.5 percent of the total county revenues. By 1974, this had increased to 34.2 percent, and for 1978 it was 34.9 percent. This proportion will increase again as the added value of the refit project is realized. In addition, the utility pays personal property taxes on the nuclear fuel and other property. In 1978, these taxes were \$239,973.

The reduction in the tax rate for 1971 to 1973 was due to the policies of the earlier three-member Board of Supervisors and the addition of the Surry Nuclear Power Station to the tax base. The policies of the five-member board, which took office in 1972, were quite different from those of the three-member board, and the change is shown by the dramatic increase in the county budget between 1973 and 1974, requiring an increase in the tax rate.

State and federal revenues are an important part of the Surry County budget, ranging from 45 percent to 60 percent of the total. The federal share has varied from year to year depending upon the programs in effect and the local level of revenues. The state share shows a steady downward trend from 42 percent in 1971 to 24 percent in 1978. The local share has been affected by the Surry project, local re-assessment, and changes in the tax rate. It increased from 1971 to 1975 and declined since that time.

7.3.3 Expenditures

Two categories of public service expenditures indicate the trends that have taken place in Surry County since the Surry Power Station project was first announced. The first, program development, is best indicated by county employment data. The second, capital projects, can be illustrated by a description of the new and improved public facilities in the county. This section presents an overview of these two areas; more

detail on the targeted public services is presented in the specific discussions later in this chapter.

County employment was fewer than 25 persons in 1967, with an additional 60 persons employed by the school district. (Elected official, personal communication, 1980; Department of Education, 1968.) The employment in 1977 was 52 county workers and 131 school district employees (Virginia Pilot, 3 July 1977; Department of Education, 1977). Employment by the county and the school district has more than doubled in this ten year period. This growth is substantially lower than the increase in county revenues and expenditures which tripled during this period.

Capital expenditures were held as low as possible during the tenure of the three-member Board of Supervisors and only the most immediate items of improvement and maintenance were funded. General plans were made for a new public high school, but it was not until the five-member Board of Supervisors took office that the school was constructed. The new Surry High School is the major capital project undertaken by the county during the study period; the cost was in excess of \$4 million (Washington Post, 27 August 1975). The other major capital project has been the \$400,000 community center, financed by a federal grant. Additionally, land purchases for other community and school facilities have been made, and some consideration has been given to acquiring more space for county operations as well as upgrading school facilities. (County Supervisors, personal communications, 1979, 1980). Smaller items, such as the purchase of automobiles for public service use, including the sheriff's vehicles, have been included in the capital expenses.

Overall, the expenditures for personnel and county programs increased rapidly as the revenues of the county rose during the study period. The capital expenditures were important, given the level of county revenues, but limited to two major projects, the new high school building and the federally-funded community center. The following sections examine how public services have changed during the study period in several targeted areas.

7.4 Selected Public Services

The public services described here are those that are most responsive to public demand and most often cited in the literature as being affected by large scale projects. In dealing with these services, it has been necessary to present an overview that

condensed extensive data for an extended period. The objectives are to identify responses to project impacts made by public services and to record structural changes that had important consequences for county residents.

7.4.1 Education

Public education in Surry County was provided through one school district under the direction of a five-member School Board. These School Board members were appointed by a five-member School Trustee Electoral Board which had been, in turn, appointed by the two circuit judges assigned to the area which includes Surry County. Education was the largest item in the county budget and it provided a major proportion of the local government employment. The control, support, and operation of the public schools has been a major factor in the significant social and political changes that have taken place in the county during the study period.

In order to properly present the changes in public education that have taken place, a brief description of the recent history of county schools is necessary. Prior to 1963, the county operated two school systems, one for the black population and another for the white population. The vast majority of the school-age population has been black due to the large proportion (about 65 percent) of blacks in the total population and their higher birth rates. Historically, the black public schools were inferior to the white public schools. The black system had inferior buildings, supplies and equipment, transportation, and administration. Teachers in the black schools were paid less than those in the white schools, and they were less qualified to teach. Class sizes were larger, and the academic offerings were smaller. It was not until 1952, for example, that the school district provided a full high school program for black students; prior to that time a 12th grade was not offered in the black system. (Former Surry County school teacher, personal communication, 1980.)

The federal district court ordered the integration of the dual school systems in 1963. As part of the doctrine of "massive resistance," white students were removed from the public school system. Public school enrollment dropped from 1,701 in 1962-1963 to 1,289 in 1963-1964. (State Department of Education, 1973:5; 1974:6). A private school, Surry Academy, was founded, and a number of students transferred to the Claremont Academy which had been in operation a number of years as a Roman Catholic school. Claremont Academy was operated by the Felician Sisters and had some black students although the enrollment was predominantly white. The primary result of these events

was that the Surry public school system became almost entirely black, and the dual system was continued with the white students attending private schools. (Former school teacher, personal communication, 1980.)

For a short time the county made tuition grants to private schools, but this practice was discontinued after a court order prohibited the practice. The county funding for public schools was modest, at best. For the school year 1966-1967, the public schools spent \$141.00 of local expenditures per pupil, putting the county in 57th place out of 95 counties. The county was ranked in 8th place in "wealth per child," which was calculated as the value of real estate and public services corporations divided by the average daily attendance of school students. A calculation of the "Equivalent True Tax Rate" (tax base divided by school expenditures) placed the county effort at the last position (95th) or the smallest true tax rate of any county in Virginia (Department of Education, 1968:41).

Many black residents in the county felt that the public school system was operated to provide a minimum expense to the county rather than to provide adequate education. They felt this unstated policy was possible because the white minority in the county controlled the Board of Supervisors, the school board, and the school administration. The schools issue was an important factor in the 1967 and the 1971 county elections. It also was important in two unsuccessful attempts to change school board selection procedures—a referendum in 1972 and a court challenge in 1975. (Black spokesperson, personal communications, 1980; Washington Post, 27 August 1975.)

The period immediately preceding the location of the Surry Power Station was one in which there was a sharp and deep racial division in the county over the issue of public schools. There was almost complete segregation of the races, with the black schools being controlled by white county officials. These differences were a primary organizing point for black residents who were determined to improve the public school system. (Black Spokesperson, personal communication, 1980.)

Changes in the public school system are summarized in Table 7-3, where enrollment, number of teachers, and local expenditure data are displayed for the period 1966-1967 to 1976-1977. Over this period, enrollment increased by 154 students, with a large proportion of the increase taking place since 1973-1974. The past few years have seen a return of white students to the public schools, a process that was started when the

TABLE 7-3
SURRY COUNTY PUBLIC SCHOOL INFORMATION
 1966-1967 TO 1976-1977

	Enrollment	Number of Instructional Personnel	Pupil/Teacher Ratio ^a		Local Expenditures (Operations) \$000	Local Expenditures Per Pupil ^a		Rank ^c
			Surry	Virginia ^b		Surry	Virginia	
1966-67	1,319	47	26.9	22.3	164	141	223	57
1967-68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1968-69	1,300	54	23.5	21.3	277	246	285	31
1969-70	1,311	58	22.5	20.8	358	283	324	30
1970-71	1,325	62	20.4	20.5	409	326	404	31
1971-72	1,349	64	20.4	20.1	430	354	425	31
1972-73	1,352	66	20.5	19.9	501	384	438	25
1973-74	1,340	70	19.1	19.2	665	519	509	8
1974-75	1,404	75	18.6	18.9	983	802	581	3
1975-76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1976-77	1,473	112	13.2	18.3	1,758	1,257	692	2

^aBased on average daily attendance.

^bFor Virginia counties only, city and town school districts excluded.

^cPosition of all Virginia counties (95 total)

Source: State Department of Education, Facing Up, (Annual Series) 1968 to 1977.

Claremont Academy closed in 1974. This increase in white enrollment is clearly shown in the one-year increase of 64 students for the 1974-1975 school year. At the present time (1979-1980), whites make up about eleven percent (more than 150 students) of the public school enrollment (school administrator, personal communications, 1980). This has been due to improvements in the school system; efforts of the current school superintendent, including the hiring of white school personnel; increased costs of private education; and gradual improvements in racial relations in the county.

The county's emphasis on improving the school programs is shown in the changing teacher/student ratio. In 1966-1967, the Surry school ratio was 26.9 compared to the state ratio of 22.3 (measured for county schools). The Surry ratio reached the state level for the 1970-1971 school year (Surry, 20.4; Virginia, 20.5), and remained close through 1974-1975. The figure for 1976-1977 is substantially lower than the state.

Local expenditures per pupil have also increased substantially, both in terms of dollars and in the ranking of the county when compared to the recorded average for all 95 counties. For the 1966-1967 school year, Surry County spent \$141 per student, 63.2 percent of the state average of \$223; the school system ranked 57th of the 95 counties. During 1972-73, the per pupil expenditures gradually increased with the county expenditures reaching 87.7 percent of the state figure. The county had risen to 25th place in the state. In 1973-1974, the county, for the first time, spent more than the state average and rose to 8th place in the county rankings. The figure for the 1976-1977 school year was \$1,257, almost twice the states average (181.6 percent), and second only to the expenditures of Arlington County in suburban northern Virginia.

During the 1973-1974 school year, which began about eighteen months after the new five-member Board of Supervisors took office in January 1972, school expenditures increased markedly. Improvements in the school system were a very high priority and, as soon as it was possible, they were included in the rebudgeting of county expenditures. Table 7-4 shows the current dollar and per capita costs of school expenditures. Expenditures peaked in 1975, the year the new high school opened. The increase and decline of capital outlays, interest, and debt costs are directly related to the high school building project. Over the entire period, operating expenses increased in terms of dollar amounts and as a proportion of the state per capita figures. The per capita total expenditures were only 65.3 percent of the state total in 1971 but this increased to 176.1 percent in 1975 and declined to 126.5 percent in 1979. This pattern reflects the cost effects of the capital outlays.

TABLE 7-4
SURRY COUNTY SCHOOL COSTS
 1971-1979
 (Current Dollars)

Fiscal Year (ending June 30)	Operation and Maintenance		Capital Outlays		Interest and Other Debt Costs		Total Expenditures		Virginia Per Capita
	Amount (\$000)	Per Capita ^a	Amount (\$000)	Per Capita	Amount (\$000)	Per Capita	Amount (\$000)	Per Capita	
1971	760.3	129	58.9	10	21.2	3	840.5	143	219
1972	905.3	154	53.3	9	20.8	3	979.4	167	245
1973	964.1	164	191.6	33	117.3	20	1,272.9	216	262
1974	1,053.0	179	1,451.3	247	248.5	42	2,752.7	468	294
1975	1,614.9	275	1,622.1	276	274.6	47	3,511.7	597	339
1976	2,287.0	408	543.0	97	323.2	58	3,153.2	563	340
1977	2,500.4	417	104.1	17	316.2	53	2,920.7	487	359
1978	2,618.3	444	111.6	19	307.5	52	3,037.4	515	378
1979	2,672.0	469	23.5	4	297.1	52	2,992.7	525	415

^aPopulation figure used to calculate per capita costs: 1971-1975, 5,882; 1976, 5,600; 1977, 6,000; 1978, 5,900; 1979, 5,700.

Source: Virginia Auditor of Public Accounts, Annual Reports, 1971-1979.

The data on enrollments do not show any significant increases that could be associated with the Surry Power Station employment patterns. Local informants report that there were very few families with school-age children who moved into the county, and, prior to 1975, white newcomers attended private schools. The number of students in the school system due to diminished out-migration can only be guessed, since these children were already in attendance prior to the employment of their parents in basic and nonbasic jobs. For 1970 (peak construction), this number would not be more than seventy students. The effects for 1977 would be larger due to the increased indirect basic employment. These figures are confounded, however, by the return of white students to the public schools. The direct effects on the school system of employment at the Surry Power Station remained very small during the operations period.

The major effects of the Surry Power Station on the school system have been through the increased revenues that the county has collected and spent on education. These expenditures have, in turn, significantly affected the social/political relations between the black majority in the county and the white minority. The improvements in education have helped begin integration of the school system. About eleven percent of the public school enrollment is white; this accounts for almost half the eligible white students. This contrasts greatly with the pre-study period situation when the races were completely separated in education, either through a dual public school system or a segregated private school system.

