IMPLICATIONS OF A NUCLEAR FACILITY IN SOUTH COUNTY RHODE ISLAND

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IMPLICATIONS OF A NUCLEAR FACILITY IN SOUTH COUNTY RHODE ISLAND

Volume 3

CASE STUDIES AND MITIGATION OF NUCLEAR FACILITIES

Francis X. Cameron and Malcolm Grant

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REGIONAL COASTAL ENERGY IMPACT PROGRAM

WAKEFIELD, RHODE ISLAND

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INTRODUCTION

AND

PERSPECTIVE ON IMPACT MITIGATION

OBJECTIVES:

The central objectives of this study have been to identify the social, economic and governmental impacts of a nuclear power plant siting, to arrive at an understanding of why these impacts have occurred, to examine what, if anything, has been done to mitigate them where adverse or capitalize on them where beneficial, and to arrive at an understanding of why such efforts have succeeded or failed, as the case may be. The focus of attention has been at the municipal level, although to achieve a more realistic perspective and a more useful product for the seven Rhode Island communities sponsoring the project we have looked at the three communities surrounding the plant site in Waterford, Connecticut, and to a lesser extent at the Southeastern Connecticut region as a whole. We would emphasize that the focus of our investigations has been on municipal social, economic and governmental impacts and not on nuclear plant safety or health impacts, except to the extent that real or imagined these have affected social, economic or governmental life.

METHODS:

In undertaking this study an initial literature search of material relating to the impacts of nuclear power plant sitings in general and the Millstone plant in particular was undertaken. Based on this literature search, a candidate list of potential siting impacts and the various interactions which appeared to be involved in their occurrence was prepared (see Appendix A). A series of questionnaires addressing these impacts was next prepared from some seventeen (17) categories of municipal officials and other knowledgeable persons including the following:

- Chief Municipal Executive Officer
- Town Manager or Finance Director
- Town Planner
- Public Works Director
- Building Inspector
- Police Chief
- Fire Chief
- School Superintendent
- Director of Recreation
- Chamber of Commerce Representative
- Hospital Administrator
- Welfare Administrator
- Realtor
- Union Official(s)
- Utility Representative
- Plant Vendor

Questionnaires were reviewed with local officials in the South County area and modified according to suggestions received. Contacts were made with

identified officials in Waterford and New London, Connecticut and interviews conducted on the basis of these questionnaires. Selected questions based on questionnaires were asked of the Chief Executive Officer of the towns of East Lyme and Montville, Connecticut and of the Director of the Southeastern Connecticut Regional Planning Agency.

Annual Town Reports for the towns of East Lyme and Waterford were reviewed for the study years 1965-1977 as were Town Plans and Regional Planning Reports. A complete comparative analysis of annual budget data for the Towns of East Lyme and Waterford was conducted based on budget data obtained from annual reports and interviews.

This document reflects analysis of interview results and the above-referenced town and regional reports and budgetary information.

As a perspective on the specific local impacts resulting from the Millstone and Seabrook facilities, the first section of the report will identify energy impact mitigation techniques that are available to state and local governments. These would apply mainly to proposals for a specific energy facility and would include associated planning and siting programs. The potential use of these techniques within the legal and institutional framework of Rhode Island will be also analyzed.

INTRODUCTION: MITIGATION

Most of the growth related to energy development has adverse impacts or costs associated with it, as well as an increase in economic well-being through increased employment, higher incomes, and an increased tax base. The social and economic costs and benefits associated with a specific energy project vary considerably depending on the type of facility; the size and rate of growth; the size and social characteristics of the surrounding area; and the capability of the area's institutions to plan for, manage, and influence growth. Due to these possible variations, it is difficult to generalize either about the negative impacts a community will suffer from energy development or about any benefits that will occur.

In addition, the nature of the socio-economic impact on a community or region is often a result of the spatial and temporal mismatch of costs and benefits resulting from an energy development. If any new growth in population is located in a political and taxing jurisdiction different from the one which realized the increase in tax base, serious financial obstacles to accommodating this growth will result. There may be significant imbalances between the community with the facility and the community with the new workers and their families. The community hosting the project may receive substantial property tax revenues, while a neighboring town receives no revenue from the facility but must provide added services for the new residents.

Many communities may experience a "time-lag" problem. While revenues may be sufficient to, over the long run, cover expenditures, they may come at the wrong time. While a commitment of funds for new services and facilities is required before the arrival of a construction workforce, there may be a major lag before increased revenues from new taxable facilities and residents materialize. This requires a community to obtain short-term financing sufficient to meet capital needs between the time the final expenditures are required and the increased revenues from the related growth are sufficient to amortize the costs of public infrastructure. Apart from the problems of the time of service demands and the locations of impacts, apparent economic benefits from the facility may not be welcomed by local residents. For example, if the energy development merely brings in outsiders who take jobs and disrupt traditional social and economic patterns, community resistance may occur. These social disruption impacts are particularly acute in rural areas which have maintained traditional social and political structures and have had little experience with assimilating newcomers. However, this problem could be offset by the long experience of a region such as South County in accommodating an influx of new residents during the tourist season.

All of these problems are aggravated by uncertainty. Individual and institutional adjustment to change is much more difficult if there is serious uncertainty about when and where the energy development will take place. This uncertainty often results from the lack of information from industry or government, or regulatory conflicts and litigation. Under the above circumstances, the potential adverse impacts which may be experienced by a community or region faced with an energy development can be generally categorized:

- public facility and service inadequacy;
- commercial facility and professional inadequacy;
- housing shortages and housing price inflation;
- social disruptions; and
- transportation impacts.

MITIGATION STRATEGIES

The successful mitigation of adverse impacts from an energy facility is dependent on the institutional framework in place to plan for and manage those impacts. In order to establish an effective framework, five functional and interrelated areas must be dealt with:

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

Information. To effectively anticipate and address the problems of energy development, state and local governments need early information on the size, location and timing of the project. Many communities have found this

information inaccessible or unavailable. Timely and accurate information enable the community to project the increased demand for community facilities and services early enough to employ measures to prevent adverse impacts. At a minimum, information should be gathered regarding:

- project specific information on the extent of service demands, employment projections, capital investment and materials requirements;
- the timing of the development phases of the project and how changes in the community will be distributed over time;
- population changes resulting from employment opportunities and related economic growth and migration patterns;
- the community services, facilities, and local characteristics that may be affected by change, and their ability to adjust to change;
- the natural resources needed to support development (water and quality);
- information regarding regional problems and impact mitigation strategies; and
- information regarding the extent to which state and local governments will need to develop and implement certain regulatory functions to manage such development.

Gathering this information can be complicated by the reluctance of private industry to release resource statistics, the need to verify industrial data, the inability of some states to accept information from private industry on a proprietary and confidential basis because of strict "sunshine" laws, and the lack of authority on the part of state government agencies to require local and state units to exchange information.

However, various federal and state programs have been designed to provide access to energy development information. The Department of Interior has begun to provide the governors of coastal states with information relative to offshore oil drilling in their region. This is to enable the coastal state to provide input into the OCS decision-making process. The Bureau of Land Management and the Bureau of Reclamation have made similar agreements with some western states with regard to coal development.

The primary federal mechanisms in this area are the A-95 review process and the information provided in the environmental impact statement prepared for a specific project under the National Environmental Policy Act (NEPA). However, the A-95 and NEPA review process are not designed to

provide information tailored to the needs of local communities facing rapid energy-related growth. More importantly, these processes are limited to individual projects and often do not provide information on the overall nature of planned development in a region.

Several states have developed energy facility siting laws which provide a mechanism for the state to obtain the necessary development-related information. In addition, many energy companies are becoming sensitive to the information needs of nearby impacted communities. However, the record of industry cooperation in releasing early, reliable information varies from project to project. Certainly, this is one area where negotiation with the developer can be used to provide needed information. Developer-community negotiation will be explored in more detail infra.

Local Government Participation in the Federal Decision-Making Process. A major problem facing energy-impact communities is their inability to influence and participate in the decision-making process on the timing, location, and scope of energy development. Federal energy policy and program decisions are important factors in the type of adverse impacts that may occur in a particular state. Federal policies on coal conversion, oil and gas pricing, or OCS leasing has a tremendous influence on state governments. Unfortunately, state government officials responsible for decision making on natural resources often have little or no influence on the federal energy programs and policies.

The final decision to develop a specific energy resource, or to site a particular energy facility, results from the complex interaction of many private, federal, state, and local decisions. It is difficult for a small community, or even a state, to possess the capability to provide an effective input into all possible channels of decisionmaking. More importantly, the opportunities for state and local participation in federal energy decisions are often only advisory. State and local governments may comment through the A-95 review process and the EIS prepared pursuant to NEPA. The federal consistency clause of the Coastal Zone Management Act and the provisions of the Outer Continental Shelf Lands Act of 1978 are examples of legislation that give the states more opportunities to influence federal agency decision making. However, even under these statutes, the bottom line is still the federal agency's perception of the national interest. However, these statutes do foster federal-state cooperation in planning for energy facilities and do increase the states' roles in the decision-making process.

Planning and Management. The capacity to adequately plan for and manage the adverse impacts from energy development. This capacity is necessary to first of all gather the necessary information to understand potential growth and to develop strategies to prepare for growth. There are a number of federal programs that provide planning assistance to impacted communities. However, many other federal agencies have planning

grant programs targeted to their specific areas. In some cases the grant formula and/or criteria are established by statute and their applicability to a specific community depends on factors other than energy development. In others,as with federal highway planning grants, the allocations are to states by formula and not to individual communities.

The federal program which has been the primary source of planning funds for communities is the Department of Housing and Urban Development (HUD) 701 Comprehensive Planning Assistance Program. Not only are the funding levels of this program declining--from $62.5 million in 1977 to $57 million in 1978--there is a fairly consistent concern at the state and local level that current funds are inadequate to meet the additional planning needs of impacted communities. Funds are spread among competing states, councils of government and municipalities, and, since funds are allocated on the basis of past population, most of the funding goes to larger cities. Small rural communities continue to receive funds according to their 1970 population base in spite of rapid growth.

HUD Community Development Block Grants are another potential source of planning assistance. While it is primarily directed to urban needs, some discretionary monies are available to non-urban areas, although the level of funds available does not reflect consideration of energy-impact needs.

The Economic Development Administration (EDA) provides some planning money and technical assistance to energy-impacted communities under Title III of the Public Works and Economic Development Act of 1965. However, the funds available for these purposes are limited. EDA administers a $10 million program to provide continuing support for existing sub-state planning districts, and a $5.5 million program which focuses on the development of a long-term state level planning capacity that can integrate economic development planning and action objectives through the sub-state level. The Title IX Adjustment Assistance Program also provides authority to fund state and local jurisdictions to design mitigation strategies for economic adjustment in impact areas. Though many state and sub-state jurisdictions could use the district and state programs to address impact problems, they provide limited resources, are not designed specifically to meet this need, and apparently have not been used for this purpose. Title IX funding, however, has in the past been used for mitigation planning and is a potential resource which could be targeted specifically to impact areas. Currently, however, there are many competing demands on this resource and use of EDA Title IX for impact assistance has thus been limited.

The Title V Regional Commissions provide a resource for solving the multi-state regional dimension of the problems resulting from energy development. They have a planning program and include the direct participation of the governors in decision making. The Farmers Home Administration (FmHA) has provided some planning grants to energy-impacted communities, as well as a wide variety of basic community facilities. However, the agency is

amendments also specified, as a condition for assistance, that states must develop an energy facility planning process for coastal energy facilities. This planning process must anticipate and ameliorate the impacts of these facilities. The CZMA is the only example of a federal energy impact assistance program that is linked to relatively specific energy facility planning and land use planning requirements at the state and local levels. However, implementation of this particular concept in an individual state often leaves much to be desired.

Some states have attempted to link energy impact mitigation with an energy facility siting and planning process. More than 35 states have adopted energy facility siting programs of one sort or another. Many of these programs provide for the long-term forecasting of energy demand and needs. This identification of future facility needs at an early date may provide useful information in identifying future energy impact problems. A few states, such as Maryland, have attempted to inventory or predesignate sites that would be most appropriate for future energy impact problems. This not only allows the choice of the site with the least harmful impacts, but also gives state and local governments enough time to plan for adverse impacts. These state siting programs usually give the state the authority to approve, conditional grant, or veto utility site proposals. In some states, the social and economic impacts of the proposed facility may be considered in the review process. In Wyoming, for example, state law requires the mitigation of socio-economic impacts as a condition of approval of proposed energy facilities. In this regard, the new Council on Environmental Quality regulations for federal agency implementation of NEPA also require the agency issuing a permit to at least indicate the type of impact mitigation measures that might be employed at a particular project.

In addition to specific programs for coastal zone and energy facilities, other states have adopted broad statewide land use planning programs. These programs often permit greater control over the secondary impacts of energy development and the site approval to comprehensive land use planning. In Vermont, energy site approval is dependent upon a finding that a proposed facility does not unduly interfere with orderly development; and Oregon's program requires compliance with comprehensive land use plans prepared by local governments in accordance with state guidelines.

Other states have adopted environmental impact laws and performance controls applicable to many types of facilities including energy development. These are usually of three types:

- environmental impact statement requirements;
- permitting controls for specific areas such as wetlands or barrier beaches; and
- performance controls which implement federal air and water quality standards.

In addition to, or as an implementation of state guidelines, local land use plans and controls, are a primary mechanism for controlling the adverse impacts of energy development. These local land use controls define the permissable use of land and provide a framework within which development proposals can be evaluated. If an effective plan, and the zoning controls to implement it, is not in place at the time of energy development proposal, a local community will be ill-prepared to influence the development or to control its impacts. Communities must be prepared and organized to manage energy-related growth. This involves not only the citizens of the particular community, but also all other affected government units in the region. Local goals and objectives must be identified, existing conditions and resources identified, land use management and capital improvement plans prepared, and industrial zoning and performance standards in place to control impacts.

In dealing with the fiscal impacts of energy development, local governments can affect either expenditures (service levels) or revenues (tax rates). If the jurisdiction is one with a large energy facility--such as a nuclear plant or an oil refinery or gas processing plant--it may have the option of increasing services and lowering taxes. If, on the other hand, the community has the people and not the facility, has a low value facility, or is in the peak development phase of adverse fiscal impact, it may be forced to raise taxes or cut services.

In setting financial objectives and a fiscal plan, the following can serve as useful guidelines for communities:

- While the new industry will obviously contribute to local revenues through tax payments, other steps may be necessary to ensure overall positive fiscal impact. There may need to be corporate guarantee of debt or prepayment of taxes.

- The fiscal plan should be seen as the means through which the growth plan is implemented and therefore tied to all other aspects of the adopted plan for growth. Critical elements of the fiscal strategy are the annual budget and the capital improvement program of local government.

The most critical pressures on local operating budgets come during the development phase, because heavy demands on public services precede revenues from the facility being developed. It would be very helpful to local government officials to have operating expenditures and revenues projected for the life of the construction phase. Obviously, these will be approximate, but they will point out potential problems, such as starting programs which cannot be paid for later, and lags in revenue which must be overcome. A long-term forecast can be used to start seeking new revenue sources, including changes in state legislation or allocations, or assistance from the energy company. This operating budget projection can also show if any funds will be available to support the Capital Improvement Program.

Capital programming has the potential for assisting local governments in planning for and meeting the demands for rapid energy development by:

- determining the magnitude of capital needs;
- setting priorities for construction;
- determining available financing;
- demonstrating financial needs to other agencies (and the energy company); and
- coordinating capital spending with operating budgets.

The eight major steps of the capital programming process, which can be accomplished in about six to nine months, are as follows:

- assemble background information;
- inventory potential projects;
- analyze individual requests;
- prepare financial analysis;
- develop draft capital program;
- prepare proposed capital program;
- adopt capital program and budget (by the board or council); and
- follow-through.

The zoning ordinance is the most effective and powerful tool for controlling development at the local level. With an ordinance, the local government is in a position to guide industry to locations where the proposed development will be compatible with neighboring uses, and to control its development to prevent or mitigate adverse environmental, social or economic impacts.

The new Northampton County Planned Industrial District is an interesting example of an ordinance which was designed to control the development of "large scale and comprehensively planned heavy industrial facilities". Though the ordinance was developed with a specific facility in mind, it still permits other uses in the district. All uses are permitted by right, but a strict two-step development plan review process applies to all development applications.

The unusual element of the ordinance is the provision--specifically permitted under state law--for "contract zoning". This allows specific development regulations and provisions to be considered as part of a rezoning request, if these conditions are "proffered" in writing by the owner of the property in advance of the formal public hearing. Any conditions which an applicant offers are legally binding and become part of the zoning agreement. Among the conditions offered by the energy developer in this case were:

- programs to train local residents;

- land for use as a temporary mobile home park;

- contribution of matching funds for a state grant for highway access construction; and

- agreement on water and sewer service.

In addition, as part of the final development plan, the industry is required to set forth "the proposed number of persons to be employed on the tract" and "provisions for minimizing the adverse effect upon the county of the influx of significant numbers of persons to be employed on the tracts".

Other local environmental controls which have particular relevance for controlling the location and development of industry are:

- erosion and runoff controls;
- dredge and fill controls;
- wetlands protection programs;
- floodplain regulations
- local coastal zone management plans and programs;
- local environmental impact statement requirements; and
- building and construction controls.

In summary, a number of techniques can be used by state and local governments to plan for and manage energy impacts. An important consideration here is the effective coordination of these programs.

Coordination. As we have seen from the proceding section, there are a great number of federal programs available to help communities, public entities or individuals to meet housing, health, education, social services, community facilities, transportation, policy and fire protection, economic assistance, and other needs. However, these programs are generally not targeted to deal with energy-impacted communities' problems. A community requiring a range of services and facilities must generally apply separately for each of these programs and must comply with a variety of separate program eligibility and administrative requirements.

Local governments may need technical and/or financial assistance to aid them in seeking out funds for community facilities and services from the maze of available state and federal programs, as well as in negotiating with new industry to share in community development costs. Local governments faced with this complex job of grantsmanship in a compressed timeframe may lack the staff capacity and expertise to foresee and effectively pursue these assistance opportunities. However, many federal programs were created for purposes other than mitigating negative energy-related socio-economic impacts. This further exacerbates the ability of impacted communities to access these federal programs.

The federal government has made several attempts in recent years to simplify and coordinate access to and management of federal programs. In the 1960's Federal Regional Councils (FRCs) were established to coordinate delivery of the major grant programs within each of ten standard federal regions. The effort was initially oriented to human resource and community development type programs -- HEW, HUD, OEO, Labor, Transportation, LEAA (Justice); however, the later additions of EPA, Interior, Agriculture, Energy and Commerce broadened this focus. The FRCs were charged with assisting state and local officials, particularly through program coordination and simplifying access to federal information and services. FRCs among other functions were given operational responsibility for Circular A-95, (the Clearing-house procedure to give state and local governments an opportunity to comment on major federal projects) and the Joint Funding Simplification Act (1975) which was enacted following an FRC pilot program of Integrated Grant Applications. Through this mechanism, FRCs can assist communities/applicants in "packaging" both applications for and management of funds from several federal sources to facilitate comprehensive problem-solving, speed up funding, and cut down on staff needed to administer, audit, and report on grant fund expenditures. Unfortunately, funding for FRCs activities has been very limited and FRC influence with other agencies has been virtually non-existent.

Regional Economic Development Commissions, so-called Title V Commissions, operate under shared federal-state leadership and were established in the late 1960's to encourage economic development in several economically depressed regions of the country. Their mandate includes coordination not only of economic programs, but programs to meet those infrastructure needs without which communities could not sustain the newly developed economic gains. Given the fact that governors participate in setting the priorities for spending of Regional Commissions funds, state initiatives have been fairly successfully coordinated with Title V funding in energy-impacted areas.

Most major pieces of federal domestic legislation call for some form of coordination with other related federal assistance. Federal programs for transportation, community development, outdoor recreation, and coastal zone management, among others, require comprehensive planning and coordination with other related programs by the state and local governments to receive these funds.

Some states have established mechanisms at the state level for coordination of programs. At the local level, councils of government or other coalitions of authorities (city-county, multi-county, water districts, school districts, park and recreation districts, transportation authorities, etc.) have been developed in response to local perceived need for coordination, or as a requirement for eligibility for many federal funding programs. They vary widely in effectiveness because of differences in authorities, and local perceptions of need and mission. A concept of sub-state planning districts has also been applied effectively in some parts of the country. The most prevalent mechanism to coordinate functional planning is the interagency

committee. In every state, interagency committees are used to coordinate the planning among state agencies, and between state and sub-state agencies. Finally, the comprehensive state planning office can play a central role in the coordination of energy planning programs. Often the state planning office will develop a common set of data and projections on population, land use, income and on other factors important to the planning process. They may also be directly linked to thepreparation and review of state budget allocation decisions. This can be a key element in the coordination of planning and the determination of trade-offs.

Three examples of cooperation among affected units of government have been developed in response to energy and defense projects in the west. These bodies made communities aware of the plans of the energy company, the potential impacts on the community, the problems each agency faced, and the actions which each proposed to take. A key element of these examples is the integral involvement on the part of industry involved.

- Priorities Board. Sweetwater County, Wyoming, analyzes the impacts of rapid energy development, sets priorities among the many public agencies involved and suggests potential industry aid to the communities. Industry has developed a system to forecast employment totals for the coming two years and provide that information to the community. The board is composed of local government officials, citizens and industry members recommended by the Southwest Wyoming Industrial Association. The Board invites observers from state agencies to its bi-monthly meetings. It is aided by a citizens' advisory committee and a technical committee of appointed officials.

- Kaiparowits Planning and Development Commission. Kane and Garfield Counties, Utah, coordinated data collection, oversaw a new town study funded by the energy companies and developed manpower training programs. The commission is composed of representatives of county, school, state, and federal officials, chairman of citizens' advisory committee and the project manager for the energy company. Staff assistance was provided by the sub-state regional planning commission. The energy project -- a 3000 MW electric generating plant -- has been cancelled, but the community had been ready, and the planning process will help all local governments with other community problems.

- Kitsap County, Washington. The county commissioners appointed a project coordinator to oversee development activity of a nuclear submarine base. He serves as staff director for the Trident Coordinating Committee, composed of county, school and city officials, and citizens representing environmental, labor and public interest groups. The Trident coordinator and committee coordinated review of the project EIS, identified areas for

study, provides liaison with the Navy's project managers and seeks state and federal assistance. The office will be phased out at the completion of construction.

Financial Assistance. There are a number of mechanisms available at the federal and state level to assist localities in financing community development costs. In addition, there are several possible approaches to increasing private industry's sharing of the costs of needed public facilities. Some energy companies have become increasingly active in assisting communities in dealing with the impacts of energy projects. This assistance can take the form of helping the community to get assistance from other sources or directly providing the needed funds, facility, or service. Energy developers are more willing to assist communities because this adds more certainty to the licensing process and often eliminates delay. The cost of mitigation in these cases is outweighed by the economic benefits accruing from expediting the licensing process. However, the town usually must possess some leverage over the developer. If the zoning laws are either nonexistent or not enforced, the community essentially has no bargaining power.

The leverage often takes the form of "contract zoning" where the utility agrees to a number of impact mitigation conditions in return for their zoning permit. The Northhampton County Industrial Development District discussed earlier is a good example of this type of zoning.

Industry participation in impact mitigation has varied significantly with the company policy, the urgency of need, and the size of the energy investment. While generally not widespread, industry efforts have been signigicant in some cases.

Some notable examples include:

- As part of a contract rezoning agreement, the Puget Sound Power and Light Company agreed to prepay some of its taxes to Skagit County, Washington, where it proposed building a two-unit nuclear generating plant. The tax prepayment is to finance additional schools and law enforcement necessitated by the influx of construction workers and their families.

- To obtain a construction permit from the Wyoming Industrial Siting Commission, the Basin Electric Power Cooperative agreed to provide adequate housing and facilities for the temporary and permanent work force expected at its coal-fired electric generating plant near Wheatland. Basin Electric also agreed to comply with an imposed ceiling on the number of construction workers employed. In addition, Basin Electric granted $18,000 to Wheatland to help the community apply for federal funds to establish a planning department.

- Under a contract agreement for its proposed offshore oil platform fabrication yard in Northhampton County, Virginia, the Brown and Root Company agreed to purchase water and sewer services from the town of Cape Charles. Furthermore, the company agreed to contribute $100,000 in matching funds to construct an access highway to its proposed site and will conduct local job training programs.

- TVA entered into an agreement with Hartsville, Tennessee, officials during construction of its multi-unit nuclear power plant. To help mitigate the socio-economic impact of the construction of the facility, TVA is providing numerous kinds of impact assistance, including police and medical services, school and sewer construction, and assistance in developing a mobile home park. To reduce the number of in-migrants, TVA is providing vans to transport workers to and from the construction site.