7.4.2 Transportation

Surry County does not have a railroad or public airport, and its only public water transportation consists of the ferry service from Scotland (across the James River) to a landing dock near Jamestown Island. The main mode of transportation is the road system, and even this method is limited to state and county routes. There are no U.S. highways in Surry County, and the existing state and county roads are all two-lane routes. The nearest four-lane road is U.S. Route 460 in nearby Sussex County which runs from Petersburg to Suffolk and into the Norfolk area.

There are three primary state highways in Surry County: (1) Highway VA-10 transverse the length of the county and provides access to Interstate-95 and Hopewell to the northwest and Isle of Wight County to the southeast, (2) Highway VA-40 which connects to U.S. Highway 460, and (3) Highway VA-31 which connects to U.S. Highway 460 and also provides access to the Scotland ferry. The Surry Power Station is served by

a state secondary highway, Route 650, which connects to Highway 10. Route 650 was improved and portions of it were relocated to provide better access to the site. The costs of the improvements, about \$600,000, were mainly provided by the state through a program designed to improve industrial access for new sites. (Former county supervisor, personal communications, 1980.)

There are six authorized truck freight companies that serve Surry County; express service is provided by United Parcel Service and REA Express. None of these firms maintains facilities in the county.

Trailways Bus Lines stops three times daily in Surry on its Richmond to Norfolk run, and Colonial Tours Inc., provides service daily from Surry County to Williamsburg. The Mason Bus Company and the Jackson Bus Company provide limited commuter service to and from Newport News, mostly for those working in the shipyards. Greyhound Bus Line service is available in Sussex County.

The U.S. Army Corps of Engineers maintains a 20 foot channel in the James River but there are no developed dock facilities in the county for commercial use. VEPCO constructed a dock at the Surry Power Station site for transporting the larger components and bulk materials used in construction. Once construction was completed, however, the dock was no longer used until it was needed to move equipment in and out for the refit project.

The Virginia Department of Highways and Transportation is responsible for maintaining both the primary and secondary roads in Surry County. This responsibility includes the ferry service across the James River. Funds for the construction and upkeep of roads are provided by the state and do not involve local contributions. The county did not incur additional expenses for transportation during the study period.

7.4.3 Public Safety

The major public safety components were the police, fire, rescue, and emergency preparedness services. Police services were provided by the county sheriff and the state police. Fire protection was handled by three volunteer fire departments and the county rescue squad. The county did not maintain an office of emergency preparedness or civil defense.

The sheriff's office was responsible for: (1) enforcing the criminal and civil code—including criminal investigations; (2) acting as an agent of the court—serving processes, collecting fines, and so forth; and (3) keeping the peace—including routine patrol and traffic control. The office works with the state police who are mainly concerned with traffic control and accident investigations.

The current sheriff joined the office in 1958 as a deputy and became sheriff in 1968. He has been re-elected to four year terms since that time. During the 1950s and 1960s, the office included the sheriff, one full-time deputy, and one part-time deputy. In 1970, this was increased to two full-time deputies and one part-time deputy; in 1980 the office had four deputies, including a state-maintained court security deputy. During this same period the state police have added personnel; one additional officer in 1966 and a second in 1972 to reach their present staff of three. (Sheriff, personal communications, 1980.)

There have also been improvements in equipment for the sheriff's office. In July 1973, the county purchased four automobiles for the office; previously, police personnel furnished their own vehicles and were compensated for the use on a mileage basis.

The sheriff's office also operates the county's emergency communications system which employs four full-time and two part-time dispatchers and provides daily 24-hour service. The communications center is directly linked to the fire departments and the rescue squad as well as the state police and other state agencies. A direct line to the communications center from the Surry Power Station has been proposed and is scheduled for installation in the near future. The major limitation of the communications system is its reliance upon the county telephone service which requires toll charges for calls from other areas of the county. Claremont, for example, has no direct access to the sheriff's office dispatchers but must go through telephone company operators. (Sussex-Surry Dispatch, 13 August 1980.)

Fire protection is provided by three volunteer fire companies located at Surry, Dendron, and Claremont. The state maintains fire protection services at Chippokes State Park, and VEPCO provides primary fire protection for the Surry Power Station. Volunteer departments located in neighboring communities, such as Waverly and Ivor in Sussex County, provide fire protection assistance for many of the rural areas that are some distance from the three Surry County departments.

The facilities and equipment of the volunteer departments have remained fairly constant over the study period with normal upgrading and replacement. Each department has 3 main pieces of equipment, including pump and tank trucks for fire-fighting. The number of volunteer firemen has increased in the last decade; in 1973 there were 12 firemen at Surry, 8 at Dendron and 10 at Claremont. (VEPCO, 1973:7.) The 1980 figures show 18 members in each department (Sussex-Surry Dispatch, 8 October 1980). The costs of facilities, equipment, and operations are primarily funded through donations and fund drives. The county provides an equal amount to each department to supplement the public donations. These funds are unrestricted and used according to the needs of each department. (Assistant county administrator, personal communications, 1980.)

The Surry County Rescue Squad is located in the town of Surry and serves most of the county. The rescue squad maintains two ambulances, a power rescue boat, and a carry-all van. Established in 1959, the rescue squad is a closely knit group which currently has 16 members, including 4 women. The squad is largely self supporting and has not received any county funds for the last two years, although at different times the county has contributed monies for facilities and equipment. About twenty-five to thirty calls per month are handled by the rescue squad—mostly auto accidents or heart attacks. The squad does not receive any direct support from VEPCO but has provided CPR training for Surry Station employees and functions as a participating organization in the emergency evacuation plan.

7.4.4. Social Services

The Department of Social Services oversees those social services that require local administration. These services can be funded by the federal, state, or local government, and the department is, in fact, a complex mixture of programs emanating from all three levels of government. The decisive role of a local Department of Social Services can be seen in the sweeping changes made in the county during the study period. The local department not only serves as the conduit by which programs and social service funds are distributed to the local area, it also serves as the advocate for local needs in obtaining funds. There is a great deal of latitude that can be exercised in this latter function, for the department can operate at a number of points along a continuum that aggressively advocates the causes of local clients at one extreme, or actively discourages local participation in social service programs at the opposite extreme. The significant change in the social services took place for a number of reasons: new federal and state programs, changes in the administration of programs,

and, importantly, changes in the perceived function of the local department. The Department of Social Services moved from a de facto policy of discouraging local social services to one of advocating the needs of local residents. This change was not from the extreme of one point-of-view to the extreme of its opposite, but it was dramatic and had significant effects on social services in the county.

The point of change in the administration of social services was the summer of 1973 when a new director was hired. When the former director left, two employees left with her, which meant a complete turn over in the department staff. In keeping with the policy of the overall county administration, social services were administered to minimize costs and the number of clients. The recipients, mostly black, felt intimidated by their reception. The process appeared to them as one that provided charity if they were deserving enough according to local county officials. (Black community worker, personal communications, 1980; former county supervisor, personal communications, 1980.)

The objective of the new director was to provide, according to program guidelines, social services to residents who qualified for the programs based upon need rather than upon local perceptions that they were deserving. This implied an expansion of the social services program which is shown in Table 7-5. These data include revenues and expenditures from the county as well as additional funding that is not recorded in the annual county budgets. These figures show the increases that resulted from the new county administration and the new director of social services. Traditional social services programs in the county increased sharply: general assistance, food stamps, old age assistance, and Aid to Dependent Children. In 1976, a Senior Citizens Program was added.

Before the change in directors, the Department of Social Services personnel included only three persons, with only one social worker. This has increased to fourteen regular positions, with an additional six people employed in the CETA and the Older Americans programs. The Department of Social Services is currently overseen by a Social Services Board that is appointed by the County Board of Supervisors. Prior to 1970, this board was appointed by the circuit judges, in much the same manner as the school board has been appointed throughout the study period.

TABLE 7-5

ANNUAL BUDGET FOR SURRY COUNTY DEPARTMENT OF SOCIAL SERVICES
1972-1973 TO 1978-1979
(1972 Dollars)

Fiscal Year	Total Budget	Average Annual Rate of Change	County Share	Average Annual Rate of Change
1972-73	\$165,519		\$11,218	
1973-74	N/A		N/A	
1974-75	430,394	61.3%	29,936	63.4%
1975-76	439,535	2.1%	33,157	10.8%
1976-77	420,008	-4.4%	47,945	44.6%
1977-78 ^a	189,548	-12.6%	39,648	-17.3%
1978-79 ^a	198,582	-0.6%	37,115	-6.4%

^aState began direct payments of ADC (Aid to Dependent Children), about \$250,000 (current dollars), included in annual rate of change calculations.

Source: Director, Surry County Department of Social Services, personal communications, 1980.

In comparison to other nearby jurisdictions, social service expenditures have increased much more rapidly in Surry. An article in a local newspaper pointed out this growth.

In 1972, Surry's welfare department handled 12 cases involving various services. Neighboring Sussex County, with twice the population, handled 35. By 1976, Sussex's case load had increased to 271, Surry's to 333. . . . Indeed, in 1976 Surry provided more services than Hanover County with a population of 37,479—more than six times the number in Surry. (*Virginia-Pilot*, 3 July 1977.)

Although the increase in social services has been dramatic, it has been more the result of changes in the policies of administering the Department of Social Services than in local funding for services. While the average annual increase in the county's expenditures have been large, the amounts in actual dollars have been relatively small. When the county provided \$47,945 (constant 1972 dollars), the highest annual amount between 1972 and 1979, it still only amounted to less than two percent of the total budget of almost \$3 million. It is difficult to conclude that the county social services

have been significantly affected by the income from the Surry Power Station since the local increased costs are very small and the major reason for change seems to be the change in county government control resulting from the election of 1971.

7.5 Summary

The growth in county government has resulted from a change in county administration and the increased revenues produced by the addition of the Surry Power Station to the tax base. The population has remained quite stable over the study period. The demand for increased services has come from a desire for better public facilities and programs rather than from increased population.

The major effort at increased services has been in the public school system. This has resulted in a new high school facility, increased expenditures for school programs, and some movement toward integration of the public schools. Schools have required from two-thirds to more than three-quarters of the total county expenditures during the study period.

The other target areas show less direct change due to the increased revenues. Transportation remains a state function; public safety remains a modest expenditure with little increase in police protection and continued operation of the volunteer fire departments and rescue squad. The change in social services has been dramatic but only a small part of the cost has been provided by the county.

Additional major changes in county programs and administration have been financed, in large part, with revenues provided by the Surry Power Station. The addition of a county administrator, county attorney, county planner, building inspector, and director of parks and recreation are among the most visible new personnel. These changes reflect the shift in county government policies that resulted from the election of a new five-member Board of Supervisors in 1971.

There have been few changes in county government to provide services directly related to the siting of the Surry Power Station. Most required on-site services are provided by the utility. Even the requirement for emergency planning that was a result of the accident at Three Mile Island was accomplished without adding additional personnel. The director of social services added the tasks of Coordinator of Emergency Services to her other duties. The use of community resources and personnel as

volunteers for public services, and the doubling-up of work responsibilities by county personnel, is a well established pattern in Surry County.

CHAPTER 8: SOCIAL STRUCTURE

8.1 Introduction

The purpose of Chapter 8 is to identify and examine the effects of the project on the social structure of Surry County. First, the important caste and class distinctions are discussed, followed by identification of the important groups and an outline of their interaction patterns. Second, the economic, demographic, housing, and local government effects due to the plant (chapters 4 through 7) are then distributed among the groups.

The information on the social structure, groups, and group interaction is based upon interviews with key informants in the Study Area. Secondary data were also used to substantiate the information provided by key informants and to further define the groups.

8.2 Social Structure at the Beginning of the Study Period

8.2.1 Caste and Class in Surry County

A discussion of the social system in Surry County must begin with an awareness of the racial relationships and interactions. The social positions of the black and white racial groups have had a long historical development that was established with the plantation system and slavery which operated during the 18th and 19th centuries. In the period following the Civil War, slavery was abolished, but the caste system which separated blacks and whites was retained. This caste system, based upon race, made primary social, economic, educational, employment, and opportunity distinctions between blacks and whites. According to Dollard, "Caste is often seen as a barrier to social contact or, at least, to some forms of social contact. It defines a superior and inferior group and regulates the behavior of the members of each group."¹ The caste system makes an absolute distinction between people so that, for example, the child of a relationship between an upper-caste and lower-caste union would be a member of the lower caste and could not be legitimized into the upper caste.

In addition to and intimately interrelated to the caste system, there existed a class system in which the upper class was exclusively white, the middle class

¹John Dollard, Caste and Class in a Southern Town. (Doubleday, Garden City, 1957) p. 62. Also see: W. Lloyd Warner, Social Class in America (Harper and Row: New York, 1960) pp. 20-21.

predominantly white, and the lower class contained both whites and blacks, with the great majority of the blacks being relegated to the bottom of the class hierarchy. The class system, generally defined in terms of occupation, income, education, and family background, allowed for mobility both upwards and downwards. It was possible for blacks or whites to rise from the lower class to the middle class, but the lower caste individual could never become an upper caste person. In practice, too, lower caste persons were excluded from the upper class, and their mobility from the lower class to the middle class was severely restricted. For the most part, class mobility for the lower caste was limited to advancement within the caste rather than within the larger social system.

The social system in Surry County was historically based upon the traditional southern caste and class distinctions. The black residents, although comprising a large majority of the population (about 65 percent), had little control over the social, economic, and political activities in the county. The conditions of public education in the early to mid-1960s provided an important issue for understanding the operation of caste conditions in public affairs. Another major change in public participation by the black caste was their long-term efforts to register and vote.

Prior to the federal court-ordered integration of the public schools for the 1963-1964 school year, the county maintained dual school systems, one white and one black. Both systems were controlled by white-dominated boards: the county Board of Supervisors which financed public education, and the School Board which oversaw administration of all public-supported schools. The supervisors were elected by local voters; the School Board members were appointed by the circuit judges.

The perception of the black residents was that the county schools were unequally funded and that black schools were discriminated against in terms of facilities, transportation, equipment, supplies, teachers' salaries, and per-pupil expenditures. Further, it was felt that a policy of saving public money at the expense of black students continued after the public school system was "integrated". This was possible because the white students left the public schools altogether, attending instead either a newly-built private school or the existing religious academy. In this way, the dual school system continued, with the white students educated in private schools and the black students in public schools. White residents, who owned perhaps 80 percent of the property in the county, tried to minimize public services and costs, especially since many families had to pay extra for private school tuition.

For blacks, the educational needs were not only real in themselves but were symbolic of the disadvantages of their lower-caste position. Opposition to the most obvious areas of discrimination--education and voting--was a national issue which involved both whites and blacks in Surry County. In the 1960s, blacks in Surry began organizing to improve their political position. Their most effective organization was the Surry Assembly, started in late 1968 as a satellite group of the Virginia Community Development Organization based in Petersburg, Virginia. (President, Surry Assembly, personal communication, 1980.) The white social, economic, and political structure that was in control of local public affairs opposed any substantial change in the status of the lower-caste blacks.

For a long time prior to the work on the Surry Power Station, the direction of race relations was towards confrontation on the basic elements of the caste system. The white caste was put in the position of attempting to defend itself against changes which seemed to threaten their traditional property rights and socioeconomic position. As a numerical minority in the county, the white residents were most vulnerable in the area of public affairs where voting behavior could shift political control to the blacks. This, in turn, had serious implications for taxes, public services, and control of high-status positions.

The black community had to deal with two problems, voter registration and voter turnout. In the 1967 election for the Board of Supervisors, black candidates got 39.3 percent of the vote (922), while the white incumbents got 60.7 percent (1,422). The next election, in 1971, was quite different. The Board of Supervisors was expanded to five members, and the election districts were realigned to conform with the population count of the 1970 census and the "one-man-one-vote" rule. The establishment of the Surry Assembly as a community development group, and the Surry Forum--its political-action counterpart--produced a majority of black voters in three election districts. The Board of Supervisors that took office in January 1972 had a black majority--3 blacks and 2 whites. These same supervisors have been re-elected twice (1975 and 1979). They have been responsible for the significant changes in public services that were discussed in Chapter 7.

In the last two decades (1960 to 1980), there have been some significant changes in the relationship between blacks and whites in Surry County. Although caste lines still exist, and caste membership is still an important social consideration for both whites and

blacks, some of the more extreme attitudes appear to have been modified. Many key informants report a less antagonist racial climate now exists than was the case during the late 1960s and the early 1970s. Nonetheless, the black control of county government and public services still results in differences with the white population on numerous points: tax rates, the level of public services, and the advisability of specific programs. However, these differences do not appear to produce the same levels of emotional commitment as was the case earlier. The black control of public affairs has not been the disaster whites feared, nor has the social and economic advancement of blacks been advanced to the degree that blacks hoped. The compromises reached imply further changes in the caste and class systems—changes that look forward to an eventual elimination of the caste system in the distant future.

8.2.2 Identification of the Social Groups

Five groups of Surry County residents were identified to help explain the often complex interactions that took place during the study period. These groups were: (1) farmers, (2) businessmen and professionals, (3) workers, (4) the elderly, and (5) newcomers.

The analyses of group composition and interaction is based upon examinations of historical development in the county, interviews with key informants, examination of secondary data, and personal observations gathered during three field trips. The premise of this study is that relationships among people in a community are structured and that functional groups can be identified and described. The analysis of group change and interaction in Surry County must be seen in the context of the color-caste system, which is assumed to be a primary factor in both inter- and intra-group relations.

8.2.3 Group Profiles

Based on a review of the literature on community organization, social structure, and large-scale project effects, seven attributes were identified as essential to the analyses of project effects on the Study Area social system. These attributes were:

1. Size of the group;
2. Livelihood of group members;
3. Demographic characteristics;
4. Geographic characteristics;
5. Property ownership characteristics;
6. Dominant attitudes and values toward growth, environment, community participation, and planning; and
7. Patterns of interaction among group members (cohesion).

The profile of each group takes into account these attributes and focuses on the characteristics that are most distinctive of group membership. Some indication of the diversity within each group is intended, as well as a description of the modal characteristics. Indications of group change over the study period are highlighted, while the stable characteristics are also described.

8.2.3.1 The Farmers

Agriculture has always been the primary economic activity in Surry County, and farming in one form or another dates back over 350 years to the earliest Colonial days. The development of the plantation system in the 18th and 19th centuries discouraged town or industry growth and conferred on the farmers, especially the large operators, a dominant social and economic position. The gradual decline in farm ownership and agricultural employment has diminished the farmer's position though it remains important and powerful.

The data in Chapter 4 (Table 4-2) show that the number of farm proprietors declined from 453 in 1967 to 312 in 1977. Wage and salary employment dropped from 187 to 123 during this same period. Total employment, however, has increased during this period (discounting the construction employment at the Surry Power Station), which means that the proportional employment of farmers and farm workers has declined as well. The size of farms has increased as the number of farming operators declined. Mechanization has allowed successful operators to expand, while marginal operators have gone to part-time farming or have left farming altogether to take wage and salary jobs, often commuting out of the county.

The farmers are about 80 percent white, and the successful operators tend to be older since many of the established farms are family properties that change hands only when the owner dies (Extension agent, personal communications, 1980). In many cases, farmers with large investments in equipment will lease as much additional land as possible to maximize use of their capital investments in machinery.

The farming properties are located throughout the county. Most of the county land is classified as prime agricultural or agricultural with a substantial proportion in timber (Surry County Planning Department, 1974:18-20). About 40 percent of the timber lands are owned by lumber companies, about 40 percent by farmers, and 20 percent by other

companies, individuals, or government agencies (Extension agent, personal communications, 1980).

Farmers comprise the major group of property owners in the county, in terms of both land value and land amount. The Surry Power Station is the largest corporate-owned property of value, with the holding of the lumber companies comprising the largest corporate ownership of acreage.

The farmers tend to be very conservative in their attitudes toward population growth, environmental use, and planning. They tend to support additions to the tax base, such as the power station, and resist proposals to spend additional tax monies. Their community participation was more extensive when they were in control of county government, although they still serve on the county Board of Supervisors—two positions from 1972 to 1977, and one position on the current Board.

The social interaction between farmers is conducted along caste system lines, with a tendency to be organized around family, friendship ties which are age determined (people who went to school together), churches, and interest in specific activities such as hunting or sports activities. The common interests in county tax policies, expenditures, agricultural programs, and marketing of farm products, also serve to provide an economic base for a series of intra-group activities.

8.2.3.2 Businessmen and Professionals

The business/professional group in Surry County includes all the nonfarm proprietors and a portion of the services sector as well as teachers, social workers, administrators, and other government employees. There were 95 nonfarm-proprietors recorded for 1967, and 108 for 1977, an increase of 13.7 percent for the decade (see Table 4-2). Government employment increased from 291 in 1967 to 616 in 1977, with from one-third to as many as one-half included in the business/professional category. Additional administrative and professional positions are filled in several areas such as health care, banking, wholesale and retail trade, insurance, transportation, and law.

The business/professional people are primarily white, with the black members of the group largely in government service. The number of blacks in these positions has increased markedly since 1972 when blacks obtained a majority on the Board of Supervisors. In the private sector, blacks remain a minority: a few small "country"

stores are owned by blacks, a black doctor has opened a practice in the county in the last few years, and the county and commonwealth attorney, both black, also maintain private law practices. Generally, however, the private sector is controlled by white business and professional people, many who operate long-established businesses. Except for the Surry Power Station and the operations of the timber companies, all administered outside the county, businesses are small. The 1979 Surry County Industrial Study lists only four county businesses as major employers in the private sector (excluding VEPCO). These four businesses employed a total of 86 employees full- and part-time. The range was from 11 to 43 part-time, and from 8 to 17 full-time employees. (Economic Research Associates, 1979:2b-5.)

The local businesses tend to primarily supply the farm operations, with some general trade businesses existing such as restaurants, food stores, gasoline stations, and appliance dealers. The range of goods and services available in the county is limited, however, causing most residents to do the majority of their shopping out of the county. For example, there is a small shop in Surry which handles women's clothes, but this is the only clothes outlet of any kind in the county. Over the study period, the manufacturing businesses (a lumber mill and a meat processing plant) have remained stable. Farm suppliers have declined somewhat, and retail trade and service businesses have increased due to tourism and an increased construction work force.

The greatest concentration of retail business and professional services is at Surry, the county seat. There are a number of old-style country stores scattered throughout the county, and the towns of Dendron and Claremont also serve as small retail centers. The county's lumber mill is located near Claremont; the meat packing company has facilities in and near Surry.

Local businessmen tend to own the property where they conduct business, but in most cases these facilities are older and represent only modest capital investments. A large proportion of the local business/professional group appear to own their own homes, and a number have other properties in the county. Home ownership is highly valued, and the ability to "have your own place" is often cited as one of the great advantages of living in the county.

The businessmen and professionals support economic growth in the county and have been active in the work that has been done on industrial development. Those in the

private sector support the possibility of increased business activities, while those in the public sector talk about the social and fiscal effects of such expansion. The private sector members of the group are less supportive of environmental and planning policies than are the public sector members. Businessmen and long-time professionals are less active in public affairs than they were prior to 1972, although many still participate in county politics and public service tasks such as the Industrial Development Committee.

The interaction between group members is defined by their race, occupation in the public or private sector, and personal inclination. The intra-racial cohesion remains quite strong, although several key informants reported that there is better cooperation now than was the case just five years ago. The social interactions between group members—in churches, social organizations, and business associations—are still largely defined in racial terms. There has been some change in this pattern, but it is evident primarily among newcomers to the group.

8.2.3.3 Workers

The working class in Surry County makes up the largest group identified for this study. These people tend to be long-term residents of the county; often they were former agricultural workers (or their descendants) or small farmers. Some still farm on a part-time basis. Their level of education tends to be lower than the state average, and their per capita income is also below the state figure (U.S. Census, 1970). Blacks make up a large majority of this group (perhaps over 70 percent), and the trend for more than two decades has been toward increased commuting to jobs outside the county. About 28 percent of the total work force commuted out in 1960. This figure rose to almost 52 percent for 1970, and key informants estimate that the figure may be as high as 60-65 percent today. The number of commuters in the county at the time of the 1970 census was 1,002, and it could be as high as 1,300 at the present time. Almost all these commuters work at factory, production, or craft jobs in such places as the Newport News Shipyard, the large packing plants in Smithfield, and the chemical industry in Hopewell. The other workers are employed in the county at a variety of businesses, including VEPCO's Surry Power Station. The county, especially the school district, is a large local employer.