- Washington Public Power Supply System, under provisions of the state siting law, has agreed to provide the Gray's Harbor County cities affected by the construction of its nuclear power plant with additional police, sewage and water services, dump trucks, street work, and schools. The utility also has supplied the state and county with funds for road and highway work.

Community-developer negotiation is often enhanced by the use of advisory boards, particularly on a regional basis. In Gray's Harbor, Washington, the Regional Planning Commission established a steering committee composed of county and city representatives. A steering committee member negotiated directly with the utility on specific assistance contracts for each impacted community.

Direct assistance from the utility can take the form of:

- preparing impact studies and growth management plans;

- agreeing to limit of phase in growth of the physical plant and the size of the incoming labor force;

- recruiting and training local workers;

- making land available;

- building needed facilities; and

- easing the housing shortage.

Beyond direct assistance, two other options have been available to industry: bond guarantees for facilities and prepayment of taxes. Company guarantees could be used to cover mortgage loans, as well as bonding for classrooms, hospitals and water and sewer systems. Since guarantees are a

contingent liability of the company rather than an immediate cash flow, they are less likely to cause capital budgeting or cash flow problems for the developing company. In practice, however, the industry has rarely offered guarantees.

Prepayment of taxes by industry is one mechanism by which industry could pay for part or all of the costs of the development area and none is individually identifiable as causing the development. Utah allows industry to voluntarily prepay sales and use taxes. Revenues go to both the State General Fund and to impacted communities. However, no industry in Utah has chosen to take this option to date. Moreover, prepayment of taxes under current Internal Revenue Service treatment can be costly to companies, since not only are the taxes paid earlier than they would otherwise have to be, but the company is not allowed to deduct the full amount of the taxes in the year they are paid.

Special impact funds utilizing severance tax revenues are one common device. Wyoming has established a Coal Impact Fund from which grants or loans are to be made to impacted areas from a special coal severance tax levied in addition to the general mineral severance tax. Montana has levied a high (30 percent) coal severance tax of which 17.5 percent is allocated to a local impact fund, four percent to the coal generating county, ten percent to coal area highway improvement, and ten percent to state equalization for public schools. Other examples include North Dakota, which makes grants from a coal impact fund created by 35 percent of a coal tonnage tax; New Mexico, which uses a portion of its severance tax income in a Severance Tax Bonding Fund for direct impact assistance to communities; and West Virginia, which provides coal counties a small portion of the coal severance tax.

Mechanisms for addressing fiscal jurisdictional mismatch have been established in some states. For example, Utah has legislation permitting special taxing districts and Wyoming has provided authority for local jurisdictions to combine voluntarily for public projects. States also have mechanisms for equalizing school expenditures. While such mechanisms were not developed for energy development-caused fiscal jurisdictional mismatches, they are very important in this regard because of the high percentage which education expenditures make up of total capital and operating expenditures.

Siting and permitting mechanisms have been used by some states to require industry impact assistance as a condition of approval of various siting and permitting applications. Wyoming law, for example, requires impact alleviation measures as a part of the permit granting process thus allowing internalization of the impact costs to the energy consumer.

While some states have taken strong measures to control development and mitigate impacts, other states have continued policies such as tax deferral and lack of any severance tax on regulatory mechanisms to encourage development. For example, Utah has low corporate taxes and no severance tax on coal, and Texas has no corporate income tax and no coal or uranium

severance tax. Thus, there is a wide variety in state policies for energy development and the mitigation of resulting impacts.

Federal programs which might provide assistance to energy-impacted communities fall into two categories: those programs designed to explicitly provide federal assistance targeted to this need; and those designed to meet other national needs, but which are sometimes accessible to energy-impacted communities if they are able to qualify under the program criteria.

Among the most significant of these programs which were not primarily established to address energy-related impacts, but have proven to have some applicability to the needs of impacted areas, are the following:

- EDA - Title IX Program. Title IX funds are provided to states, local jurisdictions and Indian tribes under current authorities for special economic development and adjustment assistance. This program is intended to address needs arising from economic dislocation due to actions of the federal government, compliance with environmental requirements, and economic adjustment problems resulting from severe changes in economic conditions. Given the flexible nature of this program, Title IX funds have been used to address energy-impact needs through direct grants or revolving funds established at the state level to provide loans and other financial assistance to impacted sub-state jurisdiction.

- Title V Regional Commissions and Appalachian Regional Commission - supplemental grants. Title V of the Public Works and Economic Development Act of 1965, as amended, authorizes the establishment of multi-state regional commissions. These commissions are provided funding under authorities for technical assistance, demonstrations and supplemental grants. The latter authority permits the commissions to supplement the federal share of other federal basic grant programs up to 80 percent of total project costs, regardless of the authorized limitations on the federal share under these programs. Two of the commissions (Four Corners and Old West) have funded projects related to energy development impacts. The primary limitations on the commissions as a source of funding for impact needs is the level of funding and the fact that such monies are limited by the constraints of other federal programs through which they are obligated.

- Farmers Home Administration - Community Facilities Loans. These multi-purpose loans, generally considered a loan source of last resort for small communities, are intended to provide overall community development support for such needs as fire and rescue services; transportation and traffic control; social, cultural, health and recreation services; and industrial and business development. This program is limited to communities with populations less than 10,000 and is noted for its lack of available funding.

- Farmers Home Administration - Water and Sewer, Solid Waste. This program provides both project grants and insured loans for rural water and waste disposal systems. As in the case of FmHA's Community Facilities Program, funds are available as a last resort to communities with less than 10,000 population. Most of the funds are allocated to states by formula; however, ten percent are reserved for discretionary purposes. While presumably such discretionary monies could be used for energy-impact needs, in practice they are primarily expended to meet cost overruns.

- Environmental Protection Agency - Waste Water Treatment Grants. This program provides project grants of 75 percent of the total costs for the planning and construction of sewage treatment works. Some states match these funds to reduce the capital costs to local communities. The primary objective of the program is to meet federal and state pollution control standards. A state may face difficulty in establishing energy-impacted communities as priority areas for funding due to requirements that areas with existing severe pollution problems receive highest priority. Also, a major constraint to use of this program by energy-impacted areas is the requirement in the law prohibiting funding of collector systems in "communities not in existence" in October, 1972, which in turn has been administratively defined to mean communities with an existing 1973 population accounting for two-thirds of the system flow for the collectors.

- HUD - Community Development Block Grants/Discretionary Grants. Discretionary grants authorized under this program can be used for a wide variety of community development activities. Unlike the block grant program which is generally limited to metropolitan areas, states and smaller communities are considered eligible applicants for discretionary grants. Although there is little indication that energy-impact areas have been successful in accessing these funds, proposed new policy directions may make this descretionary source more applicable in the future.

- DOT - Federal Aid Highway Programs. The Highway Trust Fund balance as of Fiscal Year 1976 was $9.076 billion. This fund is almost entirely allocated to states by a statutory formula which is not sensitive to energy-impact needs. Its purchasing power is shrinking with inflation, and revenue, geared largely to gasoline tax, may also shrink with increased automobile fuel economy. In general, federal aid funds are limited to capital expenditures in specific categories on the designated federal aid highway system.

Housing Assistance

- Farmers Home Administration - site acquisition loans. This program provides limited funds to builders or individuals in rural areas as

a source of last resort. Priority is given to low and moderate income families.

- Farmers Home Administration - low to moderate income housing loans and rural rental housing loans. This program provides funding for communities under 20,000 with no special criteria for energy-impacted areas. Low income and square footage limitations make this program unattractive to some builders and families.

- Federal Housing Administration mortgage guarantees. While this program offers a potentially large source of assistance, developers in the west object to associated red tape. In Appalachia, terrain characteristics often make it impossible to meet design requirements.

- Federal National Mortgage Association and Government National Mortgage Association provide very large sources of outside mortgage funds. However, this assistance is unavailable in much of Appalachia because the terrain makes it impossible to meet design requirements.

- Veterans Administration housing loan guarantees. Funds are potentially available to purchasers who are eligible veterans.

Health, Education and Social Programs

There is a variety of federal programs targeted on health, education and social service needs. Many of these programs are administered through the states and most, but not all, are focused on low-income populations. Energy-impacted communities have had difficulty in accessing these programs because of lack of knowledge of their existence or problems in meeting funding criteria.

Emergency health services, physicians services to remote and medically underserviced areas, drug and alcohol abuse programs, and social services under Title XX of the Social Security Act are particularly applicable to the needs of energy-impacted communities and are not necessarily limited to low-income populations. Title XX authorizes states to provide a broad range of services to individuals with incomes up to 115 percent of the state median income. Services can include such categories as family planning and counseling, child care and child abuse services, homemaker services, health services and transportation.

In conclusion, while a number of federal programs exist which could help states, local and tribal governments deal with financing problems resulting from energy-related growth. Major gaps, program constraints and limitations, and institutional barriers still stand in the way of meeting the financial needs of these areas. State and federal efforts have closed

these gaps to some degree; and, in some instances, industry has provided assistance. However, the following major problems remain:

- most existing federal programs are not specifically targeted to the financial needs of energy-impacted communities making it very difficult for such communities to qualify under program criteria often designed for urban, low-income, or high unemployment areas;

- industry efforts have been limited primarily to providing housing for employees in the west, with lettle effort in Appalachia beyond paying taxes. Because of political factors and economic competition, states have had difficulty in gaining sufficient leverage to encourage greater industry participation;

- state efforts have varied from major taxation efforts and facility siting laws to more limited initiatives;

- severance taxes and production royalties lag behind the impacts of development causing major front-end financing shortages;

- the existing level of funding under current federal programs is inadequate to meet the needs in both energy-impacted areas and currently identified areas.

The proposed Energy Impact Assistance Act of 1979 would expand Section 601 of the Power Plant and Industrial Fuel Use Act of 1978. Due to the existence of the Coastal Energy Impact Program, enactment of the proposed statute would not significantly add to the impact assistance that states and local governments can currently take advantage of.

The State Framework

Rhcde Island does not possess a statewide energy facilities siting law, a statewide land use law, or any energy-impact assistance legislation. However, various state agencies take an active role in energy planning and management; and Coastal Resources Management Council has promulgated energy facility siting regulations for the areas under their jurisdiction. In addition, local governments possess traditional planning and zoning powers that can be exercised to guide and control energy-related growth. The state legislative framework will be summarized below.

State Agencies. The Governor's policy in the area of energy facility siting has been articulated by a number of gubernatorial statements, the latest entitled "The Governor's Statement of Energy Policy", released on August 31, 1975. In addition, siting legislation was introduced before the 1978 session of the General Assembly.

In his January 1977 inaugural message to the General Assembly, Governor Garrahy set forth the following state energy objectives:

- To develop a conservation program that is fair to all users;

- To undertake a vigorous search for alternative energy sources such as solar energy and an imaginative use of older sources such as hydropower;

- To improve regulation of utilities in order to foster stabilized rates and greater efficiency;

- To safely develop the Outer Continental Shelf in a manner which fully considers all legitimate concerns including energy use, employment benefits, environmental impacts and the state's fishing industry; and

- To site energy facilities in light of state plans rather than private industry decisions.

Further policy direction was provided by the Governor's 1978 Annual Message to the assembly at which time he states: "An energy policy for Rhode Island requires examination of all sources of energy to determine the best available mix for both present and future, and we must analyze each source as to availability, cost, efficiency, safety, environmental impact, and overall effect upon our economy".

Siting authority for energy facilities located in or likely to affect the coastal region is vested in the Coastal Resources Management Council under Title 46, Chapter 23 of the General Laws. The "Energy Facility Siting Act" introduced by the Governor as House Bill 8106 in April, 1978, and currently under consideration as H8106 Substitute "A" by a legislative study commission would effectuate gubernatorial energy goals and policies as they relate to the state as a whole. It would address the siting of major energy facilities for which there presently exists no siting authority comparable to that exercised by the Coastal Resources Management Council over facilities located in or likely to effect the coastal region.

- It would impose a more formal system of interrelationships and shared responsibilities among those agencies presently participating in energy facility siting both within and without the coastal region. The concurrent, cooperative, but under existing law statutorily independent and parallel review of various siting actions by state agencies participating in implementation of the Coastal Management Program would be enhanced upon passage of H8106 as presently drafted by the increased structure it would provide. H8106 would provide for a single permit incorporating the various regulatory requirements and information needs of existing reviewing agencies. This would be issued by a newly created Energy Facility Siting Council on which the CRMC would be represented. H8106 would specifically require that the Coastal Management Program be reflected in Siting Council decisions.

- H8106 calls for the creation of minimum new bureaucracy. Existing state agency jurisdictions would not be disturbed and existing agency expertise is fully utilized. Passage of this legislation would facilitate implementation of state policies as these are reflected in this and other chapters of the Coastal Management Program.

Six other agencies and bodies of state government are directly involved in the formulation or implementation of state energy facility siting policies. In addition, the state's cities and towns exercise comprehensive planning, zoning and subdivision responsibilities under enabling legislation passed by the General Assembly. State level involvement in energy facility siting is summarized below.

The Rhode Island Energy Office was created by Executive Order No. 25 on May 1, 1975 and restructured by Executive Order No. 9 on May 19, 1977. The Energy Office consists of an Energy Conservation Program responsible for the preparation and implementation of the State Conservation Plan prepared under the provisions of the federal Energy Policy and Conservation Act of 1975, and the Energy Capability Program responsible for energy research and for development of new and alternative energy sources.

The Energy Office is also responsible for administration of the various grant provisions of the Coastal Energy Impact Program created by amendment to the Federal Coastal Zone Management Act of 1976. Some $74,000 in federal funds are being distributed to state and local government during fiscal 1978 to plan for and mitigate the impacts of energy facilities affecting the state's coastal region. An additional $128,000 is slated for distribution in fiscal 1979.

The Public Utilities Commission and the Division of Public Utilities under Title 39 of the General Laws have the responsibility of ensuring that gas (including LNG), electric and pipeline public utilities provide abundant, reliable and economical energy to the state's citizens and, further, that they do so "with due regard for the preservation of natural resources including scenic, historic and recreational assets, and the strengthening of long-range land use planning" [39-1-1(3)]. To this end, the Commission (PUC) has the following authorities:

- Before any utility granted access to the power of eminent domain by legislative charter can condemn land, it must obtain authorization in the form of a certificate from PUC (39-1-31). It must describe the land, right-of-way or easement it proposes to acquire and why it must do so by eminent domain. PUC may issue a certificate only if it finds after public hearing:

- That the proposed condemnation serves the public benefit;
- That it is necessary so that adequate service may be rendered to the public;
- That the proposed use will not unduly interfere with orderly and scenic development of the region.

- Parties aggrieved by decisions or orders of a municipal zoning board or of building, gas, water, health, or electrical inspectors affecting companies under PUC's supervision may appeal those decisions or orders to the Commission within ten days (39-1-30). After hearing, PUC may affirm, overrule or modify the municipal decision or order upon weighing it against consideration of public convenience, necessity and safety. Similar procedures apply to the promulgation of municipal ordinances and regulations affecting the operation of PUC supervised utilities.

- Public utilities may not issue bonds or notes payable more than 12 months from date of issue to acquire property, build or expand facilities without authorization from the Division of Public Utilities (39-3-15).

The Deparment of Environmental Management has regulatory and operational authority to implement various state and federal resource programs applicable to energy facility siting and related impacts. The Department may set standards and criteria to ensure activities do not adversely affect the environment and resources. The scope of DEM activity include the following:

- Under Title 23, Chapter 25 of the General Laws, the Department promulgates ambient air quality standards, regulations, new stationary sources of air pollution and enforces non-degradation criteria applicable to areas where air quality exceeds ambient standards. It may require new stationary sources of air pollution to install a variety of pollution control devices or may prohibit air emissions altogether where applicable standards would be violated.

- Under Section 401 of the Federal Clean Water Act, the Department acts as the certifying body for discharges into the state's waters. No such discharge may be permitted by any state or federal license or permit issuing body until an applicant obtains DEM certification of compliance with applicable water quality standards and schedules (see Section 310.7). Conditions and limitations attached to the DEM certification must be reflected in subsequent actions by other regulatory bodies.

- Under Title 2, Chapter 1 of the General Laws, the Department regulates the alteration of freshwater wetlands with the objectives

of preserving their purity and integrity and preventing loss of flood water retention capacity, reduction of ground water quality or levels, and destruction of wildlife habitat and recreational value. A DEM permit must be obtained before any freshwater pond, stream, river, swamp, marsh or bog may be filled, drained or otherwise altered (see Section 250.3).

- DEM also regulates the disposal of solid and hazardous wastes and the installation of individual septic systems.

The Statewide Planning Program in the Department of Administration performs several functions which, while not regulatory in themselves, affect the regulatory activity of other state agencies involved in energy facility siting.

- The Program has principal responsibility for preparation of the State Guide Plan which identifies long-range goals and plans for the physical, economic and social development of the state. Conformance with the State Guide Plan is required of state agencies such as CRMC, Port Authority and Economic Development Corporation and the Department of Environmental Management.

- The Program serves as the state clearinghouse for the Project Notification and Review System established by Office of Management and Budget Circular A-95. In this capacity it notifies responsible state agencies of proposed federal actions, grants and license applications affecting their responsibilities and serves as a focus for state comment and reaction to these proposals. The clearinghouse function is a vital link in state implementation of the federal consistency provisions of the Coastal Zone Management Act of 1972 (see Appendix C5).

The Coastal Resources Management Council Under Title 46, Chapter 23 of the General Laws as amended exercises regulatory responsibilities affecting energy facility siting in two broad areas.

- The Council enforces regulations and carries out permit programs governing alteration and use of a variety of coastal land and water areas and features. These regulations and programs apply equally to all uses of these areas including the construction and operation including, but not limited to, marine construction, dredging, filling and site alteration.

- The Council enforces similar regulations and implements permit programs governing "the design, location, construction, alteration and operation of specified activities or land uses when these are related to a water area under the agency's jurisdiction, regardless of their actual location" (46-23-6B). Two considerations apply in establishing the required relationship. These include "a reasonable

probability of conflict with a plan or program for resources management or damage to the coastal environment". Power generating plants and petrochemical processing, transfer or storage facilities are among the land uses regulated under this provision of the General Laws.

- All Council regulations and permit programs, including those affecting energy facility siting, must be developed around basic standards and criteria established by law. These include:

  - Need and demand for activities;
  - Impact of activities on ecological systems;
  - Compatability of activities;
  - The capability of coastal resources to support activities;
  - State water quality standards;
  - Consideration of other plans, studies, surveys, and inventories;
  - Consideration of contiguous land uses;
  - Consideration of transportation facilities; and
  - Consistency with the State Guide Plan.

The General Assembly pursuant to Section 42-64-14.1 of the General Laws as amended has reserved to itself final and exclusive authority to make the determinative state level decision regarding "project plans" for nuclear power plants and oil refineries.

- As repeatedly used elsewhere in Chapter 64 and defined under 42-64-3(r), "project plans" refers specifically and only to projects in which the Port Authority and Economic Development Corporation has an interest through financing or ownership.

In addition, the Rhode Island Port Authority and Economic Development Corporation is a quasi-public body created by act of the General Assembly (42-64; GLRI), but "having an existence separate and apart from the state". The Port Authority is authorized to assume a financial interest in or otherwise promote a variety of projects. These can include facilities for the generation, manufacture, production, storage, transportation, distribution, delivery, or furnishing of natural or manufactured gas, steam, electrical or nuclear energy, heat, light or power directly or indirectly to or for any project, project user or for the public.

- Energy conservation should be promoted as an essential part of the state's effort to plan for future energy supplies.

- Diversification should occur in the fuels, technology and energy facilities used to supply state needs. This includes use of native resources, greater fuel source flexibility in energy-consuming equipment, an expansion in the fuel types used to make

electricity, and exploration of ways to reduce power station size and decentralize their locations.

- Consideration must be made of a reasonable number of alternatives to each proposed project.

- Consideration also should be given to alternative sites for a project in order to accommodate both economic and environmental concerns.

- Strategies must be developed to mitigate the adverse consequences of the use of energy in the state, for example, by assisting groups involved in Coastal Energy Impact Program projects.

- The Coastal Resources Management Council should help in exploring other improvements to the state's ability to handle the siting of energy facilities.

The CRMC will review an application concurrently with other regulatory groups and has committed itself to participation in federal, state and local proceedings when appropriate to avoid unnecessary delays. The CRMC will issue only one permit for an entire project, rather than separate permits for each facet of its jurisdiction. In addition, it will not issue its approval until the applicant has demonstrated that all other federal, state and local permissions have been obtained. The only exceptions are if the applicant appeals a local decision to the Public Utilities Commission and wins, when local permission is not needed, or if the proposal has financial involvement by the Economic Development Corporation, in which case the General Assembly will make the final decision after receiving CRMC recommendations.

The applicant is required to demonstrate that the project fulfills a legitimate energy need; to identify the economic, social and environmental impact throughout the project's life to examine alternate sites for the proposed project; and to assess alternate means of filling the needs which the project is intended to satisfy. The CRMC requires that the proposed project will not conflict with the Coastal Management Program or the State Guide Plan. The Coastal Program contains policies and regulations controlling the use of the shore and marine resources, including physiographic features such as marshes and barrier beaches, biological resources and ecological systems. The Guide Plan is a collection of documents containing plans for housing, transportation, employment, social services, recreation and other needs of statewide concern. The developer must prove that a superior site has not been identified during the course of CRMC proceedings and that a shorefront site is necessary for the project.

The CRMC requires explicit examination of the effects of the proposal throughout its entire life cycle, including plant expansion and decommissioning. The topics to be considered in the assessment of social, economic and environmental impacts are clearly identified. An applicant must discuss at least two alternate sites in sufficient detail to make comparisons with the proposal possible. It must be demonstrated that energy conservation, alternative generating technologies, decentralized facilities and renewable energy resources are incapable of handling the need which the proposed project would otherwise meet.

Coordination and cooperation among those state agencies and bodies of government involved in the formulation and implementation of energy facility siting policies for purposes of implementing the objectives of the Rhode Island Coastal Management Program is mandated by Title 46, Chapter 23, and 42-64 of the General Laws, as amended, and by Executive Order No. 17, dated November 16, 1977.

Title 46, Chapter 23 sets forth basic coordinating responsibilities of the Coastal Resources Management Council necessary to implement its "primary responsibility (for) the continued planning for and management of the resources of the state's coastal region". These include authority to:

- Carry out resources management programs through implementing authority and coordination of state, federal, local, and private activities [46-23-6a(f)].

- Function as a binding arbitrator in any matter of dispute involving both the resources of the state's coastal region and the interests of two or more municipalities or state agencies [46-23-6C(b)].

Title 46, Chapter 23-10 further "authorizes and directs all other departments, agencies, and bodies of state government to cooperate with and furnish such information as the Coastal Resources Management Council shall require".

Title 42, Chapter 64-14(b) requires that in planning and carrying out projects (including those related to nuclear power plants and oil refineries), the Port Authority and Economic Development Corporation must "conform to applicable provisions of Chapter 46-23 of the General Laws", thereby insuring that in making its final and exclusive decision regarding such facilities, the General Assembly may be assured that issues related to coastal management plans and programs have already been considered by the Coastal Resources Management Council.

Executive Order No. 17 specifically recognizes that "the Coastal Resources Management Council is established by law as the principal agency to administer and implement the state's Coastal Resources Management Program". It further directs the Council, the Department of Environmental Management

and Health, the Statewide Planning Program and "all appropriate agencies of state government" to "act in accordance with the policies and objectives of the Management Program to the extent consistent with state statutes and regulations".

Local Government. Although roughly similar, each local government in the Region has exercised their planning and zoning authorities in different ways. The key issue in this report is not the specific exercise of authority in each case, but rather what potential authority Rhode Island's local governments possess under the state enabling legislation.

Local cities and towns generally possess only those power expressly granted, or necessarily implied, from various state enabling statutes, or from state constitutional provisions.

Prior to the adoption of the home rule amendment to the Rhode Island Constitution in 1951, no constitutional restriction was placed on the General Assembly's authority over local government. A number of general enabling acts granted authority to cities and towns to undertake a variety of governmental functions. For example, local cities and towns are specifically authorized to adopt zoning ordinances, comprehensive plans, and subdivision regulations. Other types of general enabling acts empower local communities to assess taxes, hold and convey property, and pass and enforce ordinances for the well-being of the community.

Specific enabling legislation is a second source of local governmental authority. These special acts generally supersede the general laws, and the pattern or local organization and powers established by special legislation may differ widely from that established in the general laws. For example, specific authority to the Town of South Kingstown in the area of zoning and land use controls.

Finally, Article 28 of the Rhode Island Constitution allows cities and towns to adopt home rule charters. Generally speaking, home rule powers are confined to matters of "local" concern, and are limited to the residual powers not exercised by the state. In the land use area, for example, zoning has been interpreted as a power delegated through state enabling legislation, and not transferrable to a town by virtue of adoption of a home rule amendment.