Geographically, the workers live in modest houses, often with small acreages, along the county's numerous hard-surface roads. Many of the workers own their own homes, but there is also a large number of renters. The 1976 housing survey showed that

70 percent of the respondents who rented were employed, but their household incomes were low (60 percent reported incomes of under \$6,000). (Surry Planning Department, 1978:26-28.)

County workers support economic growth in the county to provide more local jobs and diminish the necessity for commuting. There is also concern about the loss of young people due to job-related out-migration. In general, the idea of environmental preservation is supported, but in this rural area it is often considered to be an overrated issue. The workers tend to have a relatively low level of participation in community affairs. The operation of the Surry Assembly and increased voting participation of working-class blacks serve as the major ways in which community participation takes place. In recent years, there has been an increase in worker interest and participation in public affairs due to the rise of black political power in the county. Their attitude toward planning seems to be quite similar to that expressed toward other environmental issues. They support the idea due to the attitudes of the community leaders, but they do not feel that it is as necessary in Surry County as it might be in other places.

The workers are a large group, spread out in the rural areas of the county and oriented toward work places out of the county. These factors tend to weaken a sense of group cohesion. Family, religion, race, and geographical location play some part in the establishment of sub-groups and even political rivalries among the group leaders. The workers are not tightly organized, but they do recognize the similarities of their socioeconomic position. Since its beginnings in 1968, the Surry Assembly has played an important role in uniting the black workers. Many of the people in this group know each other and interact on a regular basis, mostly with due regard for the caste system, of course.

8.2.3.4 Elderly

The elderly population (65 years of age and older) of Surry County grew from 10 percent of the population in 1960 to 10.8 percent in 1970, with an estimated 11.9 percent for 1976. This is about three percentage points higher than the state figures for the same years. (Surry Planning Department, 1980:20.) Although blacks made up about 65 percent of the county population in 1970, they comprised only 43.7 percent of those 65 years of age and older. The total number of elderly was 630 in 1970. (U.S. Census, 1970.) At the current time, the elderly make up about 12 percent (approximately 715 people) of the county population.

The difference in the racial composition of the elderly compared to the general population is due primarily to migration patterns. Black out-migration at the younger ages, combined with the in-migration of some retired whites, contribute to these figures. Also, traditionally there has been evidence of a difference in black and white longevity, with whites tending to live longer.

Many of the elderly are retired and live on pensions, social security, or accumulated capital. As is the case in many rural areas, a considerable number continue working as long as they are physically able, and a large proportion of the elderly men remain active in their farms, businesses or professions. Widows who own farm properties lease the land to supplement their incomes.

While a noticeably large number of elderly whites live in the three towns, the elderly blacks tend to live in the rural areas. Claremont and Scotland are recreation-oriented areas which attract a number of people who are either retired or thinking about a retirement place. Other retired people include former natives who left the county to work then later returned, and retired military people. These people either live on family-owned rural properties or locate near the recreation areas or the towns. The town of Surry also seems to have a large number of elderly.

The elderly population has a great variation in property ownership. Some of the most successful white farmers are elderly, while a number of the elderly blacks are former workers who rent very cheap housing and live in poverty. The retired people tend to own their own housing units, and long-term residents often have some residual or family property.

The elderly tend to be more conservative in their attitudes and values than the general population. There are several exceptions, of course, but many elderly people express dismay at changes in the county which reflect different ethical or social values. Many are satisfied with the "pace of life" in Surry County and do not support growth policies. Often those with strong family ties are the most interested in economic development, seeing it as a means of enhancing the employment and income opportunities of their relatives. Environmental and planning requirements are often considered to be "over done", or a "waste of money" for the rural areas. Many of the elderly, especially the whites, are active in social and political activities. The elderly

blacks tend to be more dependent, having fewer resources and, therefore, taking a less active part in public affairs.

The elderly are a diverse group that represents many of the distinct characteristics of the county. The racial distinctions are apparent, as are the attachments to family and church. Within the group are not only some of the most successful and wealthy county residents but a large proportion of the county's poor as well. The social contacts of the elderly tend to be between newcomers and returned natives, between the long-term residents who have spent a number of years as friends and acquaintances, and among those who have ongoing business and political contacts.

8.2.3.5 Newcomers

The newcomers make up the smallest group and one that has some overlap with the other groups, since many of these people could also be classified as retired, business or professional people, workers, etc. In addition to their roles in these other groups, newcomers are perceived as a distinct classification of people, and they have often played a significant part in county affairs. Newcomers have relocated in Surry County for one of two basic reasons: as a requirement of their employment, or as in-migrants who selected the county as a preferred place to live.

The newcomers who in-migrated to the county for employment reasons have all been people with specific skills or professions. The surplus of unskilled, manual, and semi-skilled local workers is evident from the extremely high number of out-commuters. The newcomers have had two primary employers, the Surry project and the county. The people who have moved to Surry County for other than employment reasons include those who have retired, a few people employed in nearby areas who were seeking the rural atmosphere, and a few wealthy people who have purchased historical properties.

The newcomers employed by the county (counting the school district) included several whites, but the majority have been blacks recruited to fill professional or highly-skilled jobs. The other types of newcomers--retired, wealthy, and commuters--are predominantly white. Almost all these newcomers have purchased property, usually enough for their own residence and sometimes with small additional acreages. A few of the properties purchased by the wealthy newcomers have included land and, in several cases, rather large acreages. The most desirable of these historical properties have been former (18th century) plantations located along the James River.

The attitudes and values of the newcomers fall into two distinct categories, depending upon whether their residence selection was based on employment or preference reasons. Those who have chosen the county for the quality of life are less supportive of change and population growth than are the county-employed newcomers. While all the newcomers support economic growth and the benefits it would produce for local workers, there is some concern that future economic change should not be allowed to overwhelm the advantages of country life. The protection of the environment and county planning are considered essential in order to control future growth. Many of these newcomers are interested in community affairs, but their actual participation is limited due to their newcomer status.

The interaction among newcomers as a group is not systematic, but these people tend to recognize each other and, within the caste and class parameters, they have some social contact. The most active newcomers are those county employees who have common professional values, social standing, and community interests. The retired newcomers are quite cohesive and interact around the outdoor and social activities of their recreational-oriented locations.

8.2.4 Interaction among the Groups

The interaction patterns among members of different groups during the study period are discussed for three spheres of activity: economic, social, and political. The primary distinctions that were made in the discussion of caste and class are not repeated here in any detail although it should be understood that these conditions were major determinants of intergroup relationships.

8.2.4.1 Economic

The economic interaction among local residents is considerably less than would be expected from the size of the population. This is due to two important factors: (1) a large proportion of the work force is employed outside the county, and (2) much of the county income is spent in market areas outside the county. The bases for intergroup economic activities in the county are the agricultural sector, local businesses, and government employment at the county level.

Farmers have gradually decreased the number of workers they have employed, and thus their economic interaction has diminished over the study period as part of a long-term trend. Businessmen have increased employment in the trade and services sectors by

hiring local workers; the manufacturing sector has remained constant. The county is the largest employer of professional people and also has increased the number of workers hired in the last decade. The retired elderly and newcomers, who either commute out of the county or have independent incomes, have little economic interaction with other groups except as customers for local businesses.

The economic interaction of the groups is well defined within the agricultural context of the local economy. The service sector of the business community has expanded due to the Surry Power Station, but much of the total increase has gone to other areas with more developed retail facilities. Most private sector benefits have been retained by whites, while county employment, since 1972, has favored blacks (many of whom are newcomers) although some whites have also been hired.

8.2.4.2 Political

The greatest change in group interaction has taken place in the political area. These changes have been oriented toward race (the caste system) and class. In as much as the groups represent these characteristics, the changes can be attributed to groups. It should be kept in mind, however, that there is often an overlap of caste and class within the group designations.

The working group, predominantly black, has gained political ascendancy through the organization of the Surry Assembly and the Surry Forum. These two organizations, the former oriented toward community development and the latter toward political organization and voting behavior, have developed during the study period. The elections of 1971, 1975, and 1979 established and reaffirmed the dominance of the black electorate.

The farmers group and the business/professional group have experienced a sharp reduction in political influence since the 1971 election. Prior to 1971, the three-member Board of Supervisors was made up of one businessman and two farmers, all white. The current five-member board is made up of 3 blacks (two workers and a retired worker), and 2 whites (a farmer, and a well-to-do businessman who is a newcomer and does not represent the local businessman's values or point of view). The establishment of the Surry County Taxpayers Association was a successful attempt on the part of the farmers and business/professional groups to establish an effective political action entity to deal with county affairs. The professional newcomers who came to the county as a result of

the change in county administration are politically more aligned with the workers than they are with the business/professional group.

The political alignment of the elderly tends to depend on their current or former socioeconomic status. Whites support the farmer-business perspectives, while blacks support the worker-professional combination. Newcomers tend to accept the current political situation, supporting the old order if they relocated prior to 1971, or the new order if they relocated since then. In one case, a wealthy newcomer led opposition to school integration in the mid-1960s and was instrumental in defeating a James River bridge proposal. In a more recent case, an apparently well-to-do newcomer provided strong support for the efforts of the blacks to improve public services, including serving as a county supervisor.

Finally, there appears to have been some division within the black political organization on a number of issues. In part, this may have been due to some personal and family rivalries, but the nature of black-white relationships was also involved. The group interactions have become more cooperative over the last eight years due to a movement of whites toward accepting black rule in the county, and a movement of some black leadership toward representing white concerns in county government.

8.2.4.3 Social

The major social interactions took place within the groups. These were largely determined by race, religion, family, friendships (established through schools, work, and churches) and geographical location. Often these determinants crossed group lines so that the extended families in the county might include members of all groups except newcomers. Businessmen and workers often had extensive interaction since the local businesses were small. These groups also experienced some social interaction in community activities such as the volunteer fire departments, the rescue squad, and school activities. During the period of resistance to school integration, there was a great deal of interaction among white residents in connection with support of the private school. White solidarity by people of all groups was an important goal of the school supporters.

Newcomers were welcomed in the appropriate social and fraternal organizations, churches, and community service activities. Traditionally, there have been few newcomers, and these people have been accepted into the local communities based upon

their individual merits. The native and long-term residents have maintained control of the social forums, and newcomers have had to conform to local standards in order to achieve acceptance. The wealthy newcomers have often maintained their primary social ties outside the county. In a few cases, however, these people have been very active in community affairs. Generally, such local interests have been expressed more in political or community activities rather than social interaction with local people.

8.2.4.4 Social Cohesion

Surry County has been strongly oriented toward a traditional, agrarian social structure based upon family, religion, and the caste/class system of racial relationships. As agricultural employment has declined, out-migration and out-commuting have oriented a large proportion of the county population outward to other areas. The change in racial relationships has also strained the sense of social cohesion in the county. The in-migration of newcomers and the construction of the Surry Power Station have introduced new elements into the established social order.

In spite of these changes, the county has retained a strong cohesiveness. The number of commuters to jobs out of the county attests to the attraction of county life for these workers; in less cohesive circumstances these families would be out-migrants. The relatively small size of the Study Area makes it possible for people to know each other on a personal level, an attribute that is commonly remarked on by residents as a cohesive characteristic.

8.3 New Groups in the Study Area during the Study Period

No significant new groups developed in the Study Area during the study period despite the project-related activities. New people coming to the county were incorporated into the existing groups, which changed in the ways outlined previously. The newcomers' group was affected by both project-related people and people who had no direct connection with the Surry Power Station. The category, movers unaccompanied by family (or singles), was considered a subgroup of the newcomers. These project employees had only a very limited contact with the county social system; they tended to work long hours and maintain their social ties outside the Study Area. Another subgroup, the in-migrating blacks who were employed as county workers in various professional positions, changed the scope of the business/professional group and added to its membership.

8.4 Distribution of Project Effects to the Groups

The effects of the Surry Power Station project upon the economy, labor force, population, housing and settlement patterns, and government and public services for the Study Area were identified and described in Chapters 4 through 7. These effects are distributed among the groups with emphasis on two key years: 1970 when peak construction was reached, and 1977 when the station completed the most recent year of full-scale operation. The distribution described in this section was derived from key informant information, on-site field work, and analysis of the available secondary data.

8.4.1 Economic

The estimated employment and income effects for 1970 were presented in Chapter 4. About 95 direct basic and 32 nonbasic jobs were assigned to nonmovers for 1970. These jobs were filled mainly by people in the worker group. In addition, 10 workers with families moved into the county, as well as about 70 movers without families (or singles). Table 8-1 shows the 1970 distribution of employment and income by groups. The movers without their families were mostly weekly commuters who had little effect upon county groups except as customers for local businesses. This was due to their long hours on site and their frequent trips out of the area when the work schedule permitted.

The nonbasic income in 1970 was estimated at \$215 thousand which went to the business/professional group. A portion of this income went to pay nonbasic employees who were in the worker group.

The economic effects in 1977 show some similarities to 1970 as well as some interesting differences. Nonmovers, mostly from the workers group, were estimated to have filled 48 direct basic and 58 "other" basic jobs—a total of 106 positions. This was slightly greater than the jobs available during peak construction and was due to the number of "other" basic jobs created by Surry project tax revenues that went to expanded county programs. All 21 nonbasic jobs were assigned to the workers group. The workers group also included some movers with families who took basic jobs. Table 8-2 shows an estimate of the group allocation of employment and income for 1977.

8.4.2 Demographic

The demographic effects of the project were estimated in Chapter 5 with the annual population increase for the period 1967 to 1980 shown in Table 5-5. These total

TABLE 8-1

SURRY POWER STATION EMPLOYMENT AND INCOME EFFECTS BY GROUP
1970

Group	Employment	Income (\$000)
Farmers	0	0
Business/Professional	3 ^a	\$215 ^b
Workers ^c	134	1,647
Elderly	0	0
Newcomers ^d	<u>70</u>	<u>1,098</u>
TOTAL	207	\$2,960

^aEstimated as professional or administrative people due to basic and nonbasic positions.

^bTotal nonbasic income including nonbasic wages for 32 employees in workers group.

^cNumber employed includes both basic and nonbasic nonmovers and movers with families minus 3 from the business/professional group. Income includes only basic employment wages.

^dAll movers with family absent (or singles) are included as newcomers. These were temporary workers.

Source: Social Impact Research, Inc., 1980.

TABLE 8-2

SURRY POWER STATION EMPLOYMENT AND INCOME EFFECTS BY GROUP
1977

Group	Employment	Income (\$000)
Farmers	0	0
Business/Professional	27 ^a	\$126 ^b
Workers ^c	132	1,145
Elderly	0	0
Newcomers ^d	<u>22</u>	<u>186</u>
TOTAL	181	\$1,457

^aEstimated as professional or administrative people due to basic and nonbasic positions.

^bTotal nonbasic income including nonbasic wages for 21 workers in nonbasic positions; excluding income for Surry project administrative personnel who resided in the county.

^cIncludes 48 direct basic, 55 "other" basic, and 21 nonbasic from the nonmovers category plus 8 from the movers accompanied by families category.

^dIncludes all movers unaccompanied by families and single workers.

Source: Social Impact Research, Inc., 1980.

effects were the result of two components of population increase, in-migration and diminished out-migration. All of the population increase was attributed to basic and nonbasic employment which was calculated for workers and their households.

The group most affected by the employment and subsequent population increase was the workers. It was estimated (Table 5-3) that the diminished out-migration due to employment of nonmovers for both basic and nonbasic jobs was about 54 persons. In addition, about 32 persons were in-migrants, which included the households of movers accompanied by families. Of these 32, we estimate that 22 were additions to the workers group and 10 to the business/professional group. The 70 workers who resided in the county as movers unaccompanied by families (or single) were considered as a subgroup of the newcomers. They were transient people who were not involved in the county social structure to any meaningful degree. The distribution of these population effects are shown in Table 8-3 for 1970 and 1977.

TABLE 8-3

SURRY POWER STATION POPULATION EFFECTS BY GROUP
1970 AND 1977

Group	Population Increase	
	1970	1977
Farmers	0	0
Business/Professional	10	86
Workers	76	59
Elderly	0	0
Newcomers	<u>70</u>	<u>22</u>
TOTAL	156	167

Source: Social Impact Research, Inc., 1980.

For 1977, the workers' group shows a lower figure for the population increase than in 1970. This is due to fewer direct basic jobs at the Surry project site and fewer nonbasic jobs. The "other" basic employment does not make up the loss in the other two categories. The business/professional group is noticeably larger due to the employment of professional personnel by the county in the "other" basic category. The newcomers

are lower: this group accounts for the Surry project workers who are present in the county but who are either single or unaccompanied by their families.

The effects upon the local social structure during construction were slight since most of the effects on the workers' group were due to diminished out-migration. This meant that the people who were identified in the population increases were already well integrated into the community. The movers unaccompanied by families (or single) had little effect on other groups and were designated as a subgroup of the newcomers. The most interesting change was from the professional people who were added to the business/professional group due to "other" basic employment. A majority of these people were blacks, and they have provided the county with a subgroup within the black caste that did not exist prior to the change in county administration. The significance of these changes are discussed later in Section 8.5.

8.4.2.1 Settlement Patterns and Housing

The settlement patterns of the Study Area were little affected by the project. The establishment of three trailer courts between the town of Surry and the plant site was noticeable, and the building of the Surry Inn provided the county with its only motel. For the most part, however, the established land use and housing patterns continued without any major change. About 95 percent of the land in the county remained as either farmland or woodland, and the only new industrial property was that used for the Surry Power Station. The county purchased a 450-acre tract near the center of the county, part of which was used as property for the new high school. Altogether, less than 1,500 acres out of a county total of 179,200 acres experienced significant change in use. (Surry County Planning Department, 1974.) These changes in land use did not produce any apparent changes in overall settlement patterns, and did not effect specific groups within the social system.

The housing change for the period 1967 to 1980 was discussed in Chapter 6. As shown in Table 6-5, the project-related use of the housing stock was less than 3 percent prior to the steam generator refit project in late 1978. For 1979 and 1980, it was less than 4 percent of the total. The nonmovers as well as the movers were included by estimating the diminished out-migration in addition to the in-migration.

The primary type of new housing was mobile homes, which showed a dramatic increase during the study period. The workers' group purchased numerous mobile homes

and located them at various places throughout the county according to their established geographical and family residential patterns. The movers unaccompanied by families (or singles) rented some local housing, but they relied primarily on mobile homes located in the trailer parks. These parks tended to keep Surry project newcomers somewhat separated from the rest of the county social system. This tendency was strengthened by the general policy of the trailer park operators to rent to only singles or couples rather than families with children. The elderly also purchased some mobile homes for recreation or retirement use, mostly in the Claremont and Scotland areas. These additions to the county housing stock were not due to the project, however.

In-migrants who joined the business/professional group almost always bought or built conventional housing units. These people were relatively few; their housing purchases were located in the rural areas close to the schools and near the government center in the town of Surry. Interestingly, none of these movers located in the town of Surry itself due to a housing ban because of the condemned sewer system. A rural home site with some acreage seems to be a dominant housing goal for both the working class and the middle class residents.

Housing availability was identified as one of the major restrictions (along with schools and shopping) on the number of in-migrants to the county. For the newcomers' group, the problem of locating housing was difficult due to the limited stock and the lack of local real estate agencies. The cost of renting mobile homes was based upon the new cost of these units and was high compared to the established rents paid by nonmovers. Such rents did not appear to be higher than comparable housing in nearby areas, however, and they did not have any significant effects on raising the existing rent schedules for other other renters in the county. There were a few local business people who were the well-known landlords renting to project-related employees. These rental units made up only a small portion of the county housing stock and were utilized almost exclusively by movers unaccompanied by families (or singles).

8.4.3 Government and Public Services

Chapter 7 presented an analysis of the changes in county government structure, revenues, expenditures, and services. In terms of the effects upon the county social system, these are the most important changes that took place during the study period.

Every group in the county has been affected by the transfer of county government administration from the old three-member to the new five-member Board of Supervisors. The major components of change involved important shifts of control from whites to blacks, and from the landowners to the workers. While these shifts were not absolute by any means, power was definitely transferred.

The social forces that were involved in these changes were already well formed before the Surry Power Station project was started. Many of the changes that resulted would have taken place without the plant's being located in the county. However, the immense increase in county tax revenues due to the project was an important element in the change in county services and in the nature of the relationships between groups. These changes are discussed in more detail in Chapter 8, Section 8.5.

8.4.3.1 Property Tax Effects

The annual tax payments made by VEPCO on behalf of the Surry Power Station are shown in Chapter 7. The differences in taxing policies between the three-member and five-member Board of Supervisors are shown in the annual tax rates as recorded in Table 7-2. The three-member board primarily represented the two groups who were the major property owners—farmers and business/professional people. Therefore, when Surry Power Station tax revenues began to increase rapidly from 1969 to 1970, the supervisors lowered the tax rate by 13 percent to \$2.00 per \$100 assessed value. This rate was maintained until 1974 when the five-member board—representing mainly the blacks and the workers—had been in office long enough to implement changes in county services and programs. Since 1974, the trend has been to increase the tax rate to fund additional government services.

8.4.3.2 Service Effects

The Surry County school system received the major amount of attention from the county during the study period. In 1977, for example, education accounted for 69 percent of the county budget (Table 7-1). Other important changes have been made in the county administration, planning and housing inspection, parks and recreation, social services, public safety (police, fire, and rescue services) and waste disposal. In fact, all county services have increased since 1972, and many services have been initiated during this period. The election of the five member Board of Supervisors brought about an overall policy change—the advocacy of minimal public services and a county government with

the lowest possible tax rate was supplanted by a strong public services program and a county government willing to raise tax rates to pay the increased costs.

8.5 Changes in the Social Structure and the Role of the Effects of the Project

This section describes the major changes in the group composition and the relationships between groups during the study period. The discussion focuses on the role of project-related effects.

8.5.1 Changes in the Profiles of the Groups

8.5.1.1 Farmers

The long-term trend of fewer farmers but larger farm operations appears to have continued during the study period. This trend had a very conservative effect on the group since it favored operators who were well established and well financed. Newer and younger farmers were discouraged unless they were heirs to established properties. The economic and social patterns of interaction remained fairly constant. The major change has been in the political role of the farmers. Since 1972, they have occupied a minority role in county government and have lost their direct control over tax rates. They have been leaders in forming the Surry County Taxpayers Association, an organization designed to represent their interests. Overall, they have declined from being a dominant force in local politics to becoming a pressure group attempting to influence local political policy and actions.

8.5.1.2 Business and Professional

The business/professional group has changed more than any of the designated groups described for this study. The two major effects on the group have been their relative loss of political power and the addition of an important group of new professionals employed by the county. Important but less dramatic effects have taken place due to the increased income resulting from the Surry project. These income factors have mainly affected the group members located in the town of Surry area and have resulted in expanded services.

The social cohesion of the group is much weaker now than it was prior to the project. This is due both to the number and type of newcomers who have been added to the group, and to the fact that the social interaction of group members is based upon

family and church as much as upon business activities. Therefore, the diversity of newcomers (many of them black, county personnel) has tended to create a subgroup of people within the business/professional community rather than merely expanding the numbers of the established group.

The loss of political power by the business/professional group was primarily due to the 1972 political change in county administration. Prior to that time, the group was almost entirely white and closely allied with the farmers. Most of the newcomers to the group have been employees of the new Board of Supervisors or people who are supportive of the current public administration. The group has several supporters of the Surry County Taxpayers Association but, due to their dependence upon the whole population as customers and clients, they are less active than the farmers.

8.5.1.3 Workers

The workers' group includes a large and diverse membership. Some of these people obtained project-related jobs, either during construction or during operation of the Surry Power Station. The number of these positions was quite small, however, in terms of the size of the labor force. The trends toward greater participation by women in the labor force, increased commuting, out-migration, and out-of-county shopping continued. There was little significant change in the workers' group during this period due to direct project-related effects.

The social patterns of the workers also appear to have continued in much the same manner as was established prior to the project. There were no major additions to their social interaction; the emphasis on family and church remained important.

Politically, the organization of the black community, including much of the workers' group which is largely black, experienced a major change. This increased organization resulted in new access to local public administration, increased public services (especially in the school system), and development of a new leadership profile in the community. While the relative position of the group did not change much in economic terms and there were no major changes in group interaction, the group did experience an important growth in political power during the study period.