Although the home rule amendment to the Rhode Island Constitution appears to confer fairly broad powers on local communities, it has been strictly construed by the Rhode Island courts. The Rhode Island Supreme Court, for example, stated in an advisory opinion to the House of Representatives in 1952 that the adoption of a home rule charter changed the status of cities and towns only in certain "limited respects". Later cases and opinions further outlined the scope of the amendment. In Flynn v. McCaughey, 81 RI 143, a 1953 case, the Rhode Island Supreme Court held that the time and manner of holding local elections is not a "local matter" and the General Assembly had full power over all action. Zoning was held to be a power delegated by the

General Assembly in Capone v. Nunes, 85 RI 292 (1951), where the court decided that a city town, even under a home rule amendment, continues to be subject to the plenary power of the General Assembly "as such power was commonly exercised over all cities or towns prior to the adoption of the amendment". These decisions appear to be consistent with an earlier opinion of the Attorney General in 1952 that the General Assembly may legislate for cities or towns even in local matters if done by a general act, not withstanding the adoption of a home rule charter, Opinion to the House of Representatives, 79 RI (1952).

Zoning is perhaps the primary land use tool of local governments. Rhode Island's zoning enabling legislation, adopted in 1921, is found in Chapter 45-24 of the General Laws. The act provides for the regulation, by city or town councils, of the height, number of stories, and size of buildings; percentage of occupied lot sizes; the size of yards, courts, and other open spaces; the density of population, and the various uses of buildings for industrial, residential and other purposes. A mid-1950 amendment to the Act allows the prohibition or limitation of land uses in areas deemed to be subject to seasonal or periodic flooding.

Zoning traditionally has operated through the division of land into use districts, with requirements for a minimum lot size in order to develop a particular lot. Procedures established under the state's enabling legislation authorize the zoning board of review to allow a variance in the application of the terms of the ordinance where a literal enforcement of the ordinance would result in unnecessary hardship to the landowner. The board is also authorized to make special exceptions to the terms of the ordinance where "such exception is reasonably necessary for the convenience or welfare of the public". Zoning ordinances, and their amendments, require approval by the city or town council after a public hearing. A 1968 amendment to the zoning enabling act requires notice to adjoining cities and towns where adoption or amendment of a zoning ordinance will affect a public water source located within 1,000 feet of a city or town boundary.

The constraints of the existing enabling legislation have hindered the development of land use tools which could deal with current development problems. Attempts to develop imaginative zoning techniques have been held to exceed the authority conferred on local communities by the zoning enabling legislation in several Rhode Island Supreme Court decisions.

New zoning techniques such as cluster zoning and growth control ordinances provide good examples of what may or may not be possible under the Rhode Island zoning enabling legislation. These two cases also indicate how special zoning enabling legislation and the proposed statewide land use bill would change the authority of local government in this area.

Cluster zoning permits a developer to build houses in a patterns which do not comply with the standard area (frontage and set back) requirements of the zoning ordinance. Dwellings can be arranged in rows or

groups leaving portions of the tract for parks and open space. While still constrained by the density requirements of the ordinance, the developer is free to design a neighborhood in a variety of ways. This preserves open space, provides relief from the monotany of continuous development, and reduces suburban sprawl. However, the standard zoning enabling statute in Rhode Island does not clearly provide authority to municipalities to use cluster zoning. The special state enabling legislation for zoning in South Kingstown, and the statewide land use bill that has not been enacted by the General Assembly do specifically provide for cluster zoning. Although a good case can be made for the legitimacy of cluster zoning under the existing general laws, lack of specific authorization may inhibit a town from using this technique.

This would appear to be even more applicable in the case of growth control ordinances. These laws limit growth in a community by tying the permissible number of housing starts per year to a grwoth control plan. Rhode Island courts have given local governments broad discretion in accomplishing the general objectives (preventing overcrowding, etc.) of the present zoning enabling legislation. Comara v. City of Warwick 38 A 2d. 23 (1976). However, it is still an unsettled question whether this discretion would allow use of a growth control ordinance. Thus, a valuable technique for controlling energy-related growth may go unused in Rhode Island.

A second tool used by local governments is the development of subdivision regulations. Chapter 45-23 enables local communities to regulate the subdivision of land to provide for traffic; promote fire safety; provide adequate heat and light; prevent overcrowding; and to serve several other purposes. Two significant provisions, relating to water quality management, allow subdivision regulation to "conserve natural and other resources," and to "Facilitate the adequate, efficient, and economic provision of . . . water supply (and) sewerage".

Chapter 45-23 authorized the city or town to adopt several types of regulations for the physical development of subdivisions. These regulations may provide for street and grade requirements; the provision of adequate open space for traffic, recreation, air and light; and for the distribution of traffic and population to create conditions favorable to "health, safety, convenience and prosperity". Water, sewer, and utility mains may be regulated under this section. The ordinance is administered by the planning board, with appeals allowed from their determinations to the zoning board of review.

A third statute, Chapter 45-22 requires cities and towns to establish local planning boards or commissions. This 1972 statute requires the planning board to prepare a comprehensive plan which must include, among other requirements, objectives and standards for conservation areas and environmental protection programs. This plan must be reviewed at intervals of not greater than five years. The planning board or commission is also authorized under

Chapter 45-23 to establish an official map of the community which identifies the location of streets existing or established by law, and the exterior lines of other streets necessary for the physical development of the town.

Finally, local conservation commissions play a role in the use and development of land. Chapter 45-35 authorizes conservation commissions to "promote and develop the natural resources, to protect the watershed resources and to preserve natural esthetic areas" within the municipality. The conservation commissions advise the various city and town councils, board and commission on natural resource matters. The comissions may receive gifts of funds, land, buildings and other property in the name of the municipality, subject to the approval of the city or town council and financial meeting.

MUNICIPAL AND REGIONAL SOCIAL, ECONOMIC AND GOVERNMENTAL IMPACTS OF NUCLEAR POWER PLANT SITING AND OPERATION:

A CASE STUDY OF THE MILLSTONE NUCLEAR STATION IN WATERFORD, CONNECTICUT

AN OVERVIEW

Millstone; A Different Time and Place: The closer one examines the Millstone nuclear plant's impacts on the communities around it, the more evident it becomes that the nature and extent of those impacts has been dictated by a unique combination of conditions. While we believe that much of interest can be learned through an appreciation of these conditions and their influence on what happened in Waterford and its environs, we caution the reader to recognize and respect the differences that exist between Southeastern Connecticut in the late sixties and Southern Rhode Island in the late seventies. By way of an introduction to what follows we would like to briefly explore three of the more fundamental of these differences.

First and foremost, construction of the two Millstone generating units now in operation was begun and completed well before nuclear safety and health impacts became the volatile public issues they are today and well before an active anti-nuclear movement had evolved. People in the Town of Waterford in 1968 in short had no good reason to be particularly concerned about the construction of a nuclear power plant in their midst.

Second and of similar importance, the Millstone plant was sited right in the middle of a population many of whose wage earners had been working in the nuclear industry since its birth in the early 1950's. Two of the area's leading employers were involved in the development of the nation's nuclear submarine fleet; the Electric Boat Division of the General Dynamics Corporation in the building, the Navy Submarine Base in Groton in the testing and deployment. Most Waterford residents and those of neighboring communities were therefore, uniquely familiar with and comfortable with nuclear energy as a technology.

Third, Waterford town officials, utility officials, plant operators and contractors maintained a close and characteristically amicable working relationship. We found repeated reference in the conversations of interviewed town officials to the cooperation and accommodation exhibited by their plant counterparts. Time after time mutual cooperation and, more importantly perhaps, trust were cited as the principal reasons why the plant had had such a seemingly benign impact on the community.

Millstone; A Catalyst: One of the most prevasive of the Millstone plant's impacts and likely among the most transferable to other times and places has been as a catalyst for change. By catalyst we mean a facilitator as opposed to an initiator; a factor which makes it easier for something to happen rather than actually causing it. We uncovered relatively few instances where the plant was in and of itself the direct or indirect cause of a significant change in municipal policy, impact on municipal services or impact on people and the way they live. However, we found numerous instances in which the plant appeared to have accelerated a particular course of events or aggrevated a particular situation whose roots lay elsewhere. Typically, the catalytic influence in these cases was the plant's tax impacts both actual and anticipated.

Millstone; An Option: Another pervasive Millstone impact which we believe to be readily transferable to other nuclear plant sitings in other places lies in the many otherwise foreclosed options the plant opened to Waterford as the community which controlled its tax revenues. Millstone taxes simply by their magnitude have allowed the Town of Waterford to do things its less fortunate neighbors can't or can only at great sacrifice. They have removed or reduced many of the fiscal constraints which would otherwise influence municipal policies and priorities. It remains arguable whether this in the balance has been a totally unmixed blessing.

PATTERNS OF CHANGE: POPULATION, HOUSING AND COMMUNITY CHARACTERISTICS

Work Force: There is no evidence that any of the four communities in the study area experienced increases in population during the 1965-1977 period attributable to inmigration of Millstone construction workers, operating staff or their families. Principal reasons seem to be the large construction labor pool residing within easy day commute of the Millstone site, the relatively limited peak work force involved (800 for Unit I and 1,400 for II) and the small number of personnel required to operate the facility once built. Construction of the proposed Charlestown facility will require a substantially larger peak labor force (3,000 workers according to utility estimates), placing a considerably heavier drain on the regional labor pool. Operating requirements will be similarly small.

Growth Dampening: There is no evidence that overall population levels or growth rates in the study area declined in response to real or perceived plant related impacts. No direct physical displacement of Waterford residents was required to site the facility and no exodus of nearby residents aesthetically offended or frightened by its proximity was evident either in statistical evidence or statements of those interviewed. It should be noted, however, that the two Millstone units now operating were built well before controversies surrounding nuclear power reached present levels and among a population with a unique and longstanding professional association with nuclear energy.

Growth Stimulus: The Millstone facility's presence has created a very attractive tax situation in the Town of Waterford. While this is doubtless among a number of factors which make the town a desirable place to live, there is no evidence that it has led to any overall increase in residential development activity or population levels. Uncompromising enforcement of municipal growth control policies and a variety of other moderating influences ranging from a relative shortage of land for sale to physical development constraints have collectively served to hold Waterford growth in check and to divert development pressure towards more permissive neighbors.

Population Characteristics: There is considerable evidence of a direct connection between the Millstone facility's impact on Waterford's tax base and inflated real estate prices in the community. There is further evidence that high real estate prices have contributed directly and indirectly to a number of changes in population characteristics and composition. These include a shift in age distribution and income level towards an older and more affluent population and a related displacement of young resident adults unable to locate affordable housing. The nature of this displacement suggests that migration of low income groups into Waterford is extremely unlikely, resulting in increased ethnic and economic homogeneity.

The changing characteristics of the Waterford population also appear to have had spinoff impacts on neighboring communities. These include increases in their young adult population and drains on the upper income population of New London in particular. Impacts on other demographic characteristics of the study area were not apparent.

ECONOMIC PATTERNS: JOBS, SALES AND BUSINESS ACTIVITY

Direct Employment: The construction force for Millstone Units I, II and III was recruited almost exclusively from within Southeastern Connecticut's union labor force. Most workers commuted to the job site on a daily basis. Little inmigration of non-resident workers was evident.

The regional employment impacts of the Millstone projects were more notable by their absence than their magnitude; the apparent reason being the region's large and well developed employment infrastructure. This infrastructure supported sufficient jobs and workers to accommodate peak Millstone labor demands and to absorb post construction layoffs with little visible response.

Millstone construction attracted increased membership to union locals who had considerable difficulty in supporting their inflated rolls after construction peaked. The principal appeal of the Millstone project appeared to be the prospect of steady year-round work rather than wages which were union scale. Competition for labor with other construction projects was minimal due to the large available labor pool and a general slow down of regional construction activity. New recruits into the Millstone construction force were trained on the job, a practice which created no apparent difficulties given the variety of skill levels involved in building the plant.

The plant's operating staff proved too small at 150 to generate discrete identifiable economic impacts. Transient workers employed for periods of up to two months during annual refueling and retrofits appeared to take most of their economic impacts home with them although impacts on the local motel industry were evident as noted below.

Retail Sales: Retail purchases specifically attributable to Millstone construction workers or their families do not appear to have appreciably affected retail sales activity in study area communities with the possible exception of Waterford. The absence of local impacts appears to be linked to the wide geographic distribution of workers throughout the region which resulted in dispersed purchasing activity. Waterford had experienced a growth in retail sales much of it in the 1968-1972 period which is double that of its suburban neighbors. Much of this increase, however, appears to be linked to increases in the town's commercial floor space resulting in a higher capture of local and regional sales.

The single discrete retail sector that has been demonstrably effected by Millstone's presence has been the local motel industry which experienced a marked increase in offseason occupancy during construction and periodic upsurges during annual retrofits and refuelings.

Local Purchases of Goods and Services: Construction of Millstone Units I - III has generated significant local purchases of basic construction materials and services. These include lumber, steel, sand and gravel, concrete, leased equipment, janitorial and sanitation services. There is no evidence that local vendors received preferential treatment in the letting of service or material contracts beyond a policy of buying in-state, all other factors being equal. However, in practice it appears that local vendors of high volume-low unit value products such as sand, gravel and concrete had a clear competitive advantage over more distant sources.

Business Patterns: Waterford's low and stable tax rate has doubtless been a factor in business siting in that community, but does not in itself appear to serve as a magnet for either new commercial-industrial development or relocation of existing businesses from surrounding communities. Recent commercial growth in fact has been moderate while industrial expansion has been negligable indicating that other considerations such as proximity to markets, transportation links, availability of services and the like exercise a collectively greater impact on siting decisions. There is no evidence that the Millstone plant has attracted "satellites", industries which derive some direct benefit from being located near it.

PUBLIC SECTOR IMPACTS AND INTERACTIONS

Municipal Revenues: Construction of the Millstone nuclear power facility resulted in a windfall tax gain for Waterford, the town in which it was sited. It presently comprises over two-thirds of the town's tax base and is the principal cause for a better than ten-fold increase in the size of the tax base since 1965. By contrast, neighboring East Lyme's tax base has expanded by only three fold during the same period and its total 1976 tax collections were several million dollars less than the Millstone plant alone paid during the same year. The plant does not pay taxes to any of the three other communities in the study area, a fact which has produced varying degrees of jealousy.

Impacts on the Taxpayer: Waterford's other taxpayers, particularly its homeowners have been the principal direct beneficiaries of the Millstone tax windfall. Thus even as municipal budgets have increased since the plant came on the tax rolls in 1968, they have paid an ever decreasing portion of the total tax bill; down from some 75% in 1968 to about 27% in 1977. As a consequence they pay considerably less out of their own pockets for what is spent on them than their neighbors in surrounding communities. The Millstone plant pays for most of the rest.

Municipal Spending: While overall spending levels in the Town of Waterford have quadrupled since 1968, this is considerably less than would be anticipated given the ten fold expansion of the town's tax base and is in fact not that much greater than increases in East Lyme which receives no Millstone tax revenues. However, Waterford spending increases in the non-educational sector have been much more impressive, up nearly eight fold or twice the East Lyme rate. Clearly, government services in the Town of Waterford have not benefited uniformly from Millstone taxes.

General Government: Waterford expenditures in the area of municipal administration have grown at about the same rate as non-educational spending overall and the proportion of the non-educational budget committed to administration has grown only slightly, up just over two percent to 20.3% of the total. There is therefore, little evidence that the plant's presence or tax inputs have imposed significant additional demands on administrative services and spending increases appear to more directly reflect growing revenues.

Public Safety: Waterford spending patterns in the areas of police and fire protection appear to reflect policies and priorities which predate construction of the Millstone plant. This becomes evident when one compares Waterford spending levels to those of neighboring East Lyme. In the case of fire protection we find that East Lyme has consistently spent more on a per capita basis than Waterford since well before the plant was built, while the opposite is true for police protection. Both patterns persist after 1968 although Waterford spending relative to East Lyme levels has continued to increase at about the same rate as non-educational spending overall, apparently again in response to the availability of growing tax revenue.

We found no evidence in spending data or conversations with town officials that Millstone's presence had imposed additional demands on local police or fire services since the utility assumed principal responsibility for fire prevention and security at the plant and had cooperated closely with the town

in all matters of mutual concern. Demonstrations had been small, infrequent and orderly; again, imposing few demands on local police. No impacts on police or fire services in surrounding communities was noted by those questioned on the subject.

Civil Preparedness: The presence of the Millstone plant has been the catalyst for developing a sophisticated multi-community disaster response plan involving the City of New London and the towns of Waterford and East Lyme. Northeast Utilities as Millstone's operators provided both technical and financial assistance in the preparation of this plan while town officials committed considerable time both as volunteers and as part of their salaried responsibilities. The plan details specific municipal response strategies and responsibilities for a number of man-made and natural disasters of which a nuclear accident at the Millstone plant is only one. It requires routine notification by the utility of even the most minor plant incidents.

Periodic drills including a major exercise in 1978 have been conducted, but are not regarded by municipal officials as a drain on either manpower or funds since personnel already on duty have been utilized. While increased sensitivity to civil preparedness responsibilities has led to purchases of equipment and introduction of new training progrmas, here again local officials have found little fault since most of this has been subsidized by state and federal funds. In fact, considerably more fault has been found with state and federal civil preparedness agencies who are by-in-large viewed as uncooperative and less competent than the towns themselves.

Public Works and Roads: Waterford spending in this area has increased considerably although erratically since the Millstone plant entered the tax rolls in 1968. Conversations with local officials indicate that some of this increase was due to new state and federal environmental requirements while most appears to have been cuased by major equipment replacement and road upgrading programs made possible by the town's expanding revenue base.

Some road upgrading was required to handle Millstone construction traffic, especially by heavy trucks, but this was reported to have been limited with most traffic problems relatively minor, localized, and remedied by rerouting of construction vehicles. The plant disposed of all construction and generating wastes at its own expense at out-of-town sites and was seen to have been a benefit to the town landfill through the donation of free fill. Only minor plant related traffic problems were experienced by surrounding communities with East Lyme the only town to attribute any road improvements to Millstone's presence.

Water and Sewers: Construction of a town water system in Waterford began in 1968 after several years of drought had created severe well problems. However, water requirements of the then building Millstone plant also appear to have been a consideration since the plant was one of the system's earliest customers and remains its largest. Millstone taxes further appear to have facilitated expansion of the water system and beginning of a sewer system in 1976 both through their impacts on direct municipal appropriations and borrowing limits which are based on total tax collections.

The City of New London has been directly affected by ongoing water and sewer system developments in Waterford since it sells water to the Waterford system and will house the regional treatment facility for Waterford's sewage wastes. In the former case, water sales were initially advantageous to New London because they allowed it to keep rates down, but as Waterford demands have increased, New London now faces costly expansions to its supply system. In the latter case, New London has vigorously resisted participation in the regional treatment program principally for reasons of cost and out of concern that Waterford's sewers would encourage commercial development and thereby draw business out of the city.

Public Health and Social Services: As essentially upper middle class suburban communities East Lyme and Waterford have spent relatively little on public health, welfare and other social programs throughout the study period. However, since Millstone taxes entered the Waterford rolls in 1968 the town has begun to spend less in this area as a proporition of its total budget while spending relative to other areas has increased in East Lyme. This spending pattern is consistent with the low income group and young adult displacement from Waterford believed by several of those interviewed to have been caused by the inflationary impacts of Millstone taxes on local real estate prices. It would also tend to support allegations that Waterford's tax wealth has allowed it to avoid participation in many state anf federal social service programs that its neighbors cannot readily afford to ignore.

Hospital and Mental Health Services: Hospital and mental health services within the study area do not appear to have been affected directly or indirectly by the Millstone plant's presence or tax impacts. However, a radiation treatment and isolation ward was established at a New London hospital to handle accidents at all of the region's many nuclear processing and handling facilities including the nuclear plant. Northeast Utilities as the plant operator was one of three companies subsidizing equipping of this ward, although it maintains first aid and decontamination facilities at the plant.

Recreation: Neither Millstone's construction or operating staffs have reportedly imposed serious demands on town recreational services and recreational spending appears to have shared in the general increase in available revenues associated with plant taxes. In addition, the plant has contributed to public recreational opportunities by donating land for baseball and football fields. Plant taxes, however, appear to have had a number of subtle indirect impacts on public recreation in Waterford. The town's Recreation Director, for instance, saw increases in both the median age and wealth of those using town facilities and displacement of youth who no longer lived in Waterford from town recreational programs as being related to Waterford's attractive tax situation. He also noted the town's ability to avoid recourse to state and federal funding programs which might compromise exclusive town control of its beaches and parks.

Schools: Waterford's school system has benefited less from the Millstone plant's tax impacts than any other service area. Thus, while spending per student has continued to increase, it still trails per student spending in East Lyme by significant amounts. The percentage of total town spending committed to education has also declined considerably since 1965; down from some 74 percent to 54, while in East Lyme spending relative to other sectors has actually increased marginally (up to nearly 67 percent).

Waterford enrollment declines are consistent with regional patterns during the study period, but may also to some extent reflect displacement of young families caused by Waterford's high real estate values and rental shortages, both influenced by plant taxes. Enrollment increases visible in East Lyme during the same period may also be responding in part to displacements from Waterford.

Bonded Indebtedness: Both Waterford and East Lyme have demonstrated considerable reluctance to borrow money and an equal eagerness to retire their debts quickly. Waterford's tax wealth, however, readily reveals itself in the speed at which debts are retired; this in turn made possible by the high levels of spending the town has been able to commit to debt retirement since 1968 and its ability to absorb many major expenditures into its regular budget without resorting to bonding.

THE STUDY AREA

THE PLANT:[1] The Millstone Point nuclear generating complex is located on the site of an abandoned rock quarry on the shores of Niantic Bay at the eastern most end of Long Island Sound in Waterford, Connecticut. This generating complex consists of two complete and operating reactor units and one presently under construction. Unit I with a capacity of 652 megawatts was begun in 1966 and began operation in 1970. Unit II with a capacity of 828 MW was built between 1969 and 1975 and began operation in that year. Construction on Unit III was begun in 1974 and is still in progress. All units are located on the same 500 acre site and are connected to existing distribution networks by two nine-mile long 345 kilowatt transmission lines. The Millstone facility is operated by Northeast Utilities.

THE TOWNS: The area examined in this study includes the host community of Waterford and three communities which physically abut it; East Lyme to the west, New London to the east and Montville to the north.

Of the four, New London is the largest in population (estimated at 30,700 for 1977) and the smallest in land area (7.3 square miles). It is a highly urbanized industrial city and port with a relatively high minority population. In recent years extensive urban renewal programs have resulted in the construction of considerable public housing and a central city shopping mall. New London is the historic service center of the study area containing its major retail outlets, hospital and professional offices. It is governed by a city council and manager.

Montville with an area of 43.9 square miles is the largest community in the study area, but is its mostly sparsely populated, an estimated 16,500 people in 1977. Despite this, it has a significantly higher industrial employment base than either suburban East Lyme or Waterford. It is governed by a board of selectmen and a representative town meeting deciding on all fiscal matters. Montville is the only inland community in the study area.

East Lyme with an area of 34.8 square miles and an estimated 1977 population of 13,400 is in most respect Waterford's most similar neighbor. It is an essentially suburban community with a high proportion of its work force employed in white collar and technical positions in the New London-Grotn area. The Niantic section of town supports a thriving summer community due to its proximity to Long Island Sound and the Niantic River estuary. The town is governed by a board of selectmen and an annual town meeting.

1/Final Environmental Statement, Millstone Nuclear Power Station Unit 3, U.S. Atomic Energy Commission, February 1974 as cited in B.J. Purdy, et al., A Post Licensing Study of Community Effects at Tow Operating Nuclear Power Plants, Oak Ridge National Laboratory, September 1977.

Waterford is only slightly larger than East Lyme (36.7 square miles) and shares with it extensive frontage on Long Island Sound and the Niantic River. It had an estimated 1977 population of 18,500. It too is an essentially suburban community with a sizeable summer influx of tourists and seasonal residents. The majority of the labor force is employed outside of town, most in the Groton-New London area. The town is governed by a board of selectmen and a representative town meeting.

THE ECONOMY: The economy of the study area is dominated by defense related, chemical, and pharmaceutical industries located principally in the towns of Groton and Ledyard across the Thames River from New London. Major employers include General Dynamics Corporation's Electric Boat Division, the U.S. submarine base at Groton, the Naval Underwater Sound Lab, Charles Pfizer Company and Dow Chemical Company.[2/]

Nuclear Industries: A striking characteristic of the area's employment picture is the high concentration of nuclear energy related industries and the relative familiarity of the general population with nuclear energy. While the Millstone Unit itself is not a major employer (operating staff of 150), a considerable number of area residents are employed in industries where nuclear material is handled. These include Electric Boat, the submarine base and ancillary facilities in New London and United Nuclear Coropration in Montville. Some of these facilities have been handling nuclear materials since the early 1950s.