8.5.1.4 Elderly

The designation of the elderly group primarily applies to those over 65 years of age who are retired or dependent. In rural areas such as Surry County, many older persons remain active as farmers, business or professional people, or in occupations they would have retired from in more urban areas. The activities of these people add a diversity to the elderly group and provide an important link between the group and other parts of the social structure. Another subgroup of the elderly is the retired in-migrants who typically moved to the county after having some experience with the area through its recreational amenities.

The elderly group has grown somewhat, as shown by the population figures, but it has maintained much the same mix that existed prior to the project. The elderly are generally very active in family and church affairs. Their primary concerns with local economic conditions are focused upon taxes. Other than those still active in business, they experienced little direct economic effects from the project.

The county has begun a senior citizens program, and the new Community Center has provided space for a number of activities for the elderly. Therefore, in addition to the tax benefits resulting from Surry Power Station revenues, there have also been some public service programs which directly affected the group. County support for improved medical care has also directly benefited the elderly.

Politically, the elderly have less power than they had prior to the Surry project. This is due to the fact that the influential elderly people were white leaders who lost control of the county administration in 1972. Although one of the black supervisors is a retired worker, the political position of the elderly as a group is no longer as strong as it was. Many of the members of the Surry County Taxpayers Association appear to be elderly white people who have joined a political action group in order to regain some of their lost influence.

8.5.1.5 Newcomers

Newcomers to the county include the residual subgroups of people who do not fit well into the major functional groups in the social structure. The major newcomer subgroups are: movers unaccompanied by families (or singles) who remained quite separate from the local social structure; and people who moved to the county for residential reasons but who have their employment, income, or major socioeconomic

relationships outside the county. Other newcomers, such as retired people or the business/professionals, are more closely allied to established groups and have been included in discussions of these other groups.

Prior to the project, newcomers were mainly retired people and a few wealthy buyers of historical properties. The group is entirely different now, primarily due to the temporary workers at the Surry project and the relocation of a few new people who were looking for a rural atmosphere. The Surry workers are economically tied to the project but are socially and politically separate from the county social structure. The other newcomers tend to be economically independent of the project and more active in community social affairs.

8.5.2 Changes in the Relationships among the Groups

While the employment and income effects were important, they did not appear to produce any significant changes in group interaction. The demographic, housing, and settlement pattern changes were all small enough to occur without requiring major adjustments in the social structure. The largest influx of project-related people were the movers unaccompanied by families (or singles) who remained somewhat distant from the local social system.

There were, however, important changes in the relationships between the groups during this period, and the tax revenues provided by the Surry Power Station were a major factor in the outcome of the change process. The changes in public administration and political influence in the county have been outlined in Chapters 7 and 8. The purpose here is to discuss the change in relationships between groups in light of these background events.

The antagonistic positions of the blacks and whites in the county were evident in the school integration matter and in the successful efforts of blacks to form the Surry Assembly and the Surry Forum. The eventual result of these events was black control of the county government and a reversal of the county policies on taxation and public services. This put the blacks in direct opposition to whites. In terms of group involvement in the county affairs, the major opponents were the workers' group against the farmer and business/professional groups. The black administration, which principally represented the workers' group, was opposed by the major property owners regarding the right to set tax rates and the establishment of strong public services programs. In fact,

when the three black members took office in 1972, they were all out-commuting workers who had advanced in their jobs so that two of them eventually had supervisory responsibilities.

The question of who benefited most from the VEPCO tax payments—the property owners (through lower tax rates) or the recipients of public services, especially the predominantly black schools—has good arguments on both sides. Without much doubt, both obtained much more than they would have without these tax resources. Even though the tax rate is among the lowest in Virginia, major improvements have been made in all aspects of county services. Still, even with these outside revenues, the question of tax rates has caused continuing conflict between the property owners and the county administration. This finally resulted in the property owners forming the Surry County Taxpayers Association. On the other side, the Surry Assembly has actively promoted a number of public service solutions to local problems. In spite of the different positions and the deep feelings which characterize both sides, there is clear evidence that the county groups are more cooperative than has been the case in the past. The racial relations, group interactions, and social conditions have improved markedly during the study period. About half the county's white school population attends the public schools, and a number of white personnel have been employed by the school district. The previous antagonistic relationship had centered not so much on how to allocate tax revenues, but on a basic power struggle between those who advocated increased social services and had control of the local government, and those property owners who did not want the increased services but would be taxed to pay for them. The fact that a major confrontation was avoided and that group relationships have improved over the study period is due, in large part, to the tax revenues paid by the Surry Power Station.

CHAPTER 9: PUBLIC RESPONSE

9.1 Introduction

The purpose of Chapter 9 is to present the major issues that arose in connection with the Surry Power Station project. These descriptions provide important background information for understanding the evaluation and response of Study Area groups to the project. Sometimes the issues appear to bypass the Study Area altogether since the people and organizations involved have no local base. These regional or national responses are provided here to describe more fully the situation that existed for local respondents as they considered the effects of the project. The issues are presented in chronological order.

9.2 Public Response during the Pre-Construction Period

The Surry Power Station project was announced to the Surry County Board of Supervisors on 24 June 1966 at the county courthouse (Richmond Times-Dispatch, 5 July 1966). This was followed by a series of articles in Virginia newspapers describing the cost, employment, income expectations, and features of the location. Site preparation and excavation were underway by early 1967. The construction permit was granted on 25 June 1968.

9.2.1 Announcement

The reaction of Surry County officials and residents was one of enthusiastic support. The main support was based upon economic reasons: employment, taxes, tourist income, additional commercial and industrial expansion, and few demands for public services due to the projection of a small operating work force. The construction project was promoted locally by VEPCO, and from 1967 to 1974 the utility operated a visitors' center which attracted about 300,000 visitors to the site.

9.2.2 Siting

The land purchased for the site was obtained in November 1966 from the Halifax Lumber Company as one piece of property. The site was adjacent to the Hog Island Game Preserve in an isolated area of the county. The use of landfill from the plant excavation for improving roads and dikes in the game preserve was widely publicized by VEPCO. Local people, particularly sportsmen, credited the company for its contribution

toward wildlife preservation. There was no recorded opposition to the site nor were recently interviewed key informants able to recall any such cases.

9.2.3 Permits and Hearings

One consideration in siting the Surry Power Station was the local support for such a project. The hearings required to obtain the various permits and licenses were supported by Surry County officials. Local people did have some concern about the operation of the plant, but these concerns never materialized into opposition at the hearing processes. In some cases, VEPCO personnel were active in resolving concerns before they became issues. An article in the Virginian-Pilot (13 August 1967) quotes a James River oysterman: "At one time the oystermen were up in arms, but some VEPCO man came down and explained. . . . now we aren't concerned any more."

One local official told the reporter he thought the local residents were not worried about radiation and safe operation of the plant because so many of them had worked with nuclear energy in the shipyards (Virginia Press, 13 August 1967.) The combination of a willingness on the part of local people to accept the plant, VEPCO's effective public relations with concerned groups, a local sense of security concerning nuclear technology, and lack of any effective regional opposition, all combined to allow the early hearings to be completed without opposition.

The application for an Atomic Energy Commission (AEC) license was filed in March 1967, and the company was authorized to begin site preparation work. AEC Permits No. CPPR-43 and CPPR-44 were issued in June 1968. The Virginia State Corporation Commission authorized construction of the station and the transmission lines in Surry County in March 1967. Numerous permits were obtained from the U.S. Army Corps of Engineers for work that affected use of the James River. The State Water Control Board issued a certificate for cooling the operation with James River water in December 1967. There was no recorded opposition to these proceedings.

The AEC conducted public hearings prior to issuance of an operating license for Surry-1 in March 1972. A pre-hearing conference was held in Williamsburg, Virginia, and the hearings were held at the courthouse in Surry, Virginia. One intervenor, the Lieutenant Governor of Virginia, was represented at the hearings. The question of safety was considered at the hearings, especially the welding safety and inspection procedures.

These questions resulted from the Houston allegations (see Section 9.3) which were an issue during plant construction and which are discussed in Section 9.3. The AEC found that the welding at the plant had been audited and necessary repairs made to insure safe operation. (NRC docket, 50-280 T3, 20 March 1972.)

9.3 Public Response during the Construction Period

The construction period ran from January 1967, when site preparation began, until 1 May 1973, when Surry-2 began commercial operation. News stories on the project began as soon as it was announced in 1966, and descriptions of construction work were published beginning with site preparation. (Richmond News-Leader, 24 January 1967.)

Only one major issue surfaced during the construction of the plant, the question of the quality of the welding work done on the cooling system. In February 1970, Carl Houston was hired by Stone and Webster as a welding supervisor. According to his testimony at the operating license hearing, he was fired after less than two months for attempting to correct faulty welds. VEPCO maintained that he was terminated because of incompetent work. In the following months, Houston began a campaign that made the welding quality at the Surry site a public issue. Over the months he wrote letters to Stone and Webster, VEPCO, the AEC, and numerous public officials. The AEC sent investigators to Houston's home in July 1970 and, as a result of his charges, the agency formulated eight allegations, which he signed. These charges were investigated by the AEC and reported to VEPCO. The first news stories were published in December 1970, and during 1971 the issue was reported in numerous papers including the Richmond Times-Dispatch, The Daily Press (Newport News, Virginia), the Washington Post, and The Washington Star. In April 1971, a resident brought this matter to the attention of the Surry County Board of Supervisors which responded by asking VEPCO and the AEC for assurances of the power station's safety. These assurances were provided by a VEPCO spokesperson.

In partial response to the increased concern, VEPCO hired Southeast Institute of Research to conduct a complete audit of welds. Southeast began its audit in April 1971, and its report was completed by June 1971. The auditors examined 650 welds and found 94 that had to be repaired and 199 that were recommended for further engineering study. New inspection procedures were instituted at the site.

Generally, the utility spokesperson said that Houston's allegations had little merit and that the defects he pointed out would have been corrected by the established procedures. The chairperson of the AEC, however, wrote that Houston's charges were investigated and "the general validity of Mr. Houston's eight allegations was verified . . ." (Washington Post, 19 August 1971.)

As a public issue, the Houston charges were considered at the local, regional, and national levels. There were no active organizations or groups that took sides either for or against the project. The newspapers and broadcast media publicized the issue, but the investigation and resolution were accomplished almost entirely by the established governmental processes. Even the concerned local residents went to the County Board of Supervisors, and the result was the Board's request for assurances from VEPCO and the AEC.

Overall, the Surry project had wide public support in the Study Area, and the questions about safe operation of the plant were not considered insurmountable. There was some concern about the allegations of faulty welding, but overall, people seemed to be reassured by the actions of VEPCO, the AEC, and other government agencies. The company was very responsive to questions from the community and carried on an active public relations program through the visitors' center.

9.4 Public Response during the Operations Period (1972-1979)

The operating license for Surry-1 was issued on 25 May 1972. In the following years, two concerns became public issues. First, the ability of the utility to properly operate the plant has been raised on several occasions. Second, the design safety of the plant, in particular the steam generators, has been an issue.

The question of proper management resulted from a series of events which were widely reported in the news media. Shortly after the station received its operating license and before it began commercial operations, two employees were killed when they were scalded with steam as a result of the failure of a pressure relief valve and a steam venting system. (Richmond Times-Dispatch, 12 August 1972.) A reported fish-kill in late 1972 (between October and December) resulted in both structural and operational changes to the water intake facilities. There was some concern expressed by environmentalists about the design of the cooling system. (Virginian-Pilot, 7 May 1973.)

In May 1973, the AEC fined VEPCO for 28 violations of safety rules, most relating to deficiencies in the inspection and reporting methods (The Sunday Star and Daily News, 20 May 1973). In April 1973, VEPCO announced plans to build Units 3 and 4 at the Surry site in order to meet increasing electric demand. The hearings for a limited construction permit were held in Surry, Virginia, in July 1973. Two environmental groups opposed the Surry-3 and -4 project: the Striped Bass Fund and the North Anna Environmental Coalition, which were mainly opposed to the VEPCO four-unit nuclear-powered station being built at North Anna on the Louise River. The question of a geological fault near Hampton Roads and the ability of the plants to withstand seismic shocks were brought up. The AEC held the safety and health hearings on the VEPCO application in October 1974 at the Surry County courthouse. The question of earthquake protection was raised by a geophysicist from Old Dominion University. The Surry Assembly asked for better quality control of construction and for local involvement in the inspection processes. (Ledger Star, 9 October 1974.) The construction permit for Units 3 and 4 was issued in December 1974. The project was later cancelled in March 1977.

The problem of steam generator tube leaks was a continuing operational problem and was often reported in the newspapers. The leakages were identified as a generic problem that occurred in all similarly designed Westinghouse steam generators. VEPCO announced in June 1977 that it would replace the six steam generators at the Surry Power Station. (Washington Post, 13 June 1977.) Work began on the refit project in 1978 and will continue into 1981.

In July 1978, a Ralph Nader group attacked the operating record at Surry as "one of the worst" in the country. The charge was based upon an analysis of radiation exposure to employees. (Progress-Index, 26 July 1978.) During 1978 and 1979, Surry-2 was removed from service while the steam generators were replaced. For seven months in 1979, Surry-1 was out of service while the company tested and modified pipe supports that were designed to withstand the stress of an earthquake (Norfolk Ledger-Star, 26 October 1979).

The record of operating incidents, violations of operating regulations, and design problems with the plant combined to keep the operation of the station a matter of public notice. There is no evidence, however, that the plant operation was a serious issue either

in the region or in Surry County. Most people in the county accepted the plant and were satisfied with VEPCO's assurances that it was being safely operated.

9.5 Public Response during 1979-1980

In 1979, two events focused concern on the safe operation of the Surry Power Station. The first was the March 1979 accident at Three Mile Island; the second, the April 1979 attempted sabotage of stored fuel by two VEPCO employees.

9.5.1 The Accident at Three Mile Island

The TMI accident in late March and early April 1979 was an important news story throughout the country, particularly in the areas surrounding the Surry plant. The stories by nearby newspapers reported on the design differences between the TMI and Surry facilities (The Daily Press, 22 April 1979), about post-accident training (Virginian-Pilot, 4 May 1979), and evacuation procedures and training (Daily Press, 13 April 1979). A number of stories were done on the reaction of local residents to the plant following the TMI accident. In general, people living near the plant were more concerned than they were before the accident, but most people were either fatalistic about a possible accident or felt that it was not probable enough to worry about (Virginian-Pilot, 18 August 1980). The county revised its evacuation plans following the accident with more emphasis on a TMI-type accident.

9.5.2 The Fuel Assembly Sabotage Case

Shortly after the TMI accident, two Surry employees attempted to damage some stored nuclear fuel assemblies by pouring a caustic acid solution on them. The sabotage attempt was highly publicized and raised questions about the security of plant operations. The two perpetrators were arrested and went to trial in October 1979. The trial at the Surry courthouse attracted heavy media coverage, and resulted in convictions for the two defendants on charges of damage to property. They were sentenced to two years in prison. (Washington Post, 10 October 1979). Their appeal to the State Supreme Court was denied in September 1980 (defendant attorney, personal communication, 1980). The trial in the county courthouse resulted in a great deal of local interest but does not appear to have altered the relationship between the utility and the community. There was not much sympathy for the sabotage effort by local residents.

9.6 Summary

The major issues that resulted from the Surry Power Station project were the quality of construction, operations procedures and design integrity, especially in connection with the steam generators, plant security, and safety. The safety concerns became more important in 1979 after the accident at Three Mile Island.

9.6.1 Role of Study Area Residents in Public Response

Three groups were actively involved in the public response to the Surry Power Station. The earlier, three-member Board of Supervisors represented the farmer and business-professional groups. They supported the project in its earlier stages and continued to support it for economic reasons even after they lost control of the county government. The workers group supported the project as an employment opportunity, and later through their control of the Board of Supervisors.

There appears to have been a greater level of support on the part of the three-member Board of Supervisors than by the black-controlled, five-member board. The relationship between the utility and the county officials appears to be correct but distant. This may be due to tax rate increases which VEPCO has opposed (Daily Press, 21 May 1976). County officials had also complained from time to time that they were not well enough informed about operational events at the site (Daily Press, 8 August 1974). VEPCO, unlike some other companies, does not present itself as a neighbor that partakes in the community life. Rather, it maintains the appearance of a proper citizen who promptly pays all taxes but does not want to be intimately involved in the community.

The other county groups were the elderly and the newcomers. The elderly were generally supportive because they saw economic advantages for their families and friends, or for the county as a whole. The newcomers were often project employees and, in the cases where they were not, the plant was accepted as simply another aspect of the community.

Even today, after the difficulties of the operation period, the Three Mile Island accident, and the sensational sabotage trial, there is very little opposition to the plant and almost no organized group to oppose it. The remote location of the plant, the regional tendency to rely upon established governmental procedures for regulating

businesses, the paternal tradition of interaction between companies and individuals, and the general deterministic faith in the safety of the plant, all seem to be part of the issues context in the Study Area. The opposition to the plant is mostly individual rather than group actions. Another factor might be that much of the regional opposition has been focused on the VEPCO four-unit site at North Anna rather than on the Surry Power Station. From time to time, North Anna opponents have remarked about Surry, as at the hearing for a construction permit for Units 3 and 4. These occasions have been in the nature of forays into the case of Surry rather than sustained opposition as in the case of North Anna.

CHAPTER 10: EVALUATION AND SIGNIFICANCE OF THE SOCIOECONOMIC EFFECTS OF THE SURRY POWER STATION

10.1 Introduction

The purpose of this chapter is to provide a brief summary of the project and the Study Area changes resulting from the project during the period 1967 to 1980. Much of this discussion focuses on the qualitative aspects of change and includes a discussion of the group evaluations of the project. This is followed by a consideration of the essential questions involved in describing the significance of the project to the community. This consideration includes reference to the trends of change in the community and the relations between the utility and the county. The data for these descriptions were obtained in interviews with key informants, readings of county historical documents, and the observations made during three field trips to the county.

10.2 Summary of the Socioeconomic Effects

The major socioeconomic effects of the Surry Power Station project were described in some detail and summarized at the conclusion of each chapter. The purpose of this section is to provide a succinct overview oriented toward the change that took place during the entire study period. Reference is made to the most affected groups but there is no attempt to explain the details of the effects.

10.2.1 Economic Effects

The employment and income benefits to residents of the Study Area were only a small proportion of the total effects produced by the project. The location of the plant, the large number of site commuters, and the small retail and service capabilities in the county minimized the plant's effect on employment and income. However, this relatively small impact, when measured by the overall size of the project, was important to the county. The workers and the business-professional groups benefited most from the employment and income. The project also brought a number of workers unaccompanied by families (or singles) to the county. These people tended to be transients who did not integrate into the community and were classified as a subgroup of the newcomers. The higher-than-expected operations employment, the extensive maintenance work, the abortive plan for Units 3 and 4, and the steam generator refit project have all combined to keep employment at the site higher than originally forecast. Average annual employment at peak construction (1970) was about 1,850, but this was less than the total employment effects for 1979.

10.2.2 Population Effects

The greatest changes have been in the newcomers group, due to the presence of movers unaccompanied by families (or singles), and in the business-professional group, due to in-migration of "other" basic workers, chiefly county employees. There was also diminished out-migration which primarily affected the workers' group. This latter effect was important in a rural community which places great value on family relationships but it was not as noticeable a change as the in-migration, and was not often noted by key informants. The total population effects have been highest during the operation period due to "other" basic employment and the refit project.

10.2.3 Housing and Settlement Pattern Effects

The lack of housing for workers who wanted to move to Surry was identified as one of the main reasons many people commuted to the site from outside the county. Three trailer parks were developed to provide units for project workers, and over the study period these locations were used almost continuously by project employees. The Surry Inn Motel was built just as construction began and has always had a large proportion of project-related business. The effects on the general housing stock were not clearly established, but new units were built and existing dwellings were upgraded for both movers accompanied by families and nonmovers. The project-related units as a proportion of the total housing stock were estimated in Table 6-5. The demand increased to 2.8 percent in 1970 and then declined to 1.0 percent in 1973. Since 1973, demand has increased again, peaking at 3.9 percent in 1979.

The settlement patterns of the county did not change significantly during the study period. The actual station site of 840 acres transferred from woodland to industrial use, of course, but few additional changes to county land uses were recorded. Business activities in the town of Surry increased and some new business buildings were constructed; this did not change the pattern of land use but did strengthen the town's position as county seat and business center.

10.2.4 Government and Public Service Effects

Changes in Surry County government and public services during the study period were dramatic and represent the most important indicators of social and political realignment. The transfer of power from white to black control was not the result of project-related effects (see Chapter 8), but was the result of long-term social conditions which involved the weakening of the traditional caste system. It also resulted in a

change in the group relationships, since the farmer and business-professional groups are predominantly white while the worker group consists largely of black residents.

The change in political control resulted in a shift of government policy from minimal services and the lowest possible tax rate to increased services and an increased demand for revenues. The earlier policies favored the property owners, the newer policies favored the less wealthy residents. The effects of very large increases in county revenues due to the Surry Power Station were extremely important in group relations, county program development, capital investments (especially in schools), county employment, and moderating tax rate increases. The tax payments provided a large new resource base for distribution which minimized the conflict between groups on how the new county policies would be realized.

19.2.5 Effects on Groups and Group Interaction

The greatest change for the farmers was the loss of political control and ability to regulate tax rates. This also changed their relationship with the black majority in the county. Opposition to black control of the county was initially strong but appears to have moderated over time. The formation of the Surry County Taxpayers Association as a political group to represent farmers, business, and professional people, and other white property owners shows a recognition of black control of county government. In turning to political action outside the local government, these groups have recognized that their positions will not be represented by office holders but must be advanced through an outside political group.

The Surry Assembly and its political offshoot, the Surry Forum, were effective organizations that resulted in black control of the county government. This control mainly benefited the worker group and those elderly people who most needed public services. The transfer of control of the county government to the black residents, also resulted in the employment of a number of black professionals. This resulted in the creation of a new subgroup of blacks within the business-professional group. While race still remains a primary point of distinction in the county, the expansion of the black professional middle class has had a moderating influence on caste and class relationships. Several black professionals are very highly regarded by white groups in the county.

The newcomers were formerly limited to a few professionals such as school teachers and retirees, or wealthy people who purchased historical properties. These people are still considered newcomers, but there has also been a number of other people who have started businesses or professional practices, or who came as project employees. The people who have been most involved in change have been discussed as members of the business-professional group. The project-related people have tended to live separately from the local community for the most part, although a few permanent movers with families have been integrated into the community. Often, however, these people will be in the area for only a few years before they transfer to other positions.

The elderly have increased both in number and in proportion of the population. The major changes for the elderly have been in availability of county public services which has improved substantially when compared to services prior to the project construction. These changes were brought about not only by tax revenues from VEPCO, but also because of changes in local government policies and increased federal and state support for the elderly. Indirectly, the elderly have felt the project effects through both the alteration in the county government and in their social relationships, especially with the extended family and kin connections. The loss of white control of county government also meant some reduction in the influence of politically active elderly white property and business owners.

10.3 The Significance of the Project to the Study Area

The analyses provided in this study so far have been mostly incremental and partial; that is, the approach developed descriptions which separated the data in terms of time and areas of effect. These descriptions have been formulated in longitudinal formats, and an overview in terms of group and social system change has been presented. There remains, however, another level of description, perhaps more qualitative, but no less important. The questions that help identify this area of significance can be stated as follows:

1. In addition to the specific short-term and long-term effects regarding the project per se, what are other permanent considerations?
2. Where does the project fit in the total community?
3. How important is the project to the Study Area?
4. Given the project—is the place still a good place in which to live? Has the Study Area improved because of it?

These types of questions encourage a discussion that contrasts the Study Area with and without the project. They also lead to consideration of an overall cost/benefit evaluation. The question of whether the Study Area has improved because of the project also includes some consideration of risk assessment on the part of local residents.

The Surry Power Station represents the largest capital investment ever made in the county. In terms of employment, the number of project-related jobs exceeded the high level the Surry Lumber Company experienced early in the century. The number of county residents employed was, however, much smaller due to long distance commuting. There were other factors that tended to separate the project from the local community. It is deliberately located in a remote area with an extensive buffer zone and very limited access. Physically, the plant is near the edge of the county and somewhat distant from the established towns. It is administered from outside the county and the interaction between the utility and the county is limited, perhaps in part due to the cultural differences between company management and county administration. Finally, the high skill demands of the project required that managers and employees be brought in to work at the site since local people did not possess many of the required work skills. Therefore, in terms of the day-to-day operation, the Surry Power Station has little direct effect upon county interaction patterns. Rather than fitting into the community, the station coexists with the county. The areas of overlap—employment, spending, political influence, community interaction—are minimal for a project the size and scope of the Surry Power Station. The most important local activities are still focused on agriculture, public services, and commuter jobs.