Manufacturing Employment: The suburban character of East Lyme and Waterford as opposed to their more industrialized neighbors shows up readily in 1976 employment data compiled by the Connecticut Department of Commerce which shows an extremely low level of manufacturing employment.

EMPLOYMENT BY TOWN (June 1976)[3/]

Town	Total Employment	Manufacturing Employment	
		Number	% of Total
East Lyme	2,610	240	9.2%
Waterford	4,030	(100	(2.5%
Montville	3,380	1,850	54.7%
New London	16,720	1,580	9.4%
Groton	29,740	Not available	--

[2/] Southeastern Connecticut Regional Planning Agency, The Region's Economy. 1973. Norwich, April, 1974. Also personal communication with Richard B. Erickson, Executive Director of above; June 14, 1979.

[3/] Connecticut Department of Commerce, Connecticut Market Data, 1978. Hartford, 1978.

Total Employment: 1970 data, in fact, indicate that East Lyme, Waterford and Montville provided limited amounts of employment of any kind as compared to nearby New London and Groton and were in effect labor exporters. Their labor force exceeded internal job opportunities and hence significant numbers found employment outside the community.

NON-AGRICULTURAL CIVILIAN JOB OPPORTUNITIES
COMPARED TO CIVILIAN LABOR FORCE (1970)[4/]

Town	Total Jobs	% of Regional Employment	Total Labor Force	% of Regional Labor Force
East Lyme	1,620	2.2%	4,145	5.2%
Waterford	2,910	3.2%	6,870	8.7%
Montville	2,390	4.0%	5,859	7.4%
New London	16,310	22.2%	11,498	14.5%
Groton	22,560	30.6%	10,896	13.8%

However, the employment picture within the study area, inbalanced though it is, does not appear unusual for the Southeastern Connecticut region as a whole where better than seven out of every ten 1970 jobs were located in the three urban communities of Groton, New London and Norwich (three out of ten in Groton alone). The suburban communities with 45% of the region's population and a consequent high proportion of its labor force on the other hand provided only 27% of its civilian jobs probably due to the rapid population growth and only moderate economic expansion experienced during the 1960s.[5/]

Unemployment: Regional data for the years 1970-1972 show a generally favorable unemployment picture as compared to Connecticut as a whole and particularly its other 15 labor market areas. While regional unemployment almost doubled during this period in response to a nationwide recession, levels remained consistently among the lowest in the state. The region's well developed defense industry and military installations appear to have been a factor in maintaining this status.

No significant differences in unemployment levels between the region's suburban and urban communities were apparent during this period although suburban levels were marginally lower.

Industrial Job Skills: 1970 data show a sophisticated industrial work force with a high percentage of professional and skilled workers particularly in Montville and East Lyme, somewhat less so in Waterford.

[4/] Southeastern Connecticut Regional Planning Agency. The Region's Economy. 1973. Norwich, April, 1974; 1970 Social Indicators, February, 1973.

[5/] Supra. 1970 Social Indications.

JOB SKILL LEVELS BY PLACE OF RESIDENCE (1970)[6]

Town	Professional		Highly Skilled		Semi-skilled		Total
	Number	% Total	Number	% Total	Number	% Total	Number
East Lyme	1,481	37.1%	879	22.0%	1,634	40.9%	3,994
Waterford	1,783	26.0%	1,532	23.0%	3,409	51.0%	6,674
Montville	1,562	27.7%	1,410	25.0%	2,660	47.3%	5,632
New London	2,820	25.6%	1,903	17.3%	6,305	57.1%	11,028

Retail Sales Employment: Comparison of retail sales employment levels over time for the study area indicate (at least by comparison to Rhode Island) a healthy industrial climate. In fact, the ratio of retail to manufacturing employment has changed little since the end of WW II; five (5) retail jobs for ten (10) manufacturing in 1974, four (4) for ten (10) since 1960.[7]

The total number of retail jobs has remained relatively constant since 1960 while the area's population has grown considerably, particularly in suburban towns like East Lyme, Montville and to a lesser extent Waterford. This has resulted in an actual decrease in the percentage of the population employed in retail trade. This decrease has been most notable in the rapid-growth suburban communities where retail employment has dropped from thirty-five (35) jobs for every 1,000 persons of total population in 1960 to seventeen (17) per 1,000 in 1972.[8] Declines in urban areas including Groton and New London have been considerably less; 84 jobs per 1,000 population (1960) to 81 per 1,000 (1972).

Retail Sales Levels: As of 1972 the study area's urban center in New London retained its traditional preeminance in overall retail sales, although some slippage to nearby suburban communities was already evident. While sales levels in New London continued to grow during the period 1962 to 1972, they did so at a much less dramatic rate than was typical of suburban areas, particularly Waterford.

6/ Southeastern Connecticut Regional Planning Agency, The Region's Economy, 1973, Norwich, April 1974.

7/ Supra; SC RPA, 1974.

8/ Id.

COMPARISON OF UNEMPLOYMENT DATA[9/]
1969-1972

Date	% of Labor Force Unemployed		Southeastern Connecticut's Rank in % Unemployed Among Sixteen Labor Market Areas
	Southeastern Connecticut	State of Connecticut	
June, 1969	4.8	4.4	4th Lowest
September	3.4	3.6	5th Lowest
December	3.8	3.7	4th Lowest
March, 1970	4.6	4.6	4th Lowest
June	6.2	6.1	4th Lowest
September	5.4	5.8	5th Lowest
December	5.4	6.7	4th Lowest
March, 1971	6.6	8.5	Lowest
June	8.5	10.1	4th Lowest
September	6.4	8.3	Lowest
December	6.6	8.1	2nd Lowest
March, 1972	7.9	9.4	2nd Lowest
June	8.0	9.4	2nd Lowest

By combining the Norwich and New London Market Areas to produce a single figure of Southeastern Connecticut, the total number of Labor Market Areas in Connecticut is reduced from seventeen (17) to sixteen (16).

[9/] Connecticut Labor Department. Connecticut, The Labor Situation, selected issues from 1969-1972.

ESTIMATED RETAIL SALES[10]
(millions of dollars)

Town	1962	1972	% Increase
East Lyme	$10.1	$ 20.6	137%
Waterford	$10.3	$ 34.8	238%
Montville	$ 3.9	$ 8.3	113%
New London	$81.3	$121.4	49%

This pattern of migration of retail activity out of the central city into outlying suburbs parallels a similar phenomenon in Rhode Island and is probably linked to the expansion of limited access highway networks and the development of large shopping malls convenient to them. In fact, given this phenomenon one would have anticipated an even more dramatic decline in New London's retail sales dominance if not for the development of several outlying malls within city limits adjacent to Interstate Route 95.

Inflationary Trends: During the 13 year period examined for purposes of this study Southeastern Connecticut's economy was affected by inflationary trends common to the nation as a whole. The net consequence of these trends was to reduce the purchasing power of the region's residents by some 47% between 1965 and 1977, although this deficit was at least in part compensated for by rising pay scales.

INFLATIONARY IMPACTS[11]

	Consumer Price Index as of Jan. 1st (1965 Base)	Purchasing Power of Dollars in Terms of 1965 Value
1965	1.00	$1.00
1966	1.02	$0.98
1967	1.05	$0.95
1968	1.09	$0.92
1969	1.14	$0.88
1970	1.21	$0.83
1971	1.27	$0.79
1972	1.32	$0.76
1973	1.36	$0.74
1974	1.49	$0.67
1975	1.67	$0.60
1976	1.78	$0.56
1977	1.87	$0.53

[10] Id.

[11] U.S. Department of Labor, Bureau of Labor Statistics Figures (corrected to 1965 baseline).

These same trends will have affected local government costs and hence expenditures to a similar degree with the result that a considerable amount of the increase in municipal budgets taking place during this period evaporates when inflationary impacts are accounted for. The significance of the phenomenon will become more clear as we later move into a comparative examination of municipal spending patterns in Waterford and East Lyme.

THE PEOPLE:

Population: As the following table shows during the years between 1950 and 1960 the study area underwent a remarkable transition from a rural predominately agricultural area to something approaching the suburban environment of today. Waterford, East Lyme and Montville, all sparsely populated rural communities in 1950, had by 1960 grown between 60 and 75%. During the decade ending in 1970 this dramatic growth rate continued unabated in East Lyme and Montville, but was sharply curtailed in Waterford. As of 1977, however, the growth rates of East Lyme and Montville had dropped off considerably to a level more consistent with Waterford's although East Lyme is still growing noticably faster. During this same 27-year period the population of the area's urban center in New London has grown hardly at all with a relatively low growth rate during the 50's offset by actual declines since then.

AREA POPULATION GROWTH 1950-1977[12/]

Town	1950 pop.	1960 pop.	% change '50-'60	1970 pop.	% change '60-'70	1977 pop.	% change '70-'77
East Lyme	3,870	6,782	+75%	11,399	+68%	13,400	+17.6%
Waterford	9,100	15,391	+69%	17,227	+12%	18,500	+ 7 %
Montville	4,766	7,759	+63%	15,662	+102%	16,500	+ 5 %
New London	30,551	34,182	+12%	31,630	- 8%	30,700	- 3 %

Racial Characteristics: The population of the study area is overwhelmingly white, although New London contains Southeastern Connecticut's largest black community. This racial mix changed little between 1960 and 1970, the census years for which statistics are available. However, during this same period the geographic distribution of whites and blacks has changed considerably with a migration of whites out of the urban centers and into the suburbs.

12/ Southeastern Connecticut Regional Planning Agency, 1970 Social Indicators, Norwich, February, 1973.
Secretary of State's Office, State of Connecticut Register and Manual, 1978.

This migration has not been paralleled to any appreciable extent by a comparable black migration.

SOUTHEASTERN CONNECTICUT POPULATION DISTRIBUTION BY RACE[13/]

	1960		1970	
	White	Black	White	Black
Suburban Towns	39%	13%	46%	15%
Cities	57%	87%	49%	84%

All of the study area's suburban communities share a similarly low black and other non-white population according to 1970 census data reproduced below, although both in real numbers and percentage of total population Waterford's non-white population is somewhat larger than its suburban neighbors.

RACIAL DISTRIBUTION BY COMMUNITY[14/]
(1970)

Town/City	Total pop.	White	% White	Black	% Black	Other	% Other
Waterford	17,227	16,866	98%	297	2%	64	(1%
East Lyme	11,399	11,241	99%	103	1%	55	(1%
Montville	15,662	15,302	98%	225	1%	135	(1%
New London	31,630	27,532	87%	3,542	11%	556	2%

Age Distribution: Changes in relative age distribution between 1960 and 1970 appear in large measure to reflect the progress of the post war "baby boom" through the study area population.

AGE GROUPS AS PERCENT OF TOTAL POPULATION[15/]

	1960	1970
Children (0-14)	30.2%	29.5%
Students-young workers (15-24)	14.5%	18.6%
Prime workers (25-44)	27.3%	24.6%
Mature workers	18.6%	18.7%
Retired (65+)	9.4%	8.6%

[13/] Supra; SCRPA, 1973.

[14/] Id.

[15/] Southeastern Connecticut Regional Planning Agency, Population and Development, 1970. Norwich, January, 1972.

If this interpretation is correct the slight decrease in the 1970 0-14 age group would correspond to the slowing down of the boom through the late 1950s, while the 4% increase in the 15-24 group would reflect the post war peak passing through this age level. The slight decrease in the 25-44 group most likely then reflects the impact of WW II on overall bith rates during the early to mid 1940s. One would expect no major shifts in the relative levels of the older age groups as indeed appears to be the case.

While some clear digressions from the above norm are visible from community to community within the study area as indicated below, these digressions are erratic and do not appear to be elements of any perceivable pattern or trend.

1970 AGE CHARACTERISTICS OF MUNICIPAL POPULATIONS AS PERCENT OF TOTAL[16/]

	New London	East Lyme	Waterford	Montville
Children (0-14)	21.3%	33 %	28.2%	36.2%
Student-young workers (15-24)	28 %	13.4%	15.4%	14.8%
Prime workers (25-44)	19.9%	27.1%	12.5%	29.4%
Mature workers (45-64)	19.1%	23 %	24.2%	14.8%
Retired (65+)	11.7%	8%	9.2%	4.8%

Family Types: The breakdown of family types within the study area is typical of the Southeastern Connecticut region as a whole with a strong dominance (70% overall) of husband-wife family units.

FAMILY DISTRIBUTION BY TYPE (1970)[17/]

Town	Total Families	% Husband-Wife Families	% Other Male Headed	% Female Headed	% Male Indiv.	% Female Indiv.
New London	9,754	57.7%	2.5%	12.3%	9.3%	18.3%
East Lyme	3,338	77.8%	1.8%	7.1%	4.8%	8.5%
Waterford	5,163	76.1%	2.1%	7.4%	5.1%	9.2%
Montville	4,345	80.2%	1.8%	7.5%	4.1%	6.4%
Region	64,388	70.4%	2.1%	10 %	6.2%	11.3%

16/ Id.

17/ Id.

Percentage composition of families in East Lyme, Waterford and Montville closely parallel regional norms which show an overall 77% dominance of husband-wife families in suburban communities. New London's total of husband wife family units, however, is somewhat lower (by 7.3%) than the regional urban average of 65%. Study area breakdowns are also consistent with regional norms for female headed households (10% overall) which show a significantly lower proportion of suburban families and a higher proportion of urban families in this category.

Family Size: 1970 census data indicate an average (mean) Southeastern Connecticut family size of 3.2 persons with urban families generally smaller than suburban, an average of 3.0 members as opposed to 3.3 in the suburbs. Not suprisingly, rapid-growth communities such as East Lyme and Montville show the largest average family sizes.

MEAN FAMILY SIZE (1970)[18/]

Town	Number of Persons
New London	2.7
East Lyme	3.4
Waterford	3.2
Montville	3.6
Region	3.2

Income Levels: Mean income levels within the entire Southeastern Connecticut region have trailed state averages by significant amounts during the entire study period. 1970 data indicate that East Lyme alone among the study area's communities exceeded 1969 state median family income levels and then by only a slight margin.

MEDIAN FAMILY INCOME (1969)[19/]

New London	$ 9,657
Montville	11,129
East Lyme	11,828
Waterford	11,654
Region	10,452
State	11,811

18/ Id.

19/ Id.

1974 data paints a similar picture, although it reflects a per capita rather than a family average. Here it is interesting to note that the relative positions of East Lyme and Waterford have reversed themselves although neither approaches the state mean.

PER CAPITA MONEY* INCOME (1974)[20]

New London	$ 4,726
Montville	4,296
East Lyme	5,014
Waterford	5,208
Region	4,687
State	5,348

The study area's relatively low overall income levels relative to the state of Connecticut as a whole again show up in the number of families and individuals below federal poverty levels (a 1969 average income of $3,743 for a non-farm family of four).

FAMILIES AND UNRELATED INDIVIDUALS BELOW POVERTY LEVELS (1970)[21]

	Total Families	Poverty Families	Percent Total	Total Indiv's.	Poverty Indiv's.	Percent Total
New London	6,987	711	10.2%	3,580	1,235	34.5%
Montville	3,819	130	3.4%	754	273	36.2%
East Lyme	2,881	149	5.2%	536	133	24.8%
Waterford	4,384	210	4.8%	878	214	24.4%
Study Area	18,071	1,200	5.9%	5,748	1,855	30 %
State	n/a	n/a	5.3%	n/a	n/a	29 %

The generally more affluent character of the study area's three suburban communities relative to New London, however, is readily apparent in the much lower proportion of poverty families and individuals within their populations. This proportion in fact is consistently below state norms for poverty families and with the exception of Montville well below norms for poverty individuals.

Interestingly enough, moreover, despite the study area's relatively low mean income levels the proportion of its overall population receiving public assistance is somewhat lower than the state norm, while that of its suburban population is well below average.

*Money income includes wages and salaries, social security and welfare payments, interest and dividends, rental income, veteran's benefits, pensions and annuities, unemployment benefits, alimony and other money income.

[20] Id.

[21] Supra; SCRPA, 1973.

PERCENT OF TOTAL FAMILIES AND UNRELATED INDIVIDUALS RECEIVING PUBLIC ASSISTANCE[22/]

	Total Families and Unrelated Individuals	Total Receiving Pub. Assistance	Percent Receiving Pub. Assistance
New London	15,037	692	5 %
Montville	4,573	130	3 %
East Lyme	3,417	119	3 %
Waterford	5,262	104	2 %
Study Area	28,289	1,045	3.25%
State	1,018,579	37,260	4 %

Education: While the Southeastern Connecticut region lagged behind the state as a whole in the proportion of its total 1970 population who were high school graduates, the study area itself compared favorably with state norms. Not unexpectedly, suburban communities showed a considerably higher proportion of high school graduates in their population than did the city of New London with its higher low income population. However, with the single exception of East Lyme, all the area's communities lagged behind the state average for percent composition of college graduates. In relation to its suburban neighbors New London showed comparatively well at this level due to the presence of three colleges within city limits.

PERCENT OF HIGH SCHOOL AND COLLEGE GRADUATES IN POPULATION OF 25 YEARS AND OLDER (1970)[23/]

	% High School	% College
New London	51 %	11 %
Montville	55 %	7.6%
East Lyme	69 %	17 %
Waterford	59.2%	10.1%
Region	54 %	11 %
State	56 %	14 %

Housing: Regional housing patterns as reflected in 1970 census data closely parallel state patterns with nearly two-thirds of all units owner occupied (62.5% statewide versus 63% within the region). Most of the region's rental housing is located in its urban centers which alone accounted for 74% of all multi-family units (1970). Suburban communities remain overwhelmingly single family owner occupied in nature (75.4% of total 1970 suburban units fell into this category).

[22/] Id.

[23/] Id.

HOUSING OWNERSHIP AND TYPE (1970)[24/]

	Total Units	% Single Family	% Two Family	% Multi-Family	% Trailer	% Owner Occ.'d.	% Rental
New London	10,570	33.7%	25.7%	40.6%	-	41.3%	58.7%
Montville	4,563	76.2%	5.1%	12.5%	6.2%	75.5%	24.5%
East Lyme	3,941	86.6%	5.3%	8.1%	-	77.3%	22.7%
Waterford	5,536	90.4%	5.2%	3.0%	1.4%	84.3%	15.7%
New London County	73,319	62.4%	15.6%	18.9%	3.1%	63.8%	36.2%
State	n/a	n/a	n/a	n/a	n/a	62.5%	37.5%

The study area's three suburban communities all exceeded 1970 county-wide percentage levels for suburban owner-occupied and single family housing units; East Lyme and Waterford by particularly large margins. None of the suburban communities provided significant rental opportunities as compared to New London with its 6,134 units. Montville had the largest number with 1,127 units, while East Lyme and Waterford trailed behind with 795 and 856 units respectively. Building starts in both communities during the 1970-1977 period show some easing of the suburban rental picture particularly in East Lyme, although rentals in Waterford remain in short supply. The dominant new housing type in both communities remains owner-occupied - single family.

As might be expected 1970 housing and rental costs were highest in the study area's suburban communities. Montville and East Lyme, in fact, showed median rental costs well above average for the ten regional communities categorized as suburban in the 1970 census ($120-$149 as opposed to $100-$119). Median value of owner-occupied housing was more typical of regional suburban norms with East Lyme and Waterford exhibiting values in the $20,000-$24,999 range with relatively few homes valued below $10,000 or above $50,000, although Waterford showed somewhat more spread particularly into the ($10,000 range.

24/ Supra; SCRPA, 1972.

1970 RENTAL RATES AND OWNER HOUSING VALUES[25/]

	Total Rental Units	Median Rental Cost	Total Owner Occupied Units	Median Value	% Less Than $10,000 value	% More Than $50,000 value
New London	6,134	$80-$90	4,029	$20,000-24,999	2.9%	5.1%
Montville	1,127	$120-$149	3,282	$15,000-19,999	4.0%	0.2%
East Lyme	795	$120-$149	2,580	$20,000-24,999	2.3%	2.7%
Waterford	856	$100-$119	4,350	$20,000-24,999	5.6%	3.3%
Region-Urban	16,226	$80-$90	16,857	$15,000-19,999	6.7%	3.2%
Region-Sub.	6,665	$100-$119	21,314	$20,000-24,999	4.6%	2.2%
Region-Total	23,328	$80-$90	40,547	$15,000-19,999	5.6%	2.5%

The quality of the housing stock within the study area's three suburban communities was significantly above regional norms for 1970 which would be exptected given generally higher median rental rates and home values. Examination of one of the factors surveyed to determine housing quality, completeness of plumbing facilities, shows Waterford and East Lyme ranking one-two in the region with Montville four in terms of the number of housing units with complete facilities. New London, however, does not compare favorably with comparable regional urban statistics.

25/ Id.

PERCENT OF HOUSING UNITS WITH ALL PLUMBING FACILITIES (1970)[26/]

	Total Number of Housing Units	Total Number of Complete Units	Percent Complete Units
New London	10,488	10,002	95.4%
Montville	4,524	4,410	97.5%
East Lyme	3,569	3,506	98.2%
Waterford	5,330	5,257	98.6%
Region-Urban	35,415	34,165	96.5%
Region-Suburban	29,593	28,669	96.9%
Region-Total	68,018	65,642	96.5%

26/ Id.

Population, Housing and Community Characteristics

Work Force: Hard data on the size and composition of the Millstone construction force for any of the plant's three generating units proved extremely hard to come by and information obtained by interview remains, therefore, largely uncorroborated. However, the picture that emerges*, principally from discussions with area union officials shows a construction force drawn overwhelmingly from union locals within the Southeastern Connecticut region with some assistance from locals in New Haven and Hartford. It also shows a force that reached its peak levels of 800-900 men only over an extended period of time. Given the relatively short commutes involved and the large size of the regional work force (upwards of 100,000 workers), these factors would indicate a very low probability of significant immigration of non-resident workers and their families into the study area on a permanent or semi-permanent basis. This probability is borne out by population growth statistics which show no significant surges in population levels in either Waterford or its neighbors during plant construction years. In fact, population growth in Waterford already slow in the years prior to construction of Unit I fell off even more during the years in which Unit II was built and construction on III began; from 12 percent for 1960-1970 and 7 percent for 1970-1977. Growth rates in neighboring Montville and East Lyme dropped even more precipitously in the 1970 to 1977 period; from 102 percent to Montville for 1960-1970 to 5 percent, from 68 percent in East Lyme to 17.6 percent.**

While no construction worker related impact on overall population levels within study area communities is apparent, East Lyme's First Selectman expressed the belief that construction workers and their families swelled the ranks of that community's rental population through the late 60's and into the early 70's.1/ This contention is consistent with although not actually proved by 1970 census data on area rental housing which indicate that East Lyme among Southeastern Connecticut's ten suburban communities had the highest occupancy rate at 95.3 percent of all units as compared to the regional suburban average of 94.2 percent.2/ However, Waterford had nearly as high an occupancy rate (95 percent), while none of its officials indicated any belief that plant workers were among the town's rental population.

Establishing the present and prior residence of operating staff proved impossible on the basis of information provided by utility representatives. With the small numbers involved (only 150 people are required to operate Millstone I and II3/), however, it would not be expected that immigration would show up in area growth statistics unless it occurred in a single community over a short period of time. This does not appear to have been the case

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*See pp.34 - for a more complete discussion of the construction work force.

**See Table on page 47 for complete comparative data.

1/Interview with First Selectman George Seebeck of East Lyme, 6/13/79.

2/Supra; Southeast Connecticut Regional Planning Agency, 1972.

3/Telephone communication with Millstone Public Relations Officer, Clifford Hill, May 23, 1978.

and if new residents occupy operating positions, they do so in insufficient numbers to be detectable as a discrete factor in area growth.

Growth Dampening: While as noted above, overall growth rates within the study area have declined dramatically since 1970, no link between this phenomenon and the presence of the Millstone facility was evident in data reviewed or in the statements of those interviewed.

The market for homes in the vicinity of the plant remains healthy and neither a prominent area realtor nor the Waterford Town Planner noted any difficulty in selling such homes or any price penalty associated with their location.[4/] It was, however, suggested in both instances that homes with a primary view of the plant were less preferred although still sellable than those physically closer but screened from view. It would seem then that the plant's sheer bulk is something of a visual intrusion and aesthetically objectionable to some homeowners at least.

There was no evidence that reservations as to the plant's safety had any effect on area growth or real estate values. In fact, we were struck by the almost total lack of concern among those interviewed in Waterford and neighboring communities as to the plant's safety;[5/] the more so given the Three Mile Island accident, very much in the news at the time interviews were conducted. There appeared to be a prevailing conviction that a similar incident could not happen in Waterford.

Growth Stimulus: As every study of the Millstone plant has noted, its effect on Waterford's tax base has been to say the very least salubrious. Our own statistics[6/] show a nearly ten fold increase in the size of the town's tax base (measured as net taxable grand list) between 1965 and 1977 with the Millstone facility accounting for nearly 2/3 of the 1977 base. One would expect based on comparable situations elsewhere that such a favorable tax picture would act as a powerful magnet for residential development. As is clear from Waterford's growth experience since the late 1960's, however, tax advantages have not led to significant population influxes and the rate of growth has actually continued to fall off.

The most common explanation for this seemingly contrary behavior offered both by those queries by us and by prior studies[7/] is that Waterford's long

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[4/] Telephone conversation with realtor Mr. Jerry Silverstein of Silverstein Associates, New London, Connecticut, June 14, 1979. Interview with Clint Brown, Waterford Town Planner, May 29, 1979.

[5/] An exception was First Selectman Howard Beethan, Jr. of Montville who had serious reservations as to the plant's safety and economic health. (Interviewed June 14, 1979).

[6/] See pp. 69 - for a complete description of the Millstone facility's revenue impacts on the Town of Waterford.

[7/] See in particular Purdy, et.al., A Post Licensing Study of Community Effects at Two Operating Nuclear Power Plants, Oak Ridge National Laboratory, Oak Ridge, Tennessee. September, 1977.

history of strict land use controls had placed a firm lid on development well before construction of Millstone Unit I so dramatically altered the community's tax picture. Longstanding policies had effectively precluded high density plat development, conversion of owner occupied to rental housing and apartment construction. By contrast, land use controls in neighboring East Lyme and Montville were pictured as being considerably more permissive during this same period such that their rate of growth far outstripped Waterford's.

While there is a large measure of truth in the above scenario, there is also considerable reason to believe that it paints an overly simplistic picture of what actually happened. There appears, in fact, to have been at least four other factors exercising a similarly powerful dampening effect on population growth during this period.

The first of these is largely economic in nature and relates to the impact of Waterford's favorable tax situation on land values. Several of those interviewed[8/] noted that Waterford land values ran in the range of 10-20 percent higher than those of adjacent communities, most probably because of the town's low mil rate. The effect of this price differential was believed to make Waterford less attractive to development in the lower price ranges than its neighbors thereby diverting this form of development pressure towards them.[9/]

Several other contributing factors are purely practical in nature. It quite simply appears that readily developable land was becoming in increasingly short supply as Waterford entered the 1970's thereby effectively limiting opportunities for growth. A considerable quantity of land was (and much still is) in large holdings and not on the market.[10/] A considerable additional quantity (as much as 60 percent) had "serious (physical) development constraints" according to a draft 1973 Plan of Development.[11/] Developable land remains in short supply in Waterford. The Town Planner noted that there were only a total of 450 approved lots on the 1979 market in the entire town and that only after requirements were relaxed to allow building on many of them.[12/]

8/ Telephone conversation with Mr. Jerry Silverstein of Silverstein Associates, New London, Connecticut, June 14, 1979.
Interview with Mr. C. Francis Driscoll, New London City Manager, May 18, 1979.
Interview with Mr. Clint Brown, Waterford Town Planner. May 29, 1979.
Interview with Mr. Richard Erickson, Executive Director, Southeastern Connecticut Regional Planning Agency. June 14, 1979.

9/ Interview with Mr. Edward York, Waterford Building Inspector. May 22, 1979.

10/ Interview with Mr. Clint Brown, Waterford Town Planner, May 29, 1979.

11/ James P. Purcell Assoc's., Inc. Plan of Development, Waterford, Connecticut. Waterford, 1973.

12/ Supra, n. 9.

A final factor has been the manner in which Waterford officials dealt with potential developers on a day-to-day basis, as opposed to the sophistication of the control mechanism they were administering. In the words of the town's draft 1973 Plan of Development (never formally adopted):

> Under its current administrative mechanisms, the entire town is zoned for development. This development has been constrained more by administrative cussedness than by well developed control mechanisms...Waterford has developed a reputation for making it difficult for developers, so they have turned to other political subdivisions in the area.13/

If as we believe the above contentions are valid, the lessons currently drawn from Waterford's successful growth control experience require modification. Clearly the manner of implementation of land use controls is as important, probably more so, than the controls themselves in establishing an effective control "climate." Committment and determination expressed as "cussedness" created this atmosphere in Waterford to a greater degree than the town's zoning and subdivision regulations themselves.

Clearly also, the ability of Waterford to successfully control development pressure had growth consequences for its more permissive neighbors. At least some of the high growth experienced by nearby East Lyme and Montville then, particularly in subdivision and rental housing was most probably "shed" by Waterford. The pressure in other words did not dissipate, it rather redirected itself.

Community Characteristics: All of those queried on the subject14/ shared the opinion that Waterford's real estate prices were inflated as compared to similar holdings in neighboring communities. Price differentials in the range of $5,000 to $10,000 were cited by two Waterford officials who had recently shopped for homes themselves15/ while a prominent real estate appraisor noted premiums of up to 20 percent for homes in the lower price ranges and of 12-15 percent for those in the higher ranges.16/ There was a similar uniformity of opinion that the highly advantageous tax situation associated with the Millstone facility's contributions to Waterford's tax rolls was the most important cause of inflated local real estate prices, although one would expect that the community's rigorous growth control policies and other previously cited development impediments would also be factors.

13/Supra, n. 11.

14/Interview with Mr. Edward Stewart, Assistant Director, Waterford Public Works Department. May 24, 1979. See also, Driscoll, Silverstein, Brown, Erickson, Seebeck.

15/Supra, n. 10.

16/Supra, n. 8.

The impacts of price inflation in Waterford's real estate market on the town's population has been pervasive. A number of key housing variables have been affected. High prices have effectively discouraged lower value plat development and have diverted pressure for this type of housing to neighboring communities.[17] As a result one of the more attractive housing options open to the young family (age group 25 to 34 years) has been largely removed and many have been forced to buy elsewhere in the region.[18] In addition, high prices have yielded a distinct purchasing advantage to upper income buyers, a factor which both contributes to the shortage of lower income housing types and reflects itself in an increasingly wealthy population.[19] Nineteen seventy-four (1974) data[20] for instance, show Waterford the wealthiest community in the region by a substantial margin whereas in 1969 it trailed neighboring East Lyme by equally substantial amounts.[21] An increasingly wealthy and older population also shows up in the demand for recreational services according to Waterford's Director of Recreation who noted a growing demand for expert instruction and sophisticated programs and who saw a median age increase of some eight months per year among those participating in town recreational programs.[22]

Waterford's high real estate prices also seem to have affected the availability of rental housing by making it more profitable to develop land for high cost single family units than rental units although construction of rentals was also actively discouraged by town development controls dating to the mid-1950's. As a result according to the town's 1977 Plan of Development Waterford had only one 24-unit apartment complex and no new rental housing had been built since 1970. By contrast, East Lyme during the same period had issued 13 building permits for multi-family housing units.[23]

Shortages of rental housing have had a particularly severe impact on Waterford's young adults, married and non-married alike, many of whom have been unable to locate affordable housing in the community upon moving out of the family home.

17/ Interview with Ron Bugbee, Director, Recreation and Parks, Town of Waterford. May 24, 1979; Supra n. 8.

18/ Supra, n. 11
Waterford Planning &Zoning Commission, Land Use Plans, Volume One...Existing Conditions, 1977.

19/ Supra, n. 8.

20/ See Table on p. 51

21/ See Table on p.50.

22/ Supra, n. 17.

23/ East Lyme and Waterford Annual Reports, 1970-1977 inclusive; Building Inspector/Zoning Enforcement Officer's Report.

Displacement of this population group due to the low number of rental units in town and increasing housing costs is noted as a problem in both 1973 and 1977 town land use plans.[24] It shows up in 1979 census data[25] which indicate a considerably lower percentage of Waterford's total population in the 25-44 age group than is typical of neighboring East Lyme and Montville (only 12.5 percent as opposed to 27.1 percent and 29.4 percent, respectively) and also a smaller median family size (3.2 individuals) as opposed to 3.4 in East Lyme and 3.6 in Montville with their greater population of young families. Additional evidence comes from an unexpected source, Waterford's Director of Recreation who cited a growing number of instances in which he had had to deny access to town recreation facilities and programs to young former residents who had been forced to move to New London to find a place to live.[26]

A number of those interviewed traced direct links between the above described changes in Waterford's population composition and population trends in neighboring communities. One of the most intriguing of these is the alleged wholesale migration of wealthy families from New London's affluent sixth ward across the nearby town line into Waterford with its substantially lower tax rates (18.5 mils in 1977 as opposed to New London's 65.17 mils).[27] New London's Building Inspector further linked this loss of wealth to a shortage of investment capital for restoration of deteriorating housing in the city.[28] While both of these opinions were offered by knowledgeable sources, we were unable to substantiate them on the basis of any hard data available to us.

However, the effects on neighboring communities of younger Waterford residents displaced directly or indirectly by inflated real estate prices does show up in 1970 census data. As previously noted, this data indicates a much higher proportional population of 25-44 year olds in East Lyme and Montville than in Waterford. While many of these individuals doubtless were not former Waterford residents, differences are sufficiently large to suggest that displacement was a contributing factor.

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[24] Supra, n. 11; Waterford Planning & Zoning Commission, 1977.

[25] See Table on, p. 48 ; Table on , p. 50 .

[26] Supra, n. 17.

[27] Supra, n. 8.

[28] Interview with Mr. Melvin Jetmore, Building Inspector, City of New London, June 18, 1979.

In other demographic characteristics examined Waterford either did not differ significantly from its suburban neighbors or differed in ways which bear no seeming relationship to the presence of the Millstone facility.[29] Some of this lack of differentiation may stem from inadequacies in available census data, most dating from 1970 and consequently capturing only the first few years of Millstone activity (Unit I began operating in December, 1970). However, as the preceeding discussions will have demonstrated we have found that by-in-large the 1970 data have been consistent with what would be expected given information and opinion obtained by interview. This being the case, we believe that while the raw numbers have doubtless changed since 1970 the overall demographic profile of Waterford and its neighbors through the end of the study period in 1977 probably hadn't to any significant degree.

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[29] Racial composition of the three suburban communities in the study area was virtually identical with between 98 percent (Waterford) and 99 percent (East Lyme, Montville) of the population white. Approximately three-quarters of all families were headed by a husband and wife with female-headed households constituting a consistantly low 7 to 7.5 percent of the total. Similarly small numbers (2-3 percent of total population) were receiving public assistance. The vast majority of housing was owner occupied (84.3 percent in Waterford, 77.3 percent in East Lyme and Montville, respectively) and in relatively good condition (well above 90 percent had all plumbing facilities). The sole unexplained divergence is in the area of education where at both high school and college levels, East Lyme outstrips Waterford and Montville by noticeable margins.

Economic Patterns: Jobs, Sales, Business Activity

Direct Employment: Surprisingly little information as to the composition of the construction work force for Millstone Units I, II or III was available from utility representatives. Union officials proved a more fruitful information source, but were unable to provide more than general impressions. Nevertheless, these impressions are consistent with available hard data and were substantiated by other interview sources. They paint a clear if not terribly detailed portrait of the plant's construction force.

All evidence indicates that this force was composed almost entirely of workers from within the Southeastern Connecticut region with little immigration of workers from outside the region. As union projects hiring for all three Millstone Units was coordinated through local union halls. These locals served as the bargaining units for all construction trades and crafts employed by plant contractors and subcontractors. Union officials indicated that with few exceptions they were able to fill job openings from within their own ranks and only occasionally had to call in workers from locals in Hartford and New Haven.[1/] They saw few transients outside of senior management and engineering personnel following the job into the region.

No difficulty in locating sufficient amounts of union labor was encountered as Millstone construction coincided with a general lull in other major construction projects.[2/] However, even so it was necessary to significantly increase union rolls to meet Millstone demands (up to 900 union workers were employed at peak).[3/] With a large labor pool to draw from this presented no major problems and the variety of job openings available and skill levels required allowed for the integration and on-the-job training programs were initiated by either local unions or plant contractors and union officials believe none were necessary given the regional availability of numerous licensed journeymen in a wide variety of skilled crafts.[4/]

The primary incentive to seeking a Millstone construction job did not appear to be wage or fringe related since all jobs on the site payed union scale with fringe benefits identical to those payed for comparable work in any union job in the local bargaining area.[5/] Rather, it is clear that the primary attractant was the duration of the Millstone job in contrast to the short term and highly seasonal nature of other regional construction projects.[6/] This promise of

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1/ Supra; n. 30.

2/ Id.

3/ Id.

4/ Id.

5/ Id.

6/ Id.

steady long-term employment was in itself sufficient to ensure a large local pool of willing union laborers and craftsmen. It did not, however, according to union officials lead to labor shortages on other union construction jobs as there was sufficient individuals in the labor pool to meet temporary surges of demand.[7/]

The creation of this large pool of union workers has resulted in problems for the region's locals who have had difficulty in providing sufficient jobs for their inflated memberships since construction work on Unit III has stalled.[8/] Membership rolls have consequently been declining as workers especially those in the unskilled trades have been absorbed into other sectors of the region's employment base or have sought employment elsewhere.

The extent of Southeastern Connecticut's employment infrastructure (nearly 73,600 jobs and some 79,000 workers in 1970)[9/] relative to the region's small size has been a key factor in narrowing the range of employment related impacts associated with the Millstone facility. It in fact becomes more surprising how little Millstone employment has affected the economic life of the region as a whole than how much.

Perhaps most importantly, the high ration of indigenous workers to geographic area has removed incentives to inmigration of construction workers and their families from outside the region with all the host of economically and socially disruptive impacts such sudden short term population movement can entail. It has further discouraged worker movement within the region itself in that it has not been necessary to move closer to the plant in order to work there. In fact, most workers commuted daily from towns throughout the region with consequent minimal disruption of the social or economic fabric of their home communities or communities surrounding the plant.[10/]

The region's well developed employment infrastructure has further served to absorb with little visible response both employment and unemployment impacts of plant construction and completion.[11/] In fact the Executive Director of the Southeastern Connecticut Regional Planning Agency expressed the opinion that the region's employment picture would not look significantly different if Millstone hadn't been built at all.[12/] A look at the data tends to

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7/ Id.

8/ Id.

9/ Supra, n. 2. Exact census figures are 79,219 total civilian labor force and 73,570 total nonagricultural civilian jobs (1970).

10/ See pp. 56 for more on this subject.

11/ We found only one individual who held a contrary view on this issue. First Selectman Howard Beetham, Jr. of Montville saw both pirating of labor from local businesses and lowered productivity of local workers associated with Millstone's higher pay scales.

12/ Supra, n. 8.

support this view. Peak construction employment represented only one percent of 1970 regional jobs while recent layoffs would have effected an even smaller percentage of an expanded 100,000 persons 1978 regional work force.

Impacts associated with post-construction Millstone employment in the form of regular operating staff (approximately 150 for Units I and II) retrofit/refueling staff (300 to 400 people employed for up to two months annually) are even more difficult to trace through the regional economy. For all intents and purposes the operating staff is so small as to be invisible and we were unable to isolate discrete economic activity attributable to this group. Refueling/retrofit personnel are typically transients who according to utility officials[13/] move from one plant to the next due to their specialized skills. One would expect, therefore, their impacts on local economic activity to be minor and limited primarily to restaurant and motel/hotel business. This, according to those questioned on the subject appears to have been the case with an increase in off-season motel/hotel business coincidental with periodic refuelings.[14/]

Retail Sales: At peak according to local union officials Millstone's construction force numbered in excess of 900 men[15/] and they and their families could be expected to generate substantial retail activity in the normal course of feeding, clothing and housing themselves. According to regional planning officials, however, much of this activity was so widely dispersed throughout the region as to be virtually undetectable.[16/] Retail sales levels in three of the study area's four communities tend to support this view. East Lyme, Montville and New London all behave about as one might expect given long term regional trends of sharply increasing suburban sales activity and declining growth in urban activity.[17/]

Waterford presents a more confusing picture with at least some evidence of construction related retail sales impacts on overall activity. This shows up in the form of rather sharp increases in per capita sales beginning in 1968 and persisting through 1972; roughly parallel to the completion of Millstone Unit I and the first several years of Unit II construction.

13/Supra, n. 3.

14/Supra, n. 2.

15/Supra, n. 30.

16/Supra, n. 8.

17/See pp. 35 for more on this subject.

PER CAPITA RETAIL SALES PATTERNS: TOWN OF WATERFORD[18/]

Year	Per Capita Sales	% Increase	
1962	$ 656		
		38.9	
1965	911		59
		15.0	
1966	1,044		
		- 5.0	1.4
1967	987		
		7.0	
1968	1,059		
		7.0	31
1969	1,130		
		22.7	
1970	1,387		
		48.0	48
1972	2,053		
		13	
1974	2,339		13

However, several factors suggest that construction of Millstone Units I and II and the 1968-1977 surge in retail sales may be in part coincidental. Certainly, much of the '68-'70 31 percent sales increase represents recovery from the '66-'68 sales slump (only 1.4 percent net increase). Further, the 31 percent figure looks less impressive when compared with preconstruction '62-'66 sales growth. Finally, much of the post 1970 increase probably results from new commercial construction in Waterford including two large shopping centers which greatly expanded the range of retail products available in the community thereby stimulating local sales activity.[19/]

Local Purchases of Goods and Services: Although we were unable to obtain information as to the specific volume or value of local purchases for plant construction, a utility spokesman indicated that such purchases were largely limited to "basic" construction materials and services.[20/] These included lumber, structural steel, sand, gravel and readi-mix concrete and such services as portable sanitary facilities, refuse disposal and catering.[21/] Most of these were provided by vendors located in Groton and New London with relatively little participation by other communities in the study area.

While utility contractors pursued a "Buy Connecticut" policy,[22/] this apparently translated into an advantage to local vendors only where all other purchasing considerations were equal. In practice goods and services were obtained from the closest low bidder consistent with delivery requirements.[23/] This, however, tended to give local vendors a defacto competitive advantage where transportation cost constituted a high proportion of the bid price as with such high volume-low unit value products as sand, gravel and concrete.

[18/] Waterford Planning and Zoning Commission Report, 1977.

[19/] Id.

[20/] Supra, n. 3.

[21/] Id.

[22/] Id.

[23/] Id.

Business Patterns: Recent sales data show that an increasing amount of retail activity within Southeastern Connecticut has begun to move outwards from its traditional location in the region's cities into expanding suburban communities. The study area's three suburban towns; Montville, East Lyme and Waterford, are all experiencing this phenomenon to varying degrees with Waterford showing the greatest growth as discussed previously. Two major shopping centers and several smaller commercial developments have been built in the community since 1970 expanding its retail floor space by some 280,000 square feet.[24] Another major shopping complex is in the advanced planning stages.[25] New London officials express concern that Waterford has begun to siphon off businesses from its downtown area and that the construction of yet another Waterford mall will ring the death knoll for downtown business.[26]

With all this retail activity seemingly being drawn into Waterford it is tempting to look for a "magnet" of some sort and to find it in the community's low and stable taxes some two-thirds of which are generated by the Millstone plant. However, there is considerable reason to question this "tax magnet" theory despite its popularity. The Executive Director of the Regional Planning Agency and a prominent local realtor for instance both agreed[27] that recent commercial developments in Waterford had not been as dramatic as they were purported to be and that relocation of downtown New London businesses was more a search for additional customers and floor space than for a tax break. Considerably more business in fact was being attracted into heavily developed Groton with its abundance of retail floor space and large market population than was moving into Waterford.[28]

While reason suggests that Waterford's advantageous tax situation would be attractive to a business considering a site in the study area, it appears that taxes constitute an insufficiently large proportion of operating costs to be a major independent locational consideration. Rather, most of the town's recent commercial development activity seems more directly attributable to other factors including improved transportation links (with the mid-sixties completion of Interstate 95), expanded markets and extension of town sewers and water mains.[29]

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[24] Supra, n. 48.

[25] Id.

[26] Supra, n. 8.

[27] Supra, n. 3.

[28] Id.

[29] Supra, n. 48.

Tax advantages appear an even less significant industrial siting consideration as Waterford's recent experience clearly indicates. As the 1977 Town Plan of Development notes, "the number of industrial jobs within the community has not changed significantly (since 1964)." Only 768 industrially zoned acres are currently occupied,30/ 500 of these by the Millstone facility.

30/ Id.

Public Sector Impacts and Interactions

Municipal Revenues: It should surprise no one that construction of the Millstone nuclear power station resulted in a windfall revenue gain for Waterford as the town in which the plant was built. With the plant comprising an ever growing proportion of the town's taxable grand list, tax collections increased nearly five fold between 1965 and 1977. By 1977 the Millstone plant alone accounted for two-thirds of all taxes collected.

Millstone Station Tax Contributions[1/]

	Net Taxable Grand List	Millstone Assessed Valuation	Millstone % of Net	Total Taxes Collected	Mil Rate	Tax Payments
*1965	$ 63,806,470	-	-	$ 2,266,803	40	-
1966	66,462,435	-	-	2,469,565	40	-
1967	72,744,085	-	-	2,682,984	42	-
1968	90,334,773	$ 20,866,730	23.1	3,820,200	42	-
1969	97,983,440	25,880,500	26.4	3,801,043	42	$ 876,403
1970	112,585,580	37,369,660	33.2	4,137,772	42	1,086,981
1971	130,564,530	51,057,780	39.1	4,844,471	43	1,606,895
1972	168,459,350	81,720,310	48.5	5,603,218	43	2,195,485
1973	221,189,640	129,755,790	58.7	6,511,890	38	3,105,372
1974	251,901,630	158,496,400	62.9	6,864,565	31	4,022,429
**1975	309,484,520	211,500,160	68.3	4,134,254	16/32	NA
*1976	581,676,640	351,209,310	60.4	8,100,703	33	6,979,505
1977	624,879,220	388,973,080	62.2	10,229,028	18.5	6,497,372

*Re-evaluation

**Ten Month Transition Budget

By contrast, during the same period in which Waterford's tax collections were soaring in response to this major addition to its tax base, East Lyme had to maintain consistently higher mil rates to wring less than a four fold increase in collections out of its much smaller tax base.

1/ Data compiled from Town Annual Reports, interview with Waterford Tax Assessor, Kenneth Dimmock, June 15, 1979.

East Lyme Tax Collections[2/]

	Net Taxable Grand List	Mil Rate	Total Tax Collections
1965	$ 42,653,660	34	$ 1,390,656
1966	45,157,150	34	1,538,002
1967	48,073,965	38	1,770,304
1968	49,766,925	44	2,163,757
1969	52,383,745	46	2,358,204
1970	55,287,970	52	2,862,547
*1971	58,651,400	56	3,211,638
1972	98,465,310	41	3,942,992
1973	102,137,400	37	3,831,186
1974	108,668,885	39	4,159,556
1975	114,368,300	41	4,585,386
1976	119,060,630	45	5,377,040
**1977	123,473,490	22/46	2,900,717

*Re-evaluation

**Ten Month Transition Budget

Because of the size of the Millstone facility and the highly technical considerations involved in establishing its taxable worth assessment of the plant was undertaken by a professional appraisal firm by mutual arrangement between the town and the utility. To some extent then the assessment process was one of negotiation and accommodation and Waterford's Tax Assessor noted that the utility had been highly cooperative throughout.[3/]

In order to ensure as regular a flow of tax revenue from the plant as possible a stabilized depreciation rate was established for a fixed fifteen year period ending in 1985 at which time plant assessments would be renegotiated. This stabilizaed

[2/] From Town Annual Reports.

[3/] Supra; Dimmock.

rate was set at 20% for work in progress and 30% for the completed facility.[4/]

Waterford has also aggressively pursued tax revenues generated by construction equipment on the plant site which under Connecticut law are taxed as personal property of the owner of record in the town in which they are located. According again to Waterford's Tax Assessor this has been a significant revenue source.

The Millstone plant has not provided tax revenues or payments of any kind to surrounding communities, a fact which appears to have generated a considerable amount of subdued jealousy. New London officials are particularly outspoken in their support of regional tax redistribution legislation which has been introduced in the last few sessions of the state legislature.

The Taxpayer: In a very real and immediate sense Waterford's residential taxpayer has been the principal beneficiary of the Millstone tax windfall, certainly to a more uniform degree than have town agencies. Since the plant first appeared on town tax rolls in 1968 the residential taxpayer has paid an ever decreasing portion of the total tax bill even as the level of municipal spending has climbed. Because of the manner in which Waterford shows tax data it is not possible to establish exactly how much the homeowner pays, but since we know the approximate percentage of the grand list provided by the Millstone plant we can assume that it is something less than the remainder. As will be readily seen the Waterford homeowner comes off rather well both in relation to his East Lyme neighbors and relative to what he himself was paying in 1968; in both instances paying less than half as much of the total tax bill in 1977.

RESIDENTIAL TAX BASE AS % OF TOTAL: WATERFORD AND EAST LYME

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Waterford (other than Millstone)	-	-	-	76.9	73.6	66.8	60.9	51.5	41.3	37.1	31.7	39.6	37.8
East Lyme (houses & lots)	-	78.6	78.6	78.3	77.7	76.9	74.9	78.9	78.8	77.8	77.7	77.2	76.4

The Waterford residential taxpayer's enviable situation comes into even sharper focus when one looks at how much of what is spent on him comes out of his own tax dollars. By 1977, for instance, the Town of Waterford was spending nearly $700 for every man, woman and child in the community while those men, women and children were footing only a bit more than a third of the bill apiece. At $568 per head in 1976 (1977 was a ten month budget), East Lyme was spending considerably less, but its residential taxpayer was spending more than his Waterford neighbor both in an absolute sense and relative to other municipal revenue sources.

[4/] Id.

RESIDENTIAL TAX PAYMENTS RELATIVE
TO MUNICIPAL SPENDING

WATERFORD
(dollars)

	1969	1970	1971	1972	1973	1974	1975*	1976	1977
Total Spending Per Capita	287.04	360.85	384.00	437.26	470.38	496.30	493.82	608.75	692.35
Per Capita Tax Payments Exclusive of Millstone Taxes	171.53	177.09	188.23	195.85	192.46	157.90	-	61.27	201.71

EAST LYME
(dollars)

	1969	1970	1971	1972	1973	1974	1975	1976	1977*
Total Spending Per Capita	313.29	354.45	377.38	432.32	432.15	479.76	537.15	568.28	548.12
Residential	168.63	195.12	211.09	246.11	245.76	258.09	276.54	318.93	167.12

*Ten Month Budget

Clearly the presence of the Millstone plant on its tax rolls has allowed the Town of Waterford to dip only sparingly into the wallets of its residents, leaving a growing portion of their contents for other uses.

Overall Spending: Increases in Waterford spending levels since 1965 in the non-educational sectors of municipal government are impressive indeed, up nearly eight fold by 1977 or twice as much as neighboring East Lyme. Even accounting for inflation swallowing up forty-seven cents of every 1965 dollar we still find a respectable four fold increase. Most of this has occurred since 1968 when the Millstone Plant first appeared on Waterford's tax rolls and there is compelling evidence that much of it reflects the plant's impacts on Waterford's tax base.

TOTAL NON-EDUCATIONAL SPENDING: DOLLARS

WATERFORD

	1965	1966	1967	1968	1969	1970	1971
Current $	765,069	901,017	1,411,873	1,746,402	1,854,111	2,705,532	2,642,560
Current $ Per Capita	46.94	64.96	82.60	103.64	108.75	157.05	153.64
Constant 1965 $ Per Capita	46.94	63.69	78.67	95.08	95.39	129.79	120.98

	1972	1973	1974	1975	1976	1977
Current $	3,122,495	3,464,560	3,648,237	3,246,984	4,804,841	5,908,857
Current $ Per Capita	179.45	195.74	202.68	178.41	262.56	319.40
Constant 1965 $ Per Capita	135.95	143.93	136.03	106.83	147.51	170.80

EAST LYME

	1965	1966	1967	1968	1969	1970	1971
Current $	719,606	733,255	825,136	1,251,475	1,328,689	1,555,695	1,572,299
Current $ Per Capita	79.08	77.18	82.15	119.19	121.34	136.47	134.38
Constant 1965 $ Per Capita	79.08	75.67	78.58	109.35	106.44	112.78	105.81

	1972	1973	1974	1975	1976	1977
Current $	1,980,830	1,892,502	2,358,714	2,660,213	2,786,196	2,454,090
Current $ Per Capita	165.07	153.86	185.73	206.22	212.69	183.14
Constant 1965 $ Per Capita	125.05	113.13	124.65	123.49	119.49	97.94

*Ten Month Budget

However, Waterford spending increases become considerably less impressive when one factors in educational expenditures and compares total spending on a per capita basis with East Lyme. Here we find that when inflation is accounted for Waterford's overall spending had not quite doubled by 1976 (up 1.91 times), while East Lyme which receives no tax revenue from the plant had spent nearly as much, up slightly over one and one-half(1.52) times.[1]

[1] 1977 was a 10 month budget year for East Lyme necessitated by a transition to a uniform tax year. Comparison of 1977 Waterford, East Lyme data is therefore misleading.

TOTAL ALL SPENDING: DOLLARS

WATERFORD

	1965	1966	1967	1968	1969	1970	1971
Current $	2,922,398	3,103,644	3,882,881	4,490,290	4,893,891	6,216,425	6,604,806
Current $ Per Capita	179.29	198.18	230.56	266.48	287.04	360.85	384.00
Constant 1965 $ Per Capita	179.29	194.29	219.58	244.48	251.79	298.22	302.36

	1972	1973	1974	1975*	1976	1977
Current $	7,608,435	8,325,635	8,933,317	8,987,433	11,140,203	12,808,496
Current $ Per Capita	437.26	470.38	496.30	493.82	608.75	692.35
Constant 1965 $ Per Capita	331.26	345.87	333.09	295.70	341.99	370.24

EAST LYME

	1965	1966	1967	1968	1969	1970	1971
Current $	1,903,942	2,016,978	2,300,913	3,041,266	3,430,512	4,040,393	4,415,421
Current $ Per Capita	209.23	202.31	230.09	289.65	313.29	354.45	377.38
Constant 1965 $ Per Capita	209.23	198.34	219.13	265.73	274.82	292.93	297.15

	1972	1973	1974	1975	1976	1977*
Current $	5,187,811	5,315,475	6,092,980	6,929,216	7,444,426	7,344,955
Current $ Per Capita	432.32	432.15	479.76	537.15	568.28	548.12
Constant 1965 $ Per Capita	327.52	317.76	321.99	321.65	319.26	293.11

*Ten Month Budget

Waterford municipal government has not benefited uniformly from the plant's presence on town tax rolls; quite clearly.

General Government: General government expenditures as the term is used here include the budgets of all municipal administrative offices, boards and commissions.[1] As the following table indicates, spending in this area relative to total non-educational spending has grown only slightly in both East Lyme and Waterford since 1965.

General Government Expenditures:

Percent of Total Noneducational Spending[2]

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Waterford (%)	18.1	15.9	12.2	15.0	19.9	16.8	22.0	16.7	16.9	18.7	22.5[3]	23.0	20.3
East Lyme (%)	15.2	20.6	18.0	14.0	18.3	14.9	18.0	19.2	20.9	18.6	18.0	20.9	23.1[3]

Neither construction of the Millstone power station nor its incorporation into the Waterford tax rolls in 1968 have had any visible impact on the proportion of non-educational spending committed to administration. The same erratic up and down fluctuations in the range of 2 to 5 percentage points persist throughout the study period in Waterford. Overall, in fact, the percentage of the total non-educational budget committed to administration has grown substantially more in East Lyme than it has in Waterford; up 7.9 percent as compared to 2.2 percent.

In actual dollars spent, however, Waterford administrative expenditures have increased at over twice the East Lyme rate on a per capita basis; up by a factor of four as opposed to two with inflation accounted for.

1/ Selectman's Office, Town Hall, Board of Finance, Treasurer, Tax Collector, Assessor, Clerk, Building Inspector, Library, Registrar, Development and Industrial Commission, Conservation Commission, Board of Tax Review, Zoning Board of Appeals, Planning and Zoning Commissions, Retirement Commission.

2/ Data compiled from Town Annual Reports.

3/ These figures represent a ten month budget period necessitated by transition to a uniform fiscal year ending on June 30th. They are, therefore, artificially low for comparative purposes.

General Government Expenditures:

Dollars Spent

Waterford

	1965	1966	1967	1968	1969	1970	1971
Current $	138,167	170,887	168,339	265,593	369,573	453,507	581,834
Current $ per capita	8.48	10.36	10.08	15.76	21.68	26.33	33.83
Constant 1965 $ per capita	8.48	10.16	9.60	14.46	19.02	21.76	26.64

	1972	1973	1974	1975*	1976	1977
Current $	520,212	586,926	680,512	731,260	1,103.917	1,199,021
Current $ per capita	29.90	33.16	37.81	40.18	60.32	64.81
Constant 1965 $ per capita	22.65	24.38	25.38	24.06	33.89	34.66

*ten month budget

East Lyme

	1965	1966	1967	1968	1969	1970	1971
Current $	109,174	150,817	148,319	175,312	242,764	232,050	283,300
Current $ per capita	12.00	15.88	14.83	16.70	22.17	20.36	24.21
Constant 1965 $ per capita	12.00	15.57	14.12	15.32	19.45	16.83	19.06

	1972	1973	1974	1975	1976	1977*
Current $	379,854	396,482	438,428	502,328	582,706	567,559
Current $ per capita	31.65	32.34	34.52	38.94	44.48	42.36
Constant 1965 $ per capita	23.94	23.70	23.17	23.32	24.99	22.65

*ten month budget

Here changes which appear to be related to the Millstone plant are visible as Waterford per capita expenditures substantially lower than East Lyme's through 1967 begin to gain through 1968 and 1969 as the impact of plant taxes on municipal revenues is felt. Interestingly enough, however, after 1970 per capita administrative expenses in Waterford stabilize at a level very close to East Lyme's until 1976 when they once again begin to climb sharply. There does not, therefore, appear to be any direct correlation between plant tax revenues and expenditures in this area since plant taxes were increasing in fairly regular increments yearly.

Fire Protection: While both East Lyme and Waterford have well trained and well equipped volunteer fire departments supported by direct town appropriations, East Lyme has consistently spent more than its neighbor on fire protection both on a per capita basis and as a percentage of its total non-education budget.

Fire Protection:

Percent of Total Noneducational Spending

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Waterford (%)	5.7	4.1	3.8	3.6	3.3	4.4	5.4	5.0	6.0	6.3	7.7*	7.7	7.0
East Lyme (%)	6.6	4.7	9.0	3.3	4.5	3.0	9.5	7.7	10.9	9.9	9.2	8.9	12.6*

*ten month budget

Fire Protection:

Dollars Spent

Waterford

	1965	1966	1967	1968	1969	1970	1971
Current $	43,513	44,225	57,783	62,138	60,853	119,390	143,109
Current $ per capita	2.67	2.68	3.10	3.69	3.57	6.93	8.32
Constant 1965 $ per capita	2.67	2.63	2.95	3.39	3.13	5.72	6.55

	1972	1973	1974	1975*	1976	1977
Current $	155,064	208,356	228,180	250,284	369,584	416,298
Current $ per capita	8.91	11.77	12.68	13.75	20.20	22.50
Constant 1965 $ per capita	6.75	8.65	8.51	8.23	11.35	12.03

*ten month budget

East Lyme

	1965	1966	1967	1968	1969	1970	1971
Current $	47,329	34,534	74,591	40,824	59,567	47,356	149,578
Current $ per capita	5.20	3.64	7.46	3.88	5.44	4.15	12.78
Constant 1965 $ per capita	5.20	3.57	7.10	3.55	4.77	3.43	10.06

	1972	1973	1974	1975	1976	1977*
Current $	151,641	207,055	233,135	243,689	249,315	309,462
Current $ per capita	12.64	16.83	18.36	18.89	19.03	23.09
Constant 1965 $ per capita	9.58	12.38	12.32	11.31	10.69	12.34

*ten month budget

Since this pattern persists over the entire study period beginning well before Millstone taxes began to flow in 1968, there is considerable evidence to suggest that it reflects spending policies and priorities that predate the plant and which have not been essentially altered by its existence. Having said this, however, it is nevertheless clear that Waterford per capita spending levels in this area have gained considerably on East Lyme in the years since the plant came on the tax rolls having nearly quadrupled even with inflationary impacts accounted for. However, most of this gain appears to reflect the post 1968 increase in Waterford spending levels overall rather than a decision to spend more on fire protection specifically since spending in this area has gained only slightly on spending for other services (up only two percentage points as a portion of total non-educational spending).

This picture of a fire service sharing in the general largesse associated with Millstone taxes without consuming a significantly larger slice of the revenue pie than it had in the past is supported by statements from Waterford's Fire Marshall. While noting numerous improvements made in the area of community fire protection as a result of the availability of increased tax revenues, he cited few instances where the presence of the plant had imposed added fire fighting responsibilities or costs on the town. No additional men had been hired and no additional or special equipment purchased although much of the increased spending in this area appears to have been committed to replacing older equipment already on hand. Vehicle rotation, for instance, had been shortened from the twenty year period typical for area towns to twelve years.[1/]

1/ Interview with Mr. Douglas Peabody, Waterford Fire Marshall. May 22, 1979.

Much of the absence of plant impact on municipal fire protection services was attributed to cooperation by plant staff and development of a close working relationship between town and plant officials. While the plant maintained its own fire brigade and hydrant system, frequent drills and joint training sessions with town firefighters were conducted since the town retained ultimate responsibility for protection of lives and property on plant premises.2/ Town officials were routinely notified of even the most minor accidents on Millstone property in Incident Reports required by mutual agreement although actual calls to the plant had been relatively infrequent and of a minor nature.3/ The Town Fire Marshall retained jurisdiction to enforce all state fire code requirements on plant property and reported close cooperation in complying with these requirements during periodic inspections.4/

No impacts on fire services in other study area communities except for emergency preparedness responsibilities discussed on subsequent pages.were cited by any of those questioned on the subject.5/

2/ Id.

3/ Id.

4/ Id.

5/ Interview with Deputy Chief Thomas Maher, New London Fire Department, Supra; Seebeck, Beetham.

Police Protection: As is the case with fire services, Waterford and East Lyme police spending patterns appear to reflect policies and priorities which predate and which have not been essentially affected by construction of the Millstone plant. Again, it is the relatively constant level of expenditure over time for police protection as a percentage of total non-educational spending which provides the clue.

POLICE PROTECTION:
PERCENT OF TOTAL NON-EDUCATIONAL SPENDING

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Waterford (%)	12.7	11.2	9.6	9.2	11.1	9.9	10.2	10.9	10.9	11.7	13.1*	12.5	12.2
East Lyme (%)	8.3	6.9	8.6	6.6	5.9	5.3	5.6	5.1	5.6	5.9	5.5	6.2	6.3*

*Ten month budget

Thus, even though per capita police spending in Waterford has more than doubled in constant 1965 dollars since 1968, it has not gained on other spending areas having in fact dropped marginally from 12.7% of total non-educational spending in 1965 to 12.2% in 1977.

POLICE PROTECTION: DOLLARS SPENT

Waterford

	1965	1966	1967	1968	1969	1970	1971
Current $	97,471	119,997	132,467	160,736	205,413	267,458	270,376
Current $ Per Capita	5.98	7.27	7.93	9.54	12.05	15.53	15.72
Constant 1965 $ per Capita	5.98	7.13	7.55	8.75	10.57	12.83	12.37

	1972	1973	1974	1975*	1976	1977	
Current $	341,298	378,368	428,383	424,197	599,326	720,853	
Current $ Per Capita	19.61	21.38	23.80	23.31	32.75	38.97	
Constant 1965 $ per Capita	14.86	15.72	15.97	13.96	18.40	20.84	

*Ten month budget

POLICE PROTECTION: DOLLARS SPENT

East Lyme

	1965	1966	1967	1968	1969	1970	1971
Current $	59,743	50,214	71,213	82,001	77,830	83,180	87,334
Current $ Per Capita	6.57	5.29	7.12	7.81	7.11	7.30	7.46
Constant 1965 $ Per Capita	6.57	5.19	6.78	7.17	6.24	6.03	5.87
	1972	1973	1974	1975	1976	1977*	
Current $	100,715	105,724	138,616	146,181	171,508	153,698	
Current $ Per Capita	8.39	8.60	10.91	11.33	13.09	11.47	
Constant 1965 $ Per Capita	6.36	6.32	7.32	6.78	7.35	6.13	

*Ten month budget

It, therefore, appears that spending increases impressive though they are do not represent an independent decision to spend more of the total budget on police services. They in fact more likely reflect the overall escalation of the town budget which to varying degrees affected all spending areas in the years following Millstone's entry onto the tax rolls.

There is additional evidence that much of the spending difference between Waterford and East Lyme is attributable to the different types of police force they had established, in both instances well before Millstone construction began. East Lyme had opted for a largely part-time force led by a resident state trooper. As of 1978 the East Lyme department had only six full-time officers. Waterford on the other hand has long maintained a considerably larger full-time force which presently numbers some thirty-six men and women.1/

Conversations with Waterford's Police Chief bolster the impression that most of the post 1968 increase in department spending reflects the town's growing tax wealth rather than additional demands placed on the police force by the construction or presence of the Millstone plant. Few work force related impacts were noted either in the form of traffic congestion vehicular accidents and violations or bar disturbances. Plant guards, in fact, deputized as town constables controlled traffic at the major intersection leading to the plant and commuting workers reportedly spent relatively little time in local bars.2/

An equally low drain on police services was seen to have resulted from the Millstone

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1/ Interview with Waterford Police Chief James Perkins, May 23, 1979.

2/ Id.

plant's presence and operation. The utility maintains its own armed security force trained in part by Waterford's own police training officer (off duty). Guards are employed by a private security firm under contract to the utility and as special state police officers these guards have full arrest powers although in practice they have held violators for arrest by Waterford officers. The town does not routinely patrol plant premises.3/

Few problems with anti-nuclear demonstrations or labor disputes had been encountered with only three or four demonstrations held since Unit One came on line in late 1970. These had reportedly been small, peaceful and orderly with good cooperation evident between demonstration organizers, the police force and plant security officials. Special crowd control training of Waterford police personnel had not been found necessary.4/

No impact on day to day police responsibilities in neighboring communities was noted by those interviewed although both East Lyme and New London officials indicated that they had experienced localized short term traffic problems during peak construction shift changes.5/ In New London these had been handled with manpower already in place while East Lyme's difficulties were solved by scheduling openings of a bottle neck draw bridge to avoid heavy commuter hours.6/

3/Id.

4/Id.

5/Supra; Seebeck, Beetham
Interview with New London Police Chief, Samuel Fandell, June 5, 1979.

6/Supra; Seebeck, Fandell.

Civil Preparedness and Emergency Services: While the presence of the Millstone facility has had few discernable impacts on day to day police or fire department operations within the study area, it has been a major catalyst in the development of a sophisticated municipal disaster recovery program involving not only police and fire departments in Waterford, East Lyme and New London, but other municipal departments as well. Known as the Tri-Town Emergency Plan this program details specific municipal response stategies for a wide variety of major accidents and natural calamities including a nuclear accident at the Millstone Plant. While interviewed officials stressed the multiple focus of the Plan, all agreed that it would never have been developed had it not been for the impetus of the Millstone Plant's presence.

Beyond this defacto catalytic role, the utility was an active and according to local officials cooperative participant in the evolution of the Tri-Town Plan over a three year period. In fact, the utility paid for the actual drafting of the plan by a team of technical writers working closely with town representatives.[1/]

Development of the Plan, day to day monitoring of potential emergency areas (including Millstone operations) and periodic drills were not seen to have had major fiscal or manpower impacts on the communities involved. Much of the manpower committed to Plan development was apparently volunteer while additional time was absorbed into the routine paid responsibilities of town employees and is consequently difficult to isolate.[2/] Day to day monitoring of potential problem areas appears to have imposed more burdens on the utility than on participating towns. Plant officials are required to provide Waterford officials immediate notice in the form of "incident reports" of even the most minor accidents or injuries at the plant.[3/] Routine municipal responsibilities include monitoring these reports and maintaining a duty roster of on-call officials to direct emergency response. Drills, a major one was held in 1978, have also been conducted at relatively limited cost to participating towns because as noted by several of those interviewed personnel already on duty were utilized.[4/]

The theme of the plant as catalyst in the area of civil preparedness carries over into the purchase of emergency equipment and the training of emergency personnel by area municipalities. Both East Lyme and Waterford have expanded their emergency alarm and communications system and all three Tri-Town participants have expanded training programs especially in the area of radiation accidents since the Plan was completed.[5/] Again, however, these purchases and training programs were perceived to have been a largely costless gain due to the availability of various state and federal subsidies.

1/ Supra, Peabody.

2/ Id.

3/ Supra, Perkins.

4/ Supra, Fandell, Maher, Perkins.

5/ Supra, Maher, Seebeck, Peabody.

Whether actual implementation of the Tri-Town Plan in a real emergency would be as financially painless to participating communities as its development has been remains to be seen. Costs would be largely dependent on the numbers of off duty personnel called in and overtime hours put in and apparently would be borne by the town since the Plan contains no accident liability provisions.

More than the cost of implementing the Plan, local officials fear interference by state and federal agencies during a real emergency. They clearly feel better prepared to handle an emergency among themselves without outside intervention. Interestingly enough, a great deal more importance is attached to maintaining a good working relationship and open lines of communication with plant personnel than with state and federal civil preparedness agencies.[6/] Local officials have a decidedly jaundiced opinion as to the competence of these agencies to provide assistance and they attach great importance to the municipality's assumption of primary responsibility to protect itself rather than depending on other levels of government to do so.

It has not proved possible to undertake a budget analysis of municipal civil preparedness spending since most expenditures in this area are absorbed into police and fire department budgets and cannot be isolated. Uniformly, however, where it has proved possible to identify such expenditures they have been extremely low, considerably less than one percent of total non-educational spending.

6/ Supra, Peabody.

Public Works and Roads: Public Works expenditures include spending by and for the town Public Works or Highway Department, its garages and equipment, highway construction and maintenance, snow removal, sidewalks, street lighting, refuse collection and landfill operation. Spending in both East Lyme and Waterford has been extremely erratic particularly in relation to total non-educational spending.

Public Works Expenditures:

Percent of Total Noneducational Spending

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Waterford (%)	32.4	22.0	26.3	15.4	16.3	26.3	23.0	18.8	20.1	19.9	18.9*	23.5	16.8
East Lyme (%)	31.4	26.7	31.5	18.9	21.2	25.6	25.4	24.6	18.9	18.5	19.3	21.2	21.8*

*ten month budget

Year to year fluctuations in both communities appear to be caused by major equipment purchases and road construction projects incorporated at irregular intervals into town budgets.

Constant dollar* expenditures while also erratic reveal a general pattern of increased Waterford spending after 1970, up from per capita spending in the teens and low twenties to levels closer to $30 per person.

Public Works Expenditures:

Dollars Spent

Waterford

	1965	1966	1967	1968	1969	1970	1971
Current $	248,291	235,707	363,187	268,123	303,024	711,348	606,679
Current $ per capita	15.23	14.29	21.75	15.91	17.77	41.29	35.27
Constant 1965 $ per capita	15.23	14.01	20.71	14.60	15.59	34.12	27.77

(cont'd)

*Corrected for inflation to 1965 values.

	1972	1973	1974	1975*	1976	1977
Current $	587,558	695,240	725,994	614,221	1,130,265	993,237
Current $ per capita	33.77	39.28	40.33	33.75	61.76	53.69
Constant 1965 $ per capita	25.58	28.88	27.07	20.21	34.70	28.71

*ten month budget

East Lyme

	1965	1966	1967	1968	1969	1970	1971
Current $	226,002	195,680	259,846	236,713	281,710	398,778	398,948
Current $ per capita	24.84	20.60	25.98	22.54	25.73	34.98	34.10
Constant 1965 $ per capita	24.84	20.20	24.74	20.68	22.57	28.91	26.85

	1972	1973	1974	1975	1976	1977*
Current $	487,724	358,108	437,263	513,947	591,049	535,437
Current $ per capita	40.62	29.11	34.43	39.84	45.12	39.96
Constant 1965 $ per capita	30.77	21.40	23.11	28.86	25.35	21.37

*ten month budget

As in the General Government sector Waterford per capita spending has clearly increased relative to East Lyme although more suddenly and at a later date (1970 versus 1965). It also appears to have stabilized between 1970 and 1975 at per capita levels only marginally higher than East Lyme's; in two instances actually somewhat lower.

Some of the post 1970 Waterford increase also visible in East Lyme per capita spending is attributable to new state environmental and sanitary requirements affecting municipal landfill operations and costs.[1/] Much, however, appears to be related to the conversion of an old factory building into a Public Works complex, the

1/ Interview with Michael Garvie and Eward Stewart, Director and Assistant Director respectively of Waterford Department of Public Works; May 24, 1979.

acquisition of considerable new equipment, expansion of the payroll and systematic upgrading of town roads.[2]

We were unable to uncover evidence that any of these were related to Millstone impacts on town roads, traffic levels or landfills. Traffic congestion even during peak construction had reportedly created few problems and then only for brief periods in a few areas of town during afternoon commuting hours.[3] Only one-quarter mile section of town road had required widening and straightening to allow for safe use by construction vehicles while several others were closed to thru truck traffic in response to resident complaints. The town landfill was seen to have actually benefited from plant construction with the donation of free covering fill by the plant contractor. Construction wastes were either disposed of on-site or trucked at contractor expense to out-of-town locations. No atomic wastes were disposed of at town facilities. The sole impact was a weekly collection of office refuse.[4]

Given the absence of plant related demands on Public Works Department responsibilities it appears that the availability of increased tax revenues in the years following Millstone's entry onto the tax rolls is the principal cause of increased spending in this area. Department officials refer with considerable pride to their large fleet of new vehicles as "second to none" and readily acknowledge that plant taxes have allowed them to go first class in everything they've bought since 1968.[5] They further point out that the ready availability of town funds for needed highway improvements has put them in an advantageous position to obtain federal matching monies. This in turn has allowed them to undertake a systematic and complete road rebuilding and upgrading program in conjunction with the installation of sewer mains rather than the patching and resurfacing that is the normal practice.[6]

The Town of East Lyme was the only community in the study area which indicated any impacts on its Public Works system attributable to the Millstone plant or its construction. A major north-south highway connector was upgraded with state and federal funds to facilitate evacuation in case of a nuclear emergency according to the town's First Selectman.[7]

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[2] Id.

[3] Interview with James Perkins, Waterford Chief of Police; May 22, 1979.

[4] Supra; Garvie and Stewart.

[5] Id.

[6] Id.

[7] Supra; Seebeck.

Water and Sewers: The Town of Waterford began construction of a water distribution system in 1968 and as of today this system is substantially complete at a cost of some eight million dollars.[1] Planning studies towards construction of a forty million dollar sewer system were also begun in 1968 and actual construction begun in 1976. In both instances the City of New London has been involved in and consequently impacted by events in Waterford.

The coincidence of dates raises numerous questions as to the Millstone plant's part in the introduction of town water and sewers to Waterford. It could, in fact, lead one quite easily to attribute construction of these systems to Millstone's needs or at least to the availability of Millstone taxes beginning in 1968. Unfortunately the situation does not appear to have been that clear cut. We found substantial agreement that the primary impetus behind construction of a water system was an extended drought during the mid 1960's which had caused numerous well failures[2] while development of a sewer system had been necessitated by the town's typically poor drainage characteristics and consequent septic system problems.[3] Nevertheless, the first water main constructed serviced the Millstone Point area and the power plant was one of the new system's first customers and it remains its largest, consuming some 200,000 gallons of town water per day. While, then, a strong case exists that the plant's needs were not the direct impetus for introducing town water to Waterford, there is substantial circumstantial evidence that these needs were at the very least a power ful catalyst behind this move.

Plant taxes also happen to have had a catalytic impact on the extention of water and sewer systems throughout the town. While some 60-70% of the costs of the water system and a considerable portion of sewer costs were supported by assessments made against homeowners served on the basis of road frontage and lot size,[4] the remainder was raised by town appropriations and bond issues, both facilitated by the plant's large and growing tax payments. Direct water and sewer appropriations have been irregular as the following table demonstrates and bonded debt data does not identify water system bonds specifically so it is difficult to document any correlation between plant taxes and water system expansion.

WATERFORD SEWERS AND TAXES:
DIRECT APPROPRIATIONS

	1965	1966	1967	1968	1969	1970	1971	1972
Current $	55,066	283,729	567	255,041	158,387	750	750	3,799

	1973	1974	1975*	1976	1977
Current $	8,288	27,854	15,539	25,271	105,845

*Ten month budget

1/ Supra; Garvie and Stewart.

2/ Interview with Andrew Sims, Director of Public Works; Gordon Beckwith, City Engineer, City of New London. June 5, 1979.

3/ Supra; Garvie and Stewart.

4/ Id.

However, the impact of Millstone's growing tax payments on sewer system development clearly reveals itself in sewer bond data since bonded debt limits are keyed to total tax collections; 3.75 times collections for the previous year in the case of sewer bonds. Thus we see a doubling of sewer debt limitation between 1970 and 1977 in response to increases in tax collections and an almost twelve fold increase in actual borrowing.

BONDED DEBT FOR SEWERS, TOWN OF WATERFORD
(Millions of Dollars)

	1970	1971	1972	1973	1974	1975	1976	1977
Debt limit	15.551	18.220	21.167	24.524	25.890	15.564	30.545	38.559
Debt	0.588	0.723	0.675	0.625	0.575	11.832	11.714	6.898

The City of New London has been directly affected by water and sewer developments in Waterford because it owns the water being distributed on the one hand and the sewage treatment plant on the other. It entered into the first arrangement willingly, the second only under court order.

According to New London officials[5] the water arrangement had initially been advantageous to the city, expanding its rate base and thereby allowing it to keep rates down. However, as the Waterford system continued to expand increased demand reduced surplus capacity to dangerous levels which will soon require New London to develop new sources at considerable expense.

The sewer connection was never seen as advantageous by New London officials,[6] but regionalization of sewers and treatment facilities with Waterford and East Lyme was forced by court order under suit by the State's Department of Environmental Protection. The net result of this arrangement as seen from New London's perspective is to require it to build a new and larger treatment plant when it would otherwise not have to.

Beyond these direct fiscal impacts New London officials see a more insidious threat as Waterford water and sewer systems and Millstone related tax advantages combine to create a more attractive Waterford business climate, siphoning activity away from New London.[7]

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[5] Supra; Sims and Beckwith.

[6] Supra; Sims and Beckwith.

[7] Id.

Public Health and Social Services: Both as a portion of their total non-educational expenditures and in terms of dollars actually committed the town of East Lyme and Waterford spend relatively little on public health and social services.

Health and Social Services:

Percent of Toal Noneducational Spending

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Waterford (%)	4.3	3.6	3.5	2.7	2.7	1.9	2.4	1.8	1.6	2.1	2.8*	2.5	1.8
East Lyme (%)	2.1	2.8	3.0	2.1	2.4	2.3	2.3	2.3	3.1	3.2	3.6	3.4	2.9*

*ten month budget

Health and Social Services:

Dollars Spent

Waterford

	1965	1966	1967	1968	1969	1970	1971
Current $	33,153	38,716	47,652	47,603	49,417	52,672	62,876
Current $ per capita	2.03	2.35	2.85	2.83	2.90	3.06	3.66
Constant 1965 $ per capita	2.03	2.30	2.71	2.60	2.54	2.53	2.88

	1972	1973	1974	1975*	1976	1977
Current $	56,708	55,225	75,459	90,112	120,573	107,976
Current $ per capita	3.26	3.12	4.19	4.95	6.59	5.84
Constant 1965 $ per capita	2.47	2.29	2.81	2.96	3.70	3.12

*ten month budget

East Lyme

	1965	1966	1967	1968	1969	1970	1971
Current $	15,023	20,585	24,544	26,807	32,040	36,273	35,975
Current $ per capita	1.65	2.17	2.45	2.55	2.93	3.18	3.07
Constant 1965 $ per capita	1.65	2.13	2.33	2.34	2.57	2.63	2.42

	1972	1973	1974	1975	1976	1977*
Current $	46,167	57,810	74,428	96,167	95,882	70,245
Current $ per capita	3.85	4.70	5.86	7.45	7.32	5.24
Constant 1965 $ per capita	2.92	3.46	3.93	4.46	4.11	2.80

*ten month budget

This reflects itself in the limited range of services provided; principally public health nursing care and financial assistance to low income families and individuals. Neither community provides low income or elderly housing or welfare programs beyond financial support.

While per capita constant dollar health and welfare expenditures have doubled in Waterford since 1965, the proportion of total non-educational spending devoted to this area has actually declined by over half. East Lyme during the same period nearly tripled its per capita expenditures (constant 1965 dollars) and increased the proportion of total spending devoted to health and welfare by slightly over one percentage point. It has also outspent Waterford on a per capita basis since 1969 (with the exception of 1970).

No evidence of any direct links between the Millstone plant's presence or construction and patterns of municipal health and welfare spending in Waterford or East Lyme was uncovered. However, there is evidence that the plant's impacts on Waterford's tax rolls has indirectly affected health and welfare spending not only in Waterford and East Lyme, but to some extent in New London as well.

Increased per capita spending in East Lyme relative to Waterford, for instance, is consistent with the frequently expressed opinion[1/] that inflated Waterford real estate costs associated with the town's advantageous tax situation have contributed to low income group and young adult displacement to surrounding communities

1/ See pp. - for a more detailed discussion.

including East Lyme. Low Waterford spending levels relative to East Lyme are also consistent with allegations that Waterford's tax wealth has allowed it to avoid participation in all but mandatory public welfare and low income housing programs; permitting it in effect to maintain its racial and economic homogeneity at the expense of its neighbors, particularly New London.[2] While Waterford's reluctance to participate in expensive public welfare and housing programs is not unique and is purported to be shared to varying degrees by its suburban neighbors,[3] its easy access to tax monies has apparently made it significantly easier for Waterford to indulge its preferances than it has been for either East Lyme or Montville.

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[2] Supra; Erickson, Driscoll, Beetham
New London Director of Social Services, Norman Albright. June 5, 1979.

[3] Supra; Erickson, Driscoll.

Hospitals and Mental Health Services: Hospital and mental health services for the study area are concentrated in the City of New London and are provided by a variety of private agencies with little municipal involvement. Uniformly, interviewed hospital and mental health officials saw no direct Millstone related impacts on their facilities or responsibilities either during plant construction or since generating operations began in 1970.[1] Specifically, no effects on patient load, staffing or equipment requirements were identified.

However, Millstone operations along with the concentration of other nuclear materials handling facilities in the area figured in the establishment of a radiation treatment and isolation unit in New London's Lawrence and Memorial Hospital. In fact the plant's operator, Northeast Utilities, is one of three companies (others are the United Nuclear Corporation in Montville and the Electric Boat Division of General Dynamics Corporation in Groton) who funded the equipping of the unit at $12,000.[2] Special training of hospital staff members to handle radiation contaminated injuries was undertaken at hospital expense by Oak Ridge National Laboratories.[3] The radiation unit has been used twice since its creation to treat injuries in which radiation contamination was involved, one caused by an accident at the Millstone plant.[4] The plant, however, maintains its own medical and decontamination facilities and minor injuries and radiation contamination are usually handled there.[5]

No evidence that Millstone's presence had affected the mental health of the general population within the study area either in the form of increased incidence of stress, family problems or divorce was uncovered. Interviewed officials rather saw the presence of the submarine base in Groton with its large transient military population as a significantly more immediate problem.[6] No incidents were reported in which working at the Millstone plant was cited as the reason for seeking mental or emotional health services.[7]

1/ Mr. Arvid Anderson, Director of Public Relations & Development, Lawrence & Memorial Hospital, New London; June 5, 1979. Mr. James Olsen, Administrator of Outpatient Psychiatric Services, Lawrence & Memorial Hospital; June 5, 1979.

2/ Supra; Anderson.

3/ Id.

4/ Id.

5/ Id.

6/ Supra; n. 1. Olsen.

7/ Id.

Recreation: Recreation is another service area where most of the post 1968 increase in Waterford spending appears to be linked to across the board budget increases affecting all municipal agencies. Again, little gain on other budget areas which would indicate an increased commitment to recreation is visible in the overall 1% increase in the percentage of total non-educational spending devoted to recreation between 1965 and 1977.

RECREATION:
% OF TOTAL NON-EDUCATIONAL SPENDING

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Waterford %	3.4	3.3	3.2	2.8	3.1	3.5	3.1	3.8	3.2	4.0
East Lyme %	2.8	3.6	3.9	3.2	3.8	4.0	3.9	3.3	4.3	3.9

	1975*	1976	1977
Waterford %	3.8	4.7	4.3
East Lyme %	4.4	6.1	5.2

*Ten month budget

Recreation also appears to be a service area in which spending patterns in both Waterford and East Lyme reflect long standing priorities which predate Millstone's construction and its entry onto Waterford's tax rolls. It will be seen that East Lyme on a per capita basis consistently spends more on recreation than Waterford (less on only four occasions, one a ten month budget year). Spending levels in Waterford, however, have increased considerably over the study period particularly since 1970, the first year that percapita Waterford expenditures exceeded East Lyme's.

RECREATION DOLLARS SPENT

WATERFORD

	1965	1966	1967	1968	1969	1970	1971	1972
Current $	26,016	35,016	44,789	48,609	57,569	94,638	87,158	118,758
Current $ Per Capita	1.60	2.12	2.68	2.88	3.38	5.49	4.83	6.83
Constant 1965 $ Per Capita	1.60	2.08	2.55	2.64	2.96	4.53	3.80	5.17

	1973	1974	1975*	1976	1977
Current $	111,417	144,808	123,615	224,739	252,414
Current $ Per Capita	6.29	8.04	6.79	12.28	13.64
Constant 1965 $ Per Capita	4.63	5.40	4.07	6.90	7.29

EAST LYME

	1965	1966	1967	1968	1969	1970	1971	1972
Current $	20,515	26,486	32,422	39,504	50,983	61,903	61,233	65,895
Current $ Per Capita	2.25	2.79	3.24	3.76	4.66	5.43	5.23	5.49
Constant 1965 $ Per Capita	2.25	2.74	3.09	3.45	4.09	4.49	4.12	4.16

	1973	1974	1975	1976	1977*
Current $	81,633	91,665	117,043	170,326	127,591
Current $ Per Capita	6.64	7.22	9.07	13.00	9.52
Constant 1965 $ Per Capita	4.88	4.85	5.43	7.30	5.09

*Ten month budget

Budgetary evidence that such spending increases are more due to the availability of additional tax revenue than to plant related demands was supported by conversation with Waterford's Director of Recreation.[1] He noted the only direct plant demand as being the use of town ball fields by utility softball teams in league play. However, he also noted that the utility has leased for one dollar per year land at the Millstone site on which the town has built five baseball fields and one football field.

Beyond the overall improvement in the quality and extent of recreational services and facilities, however, the presence of the Millstone plant on the town's tax rolls has had other and more subtle impacts on recreational services. Two of these, the apparent attraction of an older more affluent recreational population and the displacement of young adults have already been discussed. The town's expanded revenue base has also removed many of the spending restraints which previously had kept recreational expenditures down as an expendable or luxury budget item.[2] Perhaps most significantly it has allowed the town to expand recreational opportunities without seeking state and federal assistance, thereby avoiding general public access requirements attached to such assistance.[3] Waterford's beaches and parks are very emphatically her own and the town has studiously avoided participation in outside programs which might compromise that status.

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[1] Interview with Waterford Director of Recreation Donald Busbee; May 24, 1979.

[2] Id.

[3] Id.

No impacts on recreational services in neighboring communities were cited by those questioned on the subject.[4/]

[4/] Supra; Seebeck, Beethem.
Herbert Moran, Director of Recreation, City of New London; June 5, 1979.

Schools: In hard dollars Waterford's school system has benefited significantly less from Millstone tax revenues than other municipal service areas. In a trend that begins well before plant taxes began to flow in 1968 school spending has declined steadily as a percentage of total spending, down some 20 percent between 1965 and 1977. In the same period shcools in East Lyme actually gained slightly on other service areas.

Education:

Percent of Total Spending

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
aterford (%)	73.8	67.4	64.2	61.1	62.1	56.5	60.0	59.0	58.4	59.2	65.2*	56.9	53.9
East Lyme (%)	62.2	66.8	64.1	58.9	61.3	61.5	64.4	61.8	64.4	61.3	61.6	62.6	66.6*

*ten month budget

However, Waterford schools have by no means been ignored in the distribution of increased tax revenues since 1968. Thus, while Waterford educational spending per student has consistently trailed East Lyme levels, it has gained considerably since Millstone came on the tax rolls. Spending at less than a third of East Lyme levels 1965-1967, Waterford had in fact cut the gap in half by 1976 (1977 wasn't a full budget year for East Lyme).

Educational Spending Per Student:

Waterford and East Lyme

(Dollars)

	1965	1966	1967	1968	1969	1970	1971
Waterford	267.47	288.74	326.64	393.45	430.84	536.66	625.14
East Lyme	911.42	829.23	910.80	971.98	987.90	1,085.28	1,197.78

	1972	1973	1974	1975	1976	1977
Waterford	713.46	768.86	843.33	980.25*	1,105.42	1,212.71
East Lyme	1,293.52	1,387.69	1,484.16	1,539.41	1,716.90	1,878.48*

*ten month budget

Increases relative to East Lyme are also evident in total educational spending data which show Waterford spending at slightly more than half East Lyme levels in 1965 up more than two-thirds of those levels in 1976.

Total Educational Spending:

Waterford and East Lyme

(Dollars)

	Waterford	East Lyme
1965	$1,184,336	$2,157,329
1966	1,283,723	2,202,627
1967	1,475,777	2,471,008
1968	1,789,791	2,743,888
1969	2,101,823	3,039,780
1970	2,484,734	3,510,893
1971	2,843,122	3,962,246
1972	3,206,981	4,485,940
1973	3,422,973	4,861,075
1974	3,734,266	5,285,080
1975	4,269,003*	5,740,449
1976	4,658,230	6,335,362
1977	4,890,865	6,899,639*

*ten month budget

We emphasize these relative increases so strongly because they show more so than spending levels alone new money coming into the Waterford school budget since much of the increase otherwise visible in both East Lyme and Waterford spending is attributable to factors unrelated to tax base. These include inflation (a 1965 dollar was only worth fifty-three cents by 1977), rising teacher pay scales, and the costs of new state mandated programs especially in the area of special education.

The Millstone plant also seems to have had a limited impact on Waterford enrollment levels. There is certainly little evidence of a construction worker influx into the community since enrollment levels actually begin to drop off

between 1969 and 1970, about when one would expect the work force on Unit I to have peaked.

Total School Enrollment:

Waterford and East Lyme

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Waterford	4428	4446	4518	4549	4662	4630	4548	4495	4452	4428	4355	4214	4033
East Lyme	2367	2534	2713	2823	3077	3235	3308	3468	3503	3561	3729	3690	3673

Much of this declining enrollment doubtless reflects demographic trends affecting the Southeastern Connecticut region as a whole. In light of East Lyme's increasing enrollment over the same period, however, there is at least some reason to suspect that we are seeing spinoff consequences of the Millstone plant's impacts on Waterford land values. It will be remembered that several of those interviewed noted that Millstone taxes had contributed to inflated real estate prices in Waterford and that these in turn had resulted in displacement of young adults and families particularly in the prime child bearing age groups. Such displacement could reflect itself in enrollment patterns such as were evolving in Waterford and East Lyme through the mid-1970's and would be further consistent with a rising median age within Waterford's population that the town's Assistant Superintendent of Schools cited as a factor in enrollment declines.[1/]

1/ Interview with Mr. Clarence Coogan, Jr., Assistant Superintendent of Schools, Town of Waterford, May 24, 1979.

Bonded Indebtedness: Both Waterford and East Lyme have consistently demonstrated traditional Yankee thrift and prudence in their borrowing policies. It is clear in the extent to which they press legal debt limitations and in the speed with which they retire debt obligations that the prospect of paying interest is not a pleasant one for either community. However, it is equally clear that Waterford's tax wealth relative to its neighbor has allowed it to indulge its frugal inclinations both more readily and effectively.

BONDED INDEBTEDNESS: WATERFORD
(Millions of Dollars)

	General Purpose		Schools		Sewers		Urban Renewal	
	Limit	Debt	Limit	Debt	Limit	Debt	Limit	Debt
1965	4.544	3.857						
1966	4.885	3.765						
1967	5.194	3.227						
1968	5.566	3.750						
1969	8.576	3.768						
1970	9.331	0.588	18.661	3.413	15.551	0.588	13.477	0.588
1971	10.932	0.723	21.846	3.247	18.220	0.723	15.791	0.723
1972	12.700	0.675	25.400	2.937	21.167	0.675	18.344	0.675
1973	14.714	0.625	29.428	2.322	24.524	0.625	21.254	0.625
1974	15.534	0.575	31.068	1.950	25.890	0.575	22.438	0.575
*1975	9.339	0.525	18.677	1.155	15.564	11.832	13.489	--
1976	18.327	0.475	36.655	0.935	30.545	11.714	26.473	--
1977	23.135	0.425	46.270	0.715	38.559	6.898	33.417	--

*Ten month budget

BONDED INDEBTEDNESS: EAST LYME

	General Purpose		Schools		Sewers		Urban Renewal	
	Limit	Debt	Limit	Debt	Limit	Debt	Limit	Debt
1965	2.544	1.771						
1966	2.870	1.629						
**1967	3.195	4.487						
**1968	3.653	4.058						
1969	5.503	3.629						
1970	6.472	0.500	12.945	4.345	10.787	0.500	9.349	0.500
1971	7.265	0.700	14.529	5.568	12.108	0.700	10.493	0.700
1972	8.991	0.670	17.982	4.909	14.985	0.670	12.987	0.670
1973	8.728	1.000	17.456	4.730	14.549	1.000	12.607	1.000
1974	9.478	0.885	18.957	3.995	15.797	0.885	13.691	0.885
1975	10.590	0.770	21.179	3.260	17.649	0.770	15.296	0.770
1976	12.350	0.655	24.700	3.980	20.584	---	17.839	---
*1977	6.662	0.700	13.324	2.810	11.103	0.200	9.623	---

**Indebtedness in excess of limit

*Ten month budget

As comparison of the above data will reveal, Waterford has consistently been able to retire its debt obligations more quickly than East Lyme. The sole exception is in the area of sewer bonding where as previously indicated Waterford has recently entered into a major sewer program.

The speed with which debts have been retired probably reflects two factors, both related to the town's expanding Millstone tax base. The first of these is quite simply that Waterford has apparently been able to commit a greater percentage of annual spending to debt retirement in the years since Millstone entered the tax rolls.

RETIREMENT OF DEBT AS A % OF
TOTAL NON-EDUCATIONAL SPENDING:
WATERFORD

1965	-	8.1%	1972	-	41.6%
1966	-	5.6%	1973	-	35.2%
1967	-	32.4%	1974	-	32.8%
1968	-	26.6%	1975	-	29.7%
1969	-	34.1%	1976	-	24%
1970	-	26.1%	1977	-	25.6%
1971	-	29.9%			

The second is that the expanded municipal tax base has allowed for greater flexibility in the manner in which major one time expenditures and purchases are paid for. Many of these are incorporated as line items into the annual budget accounting for the irregular year to year fluctuations which have already been noted in public works and sewer and water spending. As a consequence the town has recently not had to resort to bonding except in the case of truly major expenditures such as have been associated with sewer system construction, a fact which is readily apparent in rapidly declining indebtedness.

While Waterford's expanding tax base has also had the effect of increasing its borrowing power since debt ceilings are keyed to tax collections, there is little evidence that the town has chosen to capitalize on its higher credit line, apparently preferring to pay as it goes as much as possible. As the following table shows, borrowing as a percentage of debt ceilings has consequently declined considerably since plant taxes first began to flow in 1968.

TOWN OF WATERFORD:
TOTAL BONDED DEBT AS % OF DEBT CEILING

	Maximum Debt Ceiling	Total Bonded Debt	Debt % of Ceiling
1965	$ 4,543,979	$ 3,857,000	84.9%
1966	$ 4,885,043	$ 3,756,000	76.9%
1967	$ 5,194,491	$ 3,227,000	62.1%
1968	$ 5,565,699	$ 3,750,464	67.4%
1969	$ 8,576,030	$ 3,768,464	43.9%
1970	$28,964,404	$ 5,177,000	17.9%
1971	$33,911,297	$ 5,416,095	16%
1972	$39,222,526	$ 4,962,095	12.7%
1973	$45,583,230	$ 4,197,349	9.2%
1974	$48,051,955	$ 3,675,000	7.6%
1975	$28,939,778	$13,511,603	46.7%
1976	$56,704,921	$13,123,890	23.1%
1977	$71,603,196	$ 8,038,278	11.2%

LIST OF INTERVIEWS

Norma Albright	Director, Social Services, New London 6/5/79
Louis Alexander	Director, Family Services Association, New London 6/5/79
Arvid Anderson	Director of Public Relation and Development, Lawrence Memorial Hospital 6/5/79
Joseph Barile	United Brotherhood of Carpenters and Joiners - Local 130 6/5/79
Gordon Beckwith	City Engineer, New London 6/5/79
Howard Beetham	1st Selectman, Montville 6/15/79
Lawrence	1st Selectman, Waterford 5/22/79
Clint Brown	Town Planner, Waterford 5/29/79
Clarence Coogen, Jr.	Assistant Superintendent of Schools 5/22/79
Arthur Davis	Finance Officer, Waterford 5/22/79
Kenneth Dimmock	Tax Assessor, Waterford 6/14/79
C. Francis Driscoll	City Manager, New London 5/18/79, 6/5/79
Robert Erikson	Director, Southeastern Connecticut Regional Planning Agency, 6/14/79
Sanuel Fandel	Chief of Police, New London 6/5/79
Michael Garvey	Director of Public Works, Waterford
Cliff Hill	Public Affairs, Northeast Utilities
Melvin Jetmore	Building Inspector, New London 6/5/79
Thomas Light	International Brotherhood of Electric Workers, Local 90 6/5/79
William Lockwood	Director, New London Chamber of Commerce 6/7/79
Joseph Madeiros	Superintendent of Schools New London 6/5/79
Thomas Maher	Deputy Fire Chief, New London 6/5/79
Herb Moran	Director of Recreation and Parks, New London 6/5/79
James Olsen	Administrator, Outpatient Psychiatric Services, Lawrence Memorial Hospital 6/5/79
Doug Peabody	Fire Marshall, Waterford 5/22/79
James Perkins	Chief of Police, Waterford 5/22/79
George Seebeck	1st Selectman, East Lyme 6/18/79
John Silva	Building and Construction Trades Council, New London 6/5/79

Gerald Silverstien	Realtor, New London
Andrew Sims	Director of Public Works, New London 6/5/79
Edward Stewart	Assistant Director of Public Works, Waterford 5/24/79
Edward York	Building Inspector, Waterford 5/22/79

MUNICIPAL AND REGIONAL SOCIAL, ECONOMIC AND GOVERNMENTAL IMPACTS OF NUCLEAR POWER PLANT SITING AND OPERATION

A CASE STUDY OF THE SEABROOK NUCLEAR STATION IN SEABROOK, NEW HAMPSHIRE

OVERVIEW

In examining and reflecting on the evolving experiences of the Town of Seabrook and neighboring communities during the ongoing construction of the Seabrook nuclear power plant four distinctive themes or patterns emerge as follows:

Not All That Much Has Changed:

A reading of the literature on nuclear power plant siting impacts would lead one to anticipate many and major impacts on the host community and its neighbors. The Town of Seabrook has certainly experienced changes, some subtle, some not, but many impacts that may have been anticipated have not, at least thus far, transpired.

There has been no influx of new residents to speak of so increased demands on public services and schools have been minimal. Housing costs and availability have not suffered. The composition and characteristics of the population has remained relatively stable, white and middle class. Activity in other economic sectors which one would expect to be influenced by plant workers has not blossomed except on the most localized basis. The size of the job force has not increased disproportionately during peak construction nor have the unemployment rolls swelled during plant shut downs and layoffs. The plant simply has not had the major impact for good or ill that we may have been led to believe it should.

Some Impacts Are Surprising, Some Not:

The types of impacts experienced by the Town of Seabrook include both predictable and unanticipated problems. For instance, it is hardly surprising that anti-nuclear demonstrations have been a constant annoyance and drain. However, it is surprising that an even larger body of public concern revolves around drug sales and abuse on and around the plant site. Likewise, public apprenehsion about seemingly unworkable emergency evacuation plans is understandable, while one might not have anticipated that an influx of American Indian steel workers would have generated racial tensions.

Equally unpredictable have been the types of impacts that local residents get most upset about. These have appeared to be those which threaten established life styles and values rather than those which simply generate a demand for higher municipal spending or increased service. In fact, spending in and of itself seems to be a relatively minor concern.

Chance Is A Major Factor:

Accidents of time and nature are at least as important in creating and mitigating impacts as are the efforts of man. In Seabrook an historic water shortage has over the last few years been intensified by drought. This has resulted in a confrontation between the plant as a major water consumer and town officials trying to provide sufficient potable water for domestic consumption. The plant has thus become a major impactor on the town's water system due to factors beyond the control of utility or town officials. On the other hand this same combination of water shortage and drought conditions served to check a developmental surge (predating plant construction) that had overwhelmed loose local land use controls. In this instance factors

beyond local control had a mitigating impact which remains in force.

Town-Utility Relations Aren't So Important Afterall; Or Are They?:

In terms of how they influence the type and magnitude of impacts experienced by the town, the cordiality of town-utility relations seems less important than one might expect. In a purely financial and admittedly short term sense (since the short term is all we have to deal with in Seabrook at this time) the town has benefitted significantly in the form of increased tax revenue from the presence of the plant despite the fact that a substantial reservoir of ill will between utility and local officials persists. It would appear in fact that the utility has suffered considerably more as a result of this bad feeling than any other party.

However, in a subtler sense local distrust of the utility may be very important from the town's perspective since it appears to have opened the eyes of local officials to the possibility that the plant's presence is something less than an unmixed blessing and it may have thereby prepared them to anticipate and plan for its less desirable impacts.

SUMMARY

I. Impacts of the Seabrook Power Station On The People And Economy

Inmigration: Even rough estimates of the number of new area residents drawn by construction job opportunities at the Seabrook nuclear plant are hard to come by. A range of between 30 and 95 construction workers, with families, 90 to 285 individuals probably moved into the five study area communities, but given high local growth rates overall do not appear to have had a significant impact on their new neighbors or communities.

Population: The study area in Rockingham and Strafford Counties was during the 1960's and 70's among the fastest growing in New Hampshire, itself the fastest growing state in the North East. There is no evidence that nuclear plant construction started or even contributed significantly to this growth which had peaked in all study area communities prior to the beginning of construction in 1976.

Land Use Controls: The absence of strong land use controls coupled with ready access to the Boston-Lowell metropolitan areas and New Hampshire's attractive tax situation appears to be principal factors in the study area's growth surge. Particularly rapid growth was experienced during periods in which land use controls were weak or absent; prior to 1968 in the Town of Hampton and between 1969 and 1974 in the Town of Seabrook. Seabrook's permissive stance on control is readily apparent in the large proportion of its housing stock which is in apartments and mobile homes. According to the Town's Chairman of Selectmen it is also responsible for the siting of the plant in that community, probably more so than environmental or engineering considerations. There is, however, no evidence that plant construction either directly or through stimulus to inmigration has further taxed local land use controls.

Housing and Land Values: Land values and housing costs in the study area are high because of proximity to the shorefront. They are increasing at a rate roughly comparable to current inflation and do not appear to have been affected appreciably by the plant's presence or the housing demands of its work force. The principal housing impact attributable to plant construction is an offseason (winter) rental of both summer cottages and motel rooms. This has resulted in escalating offseason rental rates and increased conversion of seasonal residences to year round occupancy. Since this housing sector was previously under exploited, however, no displacement of other residents have been experienced.

Population Characteristics: The offseason rental impacts noted above are attributable to a large transient work force composed of typically younger single workers who have not moved into the area on a permanent basis and commute to homes elsewhere on their days off. It appears that this group as distinct from semi-permanent inmigrants and day commuters has generated the greatest impacts on the resident population of the study area.

Many transient workers are racially distinct from other area residents creating some tension. Justifiably or not, they are balmed for increases in public drunkedness and vandalism, petty crime and drug sales and abuse, all

Phenomena of considerable concern to a largely white, middle class and conservative population. By contrast, actual inmigrants either due to their small numbers, family roots, education or income levels appear to have been readily assimilated, so much so that they are nearly impossible to isolate.

Employment and Unemployment: Even with a peak 1978 work force in excess of 2,000 individuals the Seabrook plant constituted a relatively small component of a regional work force of 129,000. During a period of lower than normal unemployment levels by New England standards the influence of plant jobs on regional unemployment rates has been marginal except in the short term. A reaction to plant shut downs and layoffs is apparent. However, recovery has been rapid as layed-off workers are reabsorbed into a healthy economy.

Wages and Income: Construction of the plant appears to have had a marked impact on overall wage levels in the construction trades. Average weekly construction wage levels in Rockingham County (the County in which the plant is located) are some $45.00 higher than the state average and are in fact higher than any other job sector. Since plant workers are paid union scale, wage level impacts are probably attributable to increased union employment opportunities especially in the more highly skilled job types.

Retail Sales: Region wide impacts on retail sales activity and employment levels are not detectable most likely because the construction work force is broadly dispersed over a three state area incorporating portions of nearby Massachusetts and Maine. Increases in activity in the area immediately adjacent to the plant have, however, been experienced especially by businesses such as lunch counters, convenience stores and gas stations catering to transient and commuting workers. Businesses serving the resident population have experienced considerably less of an impact. Short term reversals have been experienced by businesses catering to plant workers during shut downs and layoffs.

Local Purchases of Goods and Services: The Seabrook plant has been a major purchaser of construction materials and services within the State of New Hampshire ($63 million through May 1978) although the amount of purchases which have benefitted the study area directly cannot be determined. Overall, the percentages of materials purchased in-state increased throughout the study period, up to nearly 80% of May of 1978.

Competition for Labor: There is no evidence that the Seabrook plant's labor demands resulted in shortages in other job sectors. In fact during the period of peak plant employment the region was experiencing a net surplus of workers in the construction trades sector.

II. Impacts Of The Seabrook Power Station On Municipal Government And Services

Town-Utility Relations:

Relations between the Town of Seabrook and Public Service Company of New Hampshire are poor and growing worse. The town and utility are in court on both the plant's tax assessment and its consumption of town water. While the town has benefitted substantially in the short term on a purely financial basis, the Chairman of Selectmen predicts that the tax windfall will never be worth the past and future problems associated with the plant's presence.

Town Reveneus: The plant's impact on town revenue sources even as construction lags behind schedule has been enormous. Its magnitude is readily apparent in a nine fold increase in the tax base that occurred between 1973 and 1978 and a five fold increase in overall tax collections between 1970 and 1979. Of this increase, the plant's share of the total tax burden had increased from a mere 1.4% during the first year of construction in 1976 to over 80% only three years later.

The Tax Rate and the Taxpayers: While municipal service expenditures have increased, the taxpayer has been the principal beneficiary of the plant's tax windfall. In the five years preceeding the beginning of construction (1970-1975) the tax rate had increased by some 50% from $31/$1000 assessed value to $43/$1000. In the three years following the beginning of construction by contrast the rate dropped to a 1979 level of $13.70/$1000.

Total Municipal Spending (Other than Schools): Much of the five fold increase in Seabrook spending between 1970 and 1978 appears to be in response to the rapid population growth of the early seventies which as noted previously is not related to the nuclear plant's construction. In fact 60% of this increase took place before construction began. Given the relatively low levels of plant generated immigration since construction began it can be assumed that most of the spending increases since 1976 are in response to overall growth and the availability of increased revenue rather than plant or work force impacts or demands.

While spending has increased substantially in Seabrook since 1970 there is little evidence that the general "character" of town government or level of service has changed significantly. In fact, per capita spending was only beginning to approach that of nearby Hampton by 1978, two years after the plant's tax impact began to be felt.

Educational Spending: Educational spending by the Town of Seabrook has increased less than most other sectors, principally in response to inflationary trends and rising salary scales. Enrollment levels have been declining steadily since well before plant construction began and exhibit no anomolies which would indicate an influx of new residents or plant workers. The apparent reason for this phenomenon is that the majority of new workers drawn to the region by the plant are either day commuters or transients whose families remain behind.

General Administration: Spending to support the administrative machinery of Seabrook town government has increased since plant taxes began to flow in 1976, although significantly less than spending overall (two times as opposed to five). Per capita increases have in fact been marginal and are substantially less than nearby Hampton with its larger government apparatus. Neither the plant nor its work force has apparently stimulated any major changes in the way the Town of Seabrook conducts its business.

Public Safety: Seabrook spending for police protection increased five fold between 1970 and 1978, roughly parallel to overall spending increases although most of the police spending increase (80%) predates the beginning of plant construction and appears to reflect the population surge of the early seventies.

While spending levels are in line with other service sectors, there is strong evidence that local police forces in the Seabrook area have been disproportionately affected by the plant's presence. Four factors in particular seem to be at work. These are increased disturbances and petty crime allegedly

associated with the presence of a large transient work force; drug abuse and sales at and near the plant site; traffic congestion especially during the summer beach season; and anti-nuclear demonstrations. The most expensive of these to manage, the demonstrations, have had a relatively limited financial impact at the local level only because the principal manpower and financial responsibility for crowd control has been assumed by the state.

Fire protection expenditures have followed a pattern similar to police services, although plant demands on town facilities appear more limited since the utility maintains its own fire control apparatus.

Civil preparedness expenditures have remained at token levels throughout the study period despite general skepticism as to the ffectiveness of emergency evacuation plans. Local officials point to the limited road network which services the area's beaches and the summer weekend crowds of 100,000 plus bathers and predict a major catastrophe if speedy evacuation was ever necessary. No spending to address this problem by state or local governments or the utility has been scheduled to the best of our knowledge.

Highways and Public Works: Seabrook spending in this sector has increased less than for most others and much of this increase predates the beginning of plant construction. Much of the demand on local roads has been managed through rerouting traffic flow patterns rather than expanding road systems although the utility constructed a new access road to service the plant site. There is no evidence of increased maintenance spending attributable to construction vehicles or commuters as of 1978.

Waste Collection and Disposal: Seabrook spending in this area has increased at a level almost double spending increases in general, up ten times between 1970 and 1978. However, this appears to be in response to the population growth surge and loose land use controls of the early seventies rather than the presence of the plant since the utility retains its own waste disposal contractor and construction wastes are not channeled through the town's collection or disposal system.

Water and Sewers: Seabrook's water system has been hard pressed by the rampant population growth of the early seventies and the power station's added demands on the system have created substantial problems and expenses. The plant is presently one of the two largest customers in the system and town officials have attempted to curb its consumption to divert more water to domestic consumers. This effort has been blocked by the utility in the courts and litigation continues. Water shortages are projected as long term drought conditions continue.

Seabrook has no sewer system, although a planning study is presently in progress.

Health and Social Services: Seabrook spending for public health and welfare services have grown at a considerably slower pace (up 2.5 times 1970-1978) than spending overall and much of the increase appears before plant construction began in 1976 indicating the impact of rapid population growth in the early seventies. Decreases in welfare payments since 1976 may reflect the plant's impact on local employment opportunities, although this cannot be verified.

Recreation: Recreational spending by the Town of Seabrook has increased at about the same rate as spending overall, but the dollar amount remains small with an actual decline in per capita spending levels since 1976. There is therefore no evidence that the Seabrook work force has imposed additional demands on local recreational facilities and programs or that the availability of plant taxes has encouraged the town to spend more in this area.

SECTION I

THE STUDY AREA IN PROFILE

The Plant:

Begun in July of 1976,[1] The Seabrook plant is sited on the shores of Seabrook Harbor in the coastal town of Seabrook, New Hampshire. Two generating units with a total design capacity of 2.3 million KW were originally slated for completion in December 1982 and 1984 respectively, but completion dates have slipped indefinitely given shutdowns ordered by various regulatory agencies and financial difficulties experienced by the plant's owners. At some 50%, controlling interest in the Seabrook plant is owned by the Public Service Company of New Hampshire with remaining shares owned by a number of New England Utilities including the New England Power Company (10%),[2] the principal sponsor of the Charlestown plant.* The Charlestown and Seabrook plants are of similar capacity and design.

The Towns:

The study area includes the host community of Seabrook and four other communities in the Rockingham-Stafford planning district in Southeastern New Hampshire. These are the towns of Hampton, Exeter and Stratham, all located within a ten-mile radius of Seabrook and the Town of Dover, some 20 miles distant.

Of these five communities, Dover is the most populated (estimated 1977 population of 22,376)[3] and industrialized while Strafford is the least populated (1,417 in 1977)[4] and the most rural. Exeter is the major retail center for the immediate Seabrook area with an estimated 1977 population of 10,429.[5] Seabrook and Hampton are the only coastal communities in the study area and while Hampton is considerably larger with a 1977 population of 9,717[6] as opposed to Seabrook's 5,331[7], both are similar in most other demographic characteristics. Seabrook and Hampton, the two communities chosen for detailed examination, are governed by elected boards of selectmen serving in a part-time capacity. Both support sizeable summer populations drawn by their shorefront location and beaches.

Population Growth:

Over the last two decades Southeastern New Hampshire has grown extremely rapidly, exceeding the state population growth rate by considerable margins throughout the sixties. Since 1970, however, this high growth rate has slackened considerably to levels more typeical of and even less than the state as a whole (See Table 1).

Within the region Seabrook and neighboring Hampton have shown the highest growth rates with both far in excess of state and regional norms. Hampton's

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*Application before the Nuclear Regulatory Commission to build the Charlestown plant was withdrawn by NEPCO in late 1979 upon unsuccessful appeal of a General Services Administration decision excluding siting of the plant at the former Charlestown Naval Auxiliary Air Field.

growth curve appears to have peaked by 1970 with a marked decline in the rate of growth evident after that date. Seabrook's population on the other hand continued to expand rapidly well into the seventies with peaking not apparent until after 1975 (Table 1).

Numerous factors are cited by regional planning officials as contributing to high post 1960 growth rates. The most powerful of these is the coincidental growth of the Boston metropolitan area and the industrialized corridor extending up through Lowell and towards the Nashua, New Hampshire area.[9] With completion of Interstate Route 95 through Southeastern New Hampshire the area became an easy day commute to job centers to the south.

TABLE 1

POPULATION GROWTH PATTERNS:

SOUTHEASTERN NEW HAMPSHIRE[8] (1978)

	Population		Estimated Population		% Change	% Change	% Change
	1960	1970	1975	1977	1960-1970	1970-1975	1975-1977
New Hampshire	606,787	737,578	833,461	877,488	21.6	13.0	5.3
Strafford-Rockingham Region	142,698	182,728	207,281	217,065	27.8	13.4	4.7
Seabrook	2,209	3,053	4,710	5,331	38.2	54.3	13.2
Hampton	5,379	8,011	9,028	9,717	48.9	12.7	7.6
Exeter	7,243	8,892	9,535	10,429	22.8	7.2	9.4
Dover	19,131	20,850	22,183	22,376	9.0	6.4	0.9
Strafford	722	965	1,272	1,417	33.7	31.8	11.4

This coupled with the state's uniquely favorable tax climate drew large numbers of former Massachusetts residents into the region,[10] a phenomenon readily apparent in survey data compiled by the Rockingham-Stafford Census Project on place of previous residence.

TABLE 2

PLACE OF PREVIOUS RESIDENCE[11]

Town	Same Town (%)	Other Town S.E. New Hampshire (%)	Other N.H. County (%)	Other State (%)
Seabrook	19.0	10.2	10.2	49.4
Hampton	22.5	15.1	11.3	42.0
Exeter	19.2	24.2	14.5	32.3
Dover	37.6	19.5	11.2	21.8
Stratham	9.4	34.7	20.2	29.2

NOTE: % are of total surveyed; not total population.

Residential development is also believed to have been stimulated by the large amounts of developable acreage available, the paucity of local development controls and the general attractiveness of the area's seaside location.[12] Absence of effective land use controls coupled with ready access to I-95 is in fact specifically cited as a major factor in Seabrook's growth surge.[13] Evidence that this has indeed been the case is apparent in the decline in local population growth since 1975 which followed the reintroduction of zoning into the community and the imposition of controls on new mobile home siting and major town water system tie-ins.[14]

Racial Characteristics:

The population of the study area is overwhelmingly caucasion with a very small minority element as indicated on Table 3. There is no evidence that the heavy influx of new residents from out of state has altered the preexisting racial composition of the Southeastern New Hampshire population to any appreciable degree.

TABLE 3

1978 POPULATION RACIAL COMPOSITION[15]

Town	Caucasion (%)	Black (%)	Other Minority (%)
Seabrook	99.5	0.2	0.2
Hampton	99.8	0.1	0.1
Exeter	99.2	0.2	0.6
Dover	99.1	0.5	0.4
Stratham	98.4	1.2	0.5

NOTE: % are of total surveyed; not total population.

Age Distribution:

The age distribution and characteristics of the resident population of the five community study area shows no unusual concentrations in any age group or major differences between communities. The median age of this population ranges between 30 and 34 years for four of the five communities examined with more heavily settled Dover having a younger median age in the range of 25-29 years.

TABLE 4

1978 POPULATION AGE CHARACTERISTICS[16]

Town	% children 0-14 yrs.	% student/ young worker 15-24 yrs.	% prime worker 25-44 yrs.	% mature worker 45-64 yrs.	% retired 65 yrs. +	Median age group
Seabrook	19.1	16.4	27.0	24.0	13.5	30 - 34
Hampton	22.0	17.1	26.6	20.3	14.0	30 - 34
Exeter	21.0	15.9	26.0	19.4	17.7	30 - 34
Dover	21.6	21.7	24.3	19.5	12.9	25 - 29
Stratham	23.6	17.8	30.4	19.7	8.5	30 - 34

NOTE: % are total surveyed; not total population.

Family Characteristics:

Rockingham-Strafford Census Project survey data indicate median family sizes (Table 5) within all five study area communities which are so low as to suggest that the survey methodology has introduced significant error, probably by overrepresenting retirees. A similar study of the Waterford, Connecticut area undertaken by the authors suggests that median family sizes in the range of 2.5 to 3.5 individuals would be more likely. Median age of heads of households is also unexpectedly high, probably for similar reasons related to the time of day in which the survey was conducted. The high proportion of husband-wife family units, hwoever, seems well within expectable ranges as does the slight increase in female-headed households including non-related individuals in the urban setting of Dover (Tabel 5).

TABLE 5

FAMILY CHARACTERISTICS (1978)[17]

Town	Median # * Persons per household	Median age head of household (yrs)	% male head of household	% female head of household	% unrelated individuals same household
Seabrook	1.77	45 - 49	79.6	20.4	2.3
Hampton	2.00	45 - 49	79.3	20.7	1.5
Exeter	1.95	50 - 54	76.6	23.4	1.1
Dover	2.11	40 - 44	74.2	25.8	3.3
Stratham	2.75	40 - 44	87.1	12.9	1.3

NOTE: All numbers are of those surveyed.

*See reservations in text above.

Education:

Again, Rockingham-Strafford Census Project data provide the most up-to-date information on educational attainment within the resident population of the study area (Table 6), but survey numbers seem somewhat lower than might be expected probably due to methodological problems. However, they remain useful for comparative purposes indicating similar percentages of high school graduates among those surveyed in the five communities examined. Seabrook and Hampton, however, indicate noticeable variations from the norm in the percentage of college graduates with Seabrook somewhat lower and Hampton higher than their neighbors. This variation also shows up in the relative distribution of job skills within these communities with Hampton showing a considerably higher proportion of individuals in the managerial-professional ranks (see pp. 117).

TABLE 6

EDUCATIONAL LEVELS (1978)[18]

Town	% High School (12 yrs.)	% College (16 yrs.)
Seabrook	37.2	6.9
Hampton	33.7	15.6
Exeter	36.6	10.2
Dover	39.1	10.4
Stratham	36.6	13.2

NOTE: % are of those surveyed; not total population.

Housing:

1978 housing data compiled by the Rockingham-Strafford Census Project paints a predictable picture for four of the five communities studied. (Table 7) This shows up in higher percentages of owner occupied single family residences in the "suburban" towns of Hampton and Exeter and highest percentages in rural Stratham. Dover as an urban area by contrast shows considerably higher percentages of renter occupied and apartment domiciles.

Surprisingly, Seabrook's housing picture looks considerably more like urban Dover's than one might expect given its suburban character. Its rental population apparently constitutes nearly as large a portion of its residents and it has by far the largest percentage of residents living in mobile homes of those communities examined.

TABLE 7

HOUSING CHARACTERISTICS (1978)[19]

	OWNERSHIP		TYPE				"QUALITY"		
Town	% own	% rent	% single family	% apartment	% mobile home	number of rooms (median)	% bath	% kitchen	% running water
Seabrook	67.7	32.3	38.6	26.6	39.9	4	99.5	99.9	99.1
Hampton	75.4	24.6	75.4	19.1	1.7	5	99.9	99.9	99.9
Exeter	77.2	18.4	56.6	16.7	23.0	5	98.9	99.0	99.7
Dover	58.9	36.8	57.5	31.8	2.6	5	99.6	99.7	99.6
Stratham	90.9	9.1	87.1	3.4	6.6	6	99.1	99.1	100

NOTE: % are of those surveyed; not total population.

It appears that the town's permissive land use controls and mobile home policy have been the biggest factor in generating this departure from predictable norms since survey data on the length that residents have lived at their present address is fairly consistent with data from the other four communities examined. This data suggests that movement into or within all the communities in the years since Seabrook plant construction began in 1976 (evident in 2 years or less at address) has been about equally active, although activity in Seabrook had picked up considerably relative to its neighbors in the six months before the survey was conducted in the late summer and fall of 1978.

TABLE 8

YEARS AT PRESENT ADDRESS[20]

Town	% 6 mos.	% 1 yr.	% 2 yrs.	% 3 yrs.	% 4 yrs.	% 5 yrs.	% 6-10 yrs.	% 11-15 yrs.	% 16-20 yrs.
Seabrook	9.4	14.9	11.3	9.6	7.7	5.1	19.2	7.8	5.5
Hampton	6.0	15.0	10.7	7.1	6.7	6.2	22.2	12.6	6.1
Exeter	7.0	15.7	11.4	7.6	6.6	5.9	18.6	10.3	7.0
Dover	8.4	16.1	10.4	6.7	5.0	4.7	15.8	12.7	9.0
Stratham	6.8	19.0	10.7	8.2	3.6	6.8	18.9	12.5	5.5

NOTE: % are of those surveyed; not total population.

Survey data on housing "quality" indicators (Table 7) are largely self explanatory suggesting that a high proportion of the housing stock has basic amenities with no significant anomolies apparent within the five communities examined.

Employment Patterns:

Rockingham-Strafford Census Project data show a diversified employment picture with employment spread