In one sense, the project is more than just a member of the county; it is by far the single most important source of local tax revenues. Because of its separate status from the county administration, however, the utility managers exercise little control over tax rates or county programs. In addition, the utility makes few demands for services. As a result of these conditions, the tax revenues from the project are almost a "no strings attached" source of revenue.

The question of how important the project is to the community can be answered for a number of dimensions. As a revenue source it is very important; as a business enterprise it has only a small involvement in the community and functions as a permanently distinct entity within the county jurisdiction. Occasionally there are calls

for greater cooperation between local people and project personnel. These efforts are usually short-lived and have not moved the company towards a more active local role.

The permanance of the Surry Power Station is accepted by everyone. The 30-year license period defines a minimal expectation for use of the property as a generating facility. Since the problems of siting large industrial facilities appear to be growing more difficult, many people expect that the location will be upgraded and/or converted to different uses as technical developments make such future utilization possible. Many local people warn that the tax base will diminish through depreciation as allowed by state law. Others are not convinced that serious depreciation will result; they point to an increased valuation of the property resulting from the steam generator refit project.

An important consideration for many communities near nuclear stations has been the risk of accidents and the environmental costs of plant operation. In Surry County, there was some concern expressed after the accident at Three Mile Island, but generally the risk factor has caused little opposition. There appear to be a couple of reasons for this attitude. The farmers are very conservative in many ways, but in actual farming operations they take many financial risks on conditions over which they have little control. As a result, the county has a deterministic or fatalistic attitude about many things. As one farmer put it, "When this season started I bet over a \$100,000 that my hogs, peanuts, corn, and soybeans would make me money. I did everything I could do, the best I knew how. But the drought was bad, and I'll lose \$50,000. Maybe more. I can't worry too much about it. I did the best I could but I can't change the weather. I'll borrow on the place. Some people aren't going to make it this year; that's too bad." When talking about living near the power plant he remarked that he didn't concern himself much about any risk because there "just isn't much I can do about it."

Another element of the general acceptance of the risk posed by the plant apparently has to do with the generally paternalistic aspect of Southern society. The general socio-political system is thought to be able to take care of the risk. It is not so much that VEPCO or the government are respected for their ability to control the risk of the station; in fact both often are criticized for real or imagined shortcomings. Rather, there is a deep, mostly unstated belief that the "system" will take care of it somehow. There is a faith in a guiding destiny which many people seem to think of as a hopeful element that minimizes the total risk.

The rural lifestyle that local people acclaim and newcomers deliberately choose for themselves not only has remained but, in many ways, seems to be more attractive now than it was prior to the project. Business and professional people, retired elderly, and out-commuters are moving into the county. Many of these people have nothing to do with the Surry Power Station and select the county in full knowledge of the plant's location. A number of these newcomers are white, and these people are relocating in spite of the racial caste system, the poor shopping, and the reputation of inferior schools and housing. A large number of newcomers seem to feel that conditions are much better in the county than they were earlier and that the improvements will continue. There is a feeling that racial relations will continue to improve. Although the basis for these conditions vary, one important factor has been the increased tax revenues. The project generally gets some credit for assisting in making the county a better place to live. In addition, our analysis indicates that these tax revenues have been important in moderating the relationships between blacks and whites during the black-controlled administration of county government. The improvement in these relationships, as evidenced by increased white enrollment in the public schools, has been important to the entire county social structure. There is a great deal of optimism about recent improvements in the county and the potential of a better future.

BIBLIOGRAPHY

Andriot, John L.

- 1980 Population Abstract of the United States. McLean, Virginia: Andriot Associates.

Atlantic Nuclear Services

Domicile Reports for VEPCO Employees March 31, 1979, July 26, 1980 by City, County, and State. Norfolk, Virginia: Atlantic Nuclear Services.

Continental Telephone of Virginia

- 1979 Telephone Directory, Area Code 804, July 1979. Smithfield, Virginia: Continental Telephone of Virginia.

Department of Education

- 1978 A Survey of School Building Needs, Surry County. Richmond, Virginia.

Department of Intergovernmental Affairs, Division of Local and Regional Planning

- 1977 Virginia Local and Regional Planning, 1977.

Department of Planning and Budget, Economic Research Section

- 1974 Data Summary, Isle of Wight County.

-
- 1974 Data Summary, James City County and City of Williamsburg.

-
- 1971 Data Summary, Surry County.

-
- 1975 Data Summary, Surry County.

-
- 1975 Data Summary, Sussex County.

-
- 1977 Projections and Economic Base Analysis, Isle of Wight County.

-
- 1972 Projections and Economic Base Analysis, James City County.

BIBLIOGRAPHY (Continued)

-
- 1968 Projections and Economic Base Analysis, Surry County.
-
- 1977 Projections and Economic Base Analysis, Surry County.
-
- 1971 Projections and Economic Base Analysis, Sussex County.
-
- 1979 Surry County Comprehensive Plan: Background on the Economy.
-
- Population Projections: Virginia Counties and Cities 1980-2000.
- Department of Planning and Development
- 1978 Housing Assistance Plan, Surry County.
- Department of Taxation, Virginia
- 1977 1975 Virginia Assessment/Sales Ratio Study.
-
- 1978 1976 Virginia Assessment/Sales Ratio Study.
-
- 1968-
1973 Report of the Department of Taxation to the Governor of Virginia.
-
- 1974-
1977 Report of the Department of Taxation to the Governor of Virginia.
- Economic Research Associates
- 1979 Surry County Industrial Study. Prepared for County of Surry, Virginia.
- Governor's Advisory Committee
- 1974 Reforming the Virginia Property Tax, Volume 1, Recommendations to the Governor. Staff Report.

BIBLIOGRAPHY (Continued)

Governor's Office: Division of Industrial Development

Virginia Facts and Figures, 1976, 1977, 1978.

Jung, Clarence R., Jr.

1978 Employment and Housing in Virginia's Urban Corridor. Virginia Electric and Power Company.

Kornwolf, James D.

1977 Guide to the Buildings of Surry County and the American Revolution. Surry County, 1776 Bicentennial Committee.

Moody's Investors Services, Inc.

1977 Moody's Public Utility Manual. New York, New York.

NUS Corporation

1979 Commercial Nuclear Power Plants Edition Number 11. Rockville, Maryland: NUS Corporation.

Patteson, G.W.; Z. M.K., Fulton, Jr.; A.J. Harris

1958 "Classification of Land Ownership: Surry and Sussex Counties." Bulletin 487. Virginia Agricultural Experiment Station.

Slade, Armistead

1980 A Geographical/Social Map of Property Owners on the James River for Surry County. Prepared for the Lower James Association.

State Corporation Commission of Virginia

1966-
1978 Statement Showing the Assessed Value of the Property of Electric Light and Power Corporations, Gas and Pipe Line Transmission Corporations and Water Corporations and the State Taxes Extended for the Year.

Stone and Webster Engineering Corporation

1971-
1972 Monthly Labor Summary, Surry Nuclear Power Station, J.O. Number 11448, 11548 for Periods 1971-1972. Boston, Massachusetts: Stone and Webster Engineering Corporation.

BIBLIOGRAPHY (Continued)

Stone and Webster Engineering Corporation

Monthly Progress Report to Virginia Electric Power Company for Surry Power Station, 1966-1972. Boston, Massachusetts: Stone and Webster Engineering Corporation.

Surry County

1979 Capital Improvements Program and Financial Analysis. Prepared by Planning Management Associates.

Surry County Board of Supervisors

1974 Land Development Plan, Surry County, Virginia.

Minutes of Meetings 1965-1978.

Surry County Planning Department

1980 Comprehensive Plan (Draft).

Taylor Murphy Institute, University of Virginia, Charlottesville, Virginia.

1977 Estimates of Demographic Characteristics of Virginia's Cities and Counties, 1975.

1972-
1977 Estimates of the Population of Virginia Counties and Cities. (Series.)

1978 Personal Income Estimates for Virginia Cities and Counties, 1969 to 1976.

1971 Selected Population Characteristics of Virginia, 1970.

1974 Virginia's Population: A Decade of Change, Socioeconomic Characteristics.

Tidewater Virginia Development Council

1980 Tidewater Virginia FACTS/1979.

BIBLIOGRAHY (Continued)

Department of Police, Uniform Crime Reporting Section

1975-
1977 Crime in Virginia.

Crime in Virginia, 1978.

U.S. Atomic Energy Commission

1968 Safety Evaluation by the Division of Reactor Licensing, Surry Units 1 and 2. Docket Number 50-280 and 50-281.

U.S. Atomic Energy Commission, Directorate of Licensing

1972 Final Environmental Statement Related to Operation of Surry Power Station Unit 1, Docket Number 50-280.

1972 Final Environmental Statement Related to Operation of Surry Power Station Unit 2. Docket Number 50-281.

U.S. Department of Commerce, Bureau of the Census

Census of Business: 1958, 1967, 1972, Retail Trade, Virginia.

1963 Census of Housing, 1960, Virginia.

1952 Census of Population: 1950, Vol. II, Characteristics of the Population, Virginia.

1963 Census of Population: 1960, Vol. I, Characteristics of the Population, Virginia.

1973 Census of Population: 1970, Vol. I, Characteristics of the Population, Virginia.

1963 Census of Population and Housing Characteristics, 1960, Advance Table PH(1), Virginia.

BIBLIOGRAPHY (Continued)

U.S. Department of Commerce, Bureau of the Census

1963 County and City Data Book, 1962.

1973 County and City Data Book, 1972.

1978 County and City Data Book, 1977.

1970 1967 Census of Governments, Volume 4, Virginia.

1972 Census of Governments, Virginia.

1977 Statistical Abstract of the U.S., 1977 (98th Edition).

U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Measurement Division.

1976 Industry Mix Index and Employment Change Index by County for 1971-1975.

1977 Local Area Personal Income, 1970-1975, Volume 6.

1975 Regional Employment by Industry, 1940-1970.

U.S. Nuclear Regulatory Commission

1977 Safety Evaluation Report, Surry Unit No. 1 Steam Generators. Docket Number 50-280-749.

Virginia Department of Highways and Transportation

1978 General Highway Maps for James, Prince George, York, Southampton, and Surry Counties, 1977.

BIBLIOGRAHY (Continued)

Virginia Division of Justice and Crime Prevention

- 1978 Police File, Number of Full-Time Employees' Reports, 1975-1977. Compiled from the Auditor of Public Accounts' Office, Report on Comparative Cost of City/County Government, and Department of State Police.

-
- 1975-
1977 Salaries and Expenditures of Sheriff's Office, Report of the Compensation Board, 1975-1977.

Virginia Electric and Power Company

- 1975 Annual Report, Surry Nuclear Information Center, 1969, 1970, 1971, 1973, and 1974. Richmond, Virginia: Virginia Electric and Power Company.

Chronology: AEC/DRL License Review, Surry Power Station. Richmond, Virginia: Virginia Electric and Power Company.

Virginia Electric and Power Company, Area Development Department

- 1973 Surry County, Virginia, an Economic Study. Surry County, Virginia.

Virginia Employment Commission

- 1979 1978 Wage Rates and Fringe Benefits for Selected Occupations Paid by Virginia Manufacturers.

Virginia Employment Commission, Manpower Research

- 1973-
1977 Population and Employment Data, 1973-1976 and 1977.

-
- 1970-
1972 Population and Work Force Data, 1970-1971 and 1972.

Virginia Farm Bureau Federation, Public Affairs Department

- 1977 Comparative Costs of County Governments in Virginia, 1975.

-
- 1979 Comparative Costs of County Governments in Virginia, 1979.

BIBLIOGRAPHY (Continued)

Virginia Public Accounts Office

- 1971-
1979 Report of the Auditor of Public Accounts of the Commonwealth of Virginia on Comparative Costs of County Governments for Years ending June 30, 1971-1979.

Virginia State Department of Education, Division of Management Information Services.

- 1969-
1977 Facing Up. Volumes 2, 4-10, and 12, 1969-1977.

William and Mary College, Bureau of Business Research

- 1970-
1979 Virginia Business Report, Monthly Series.

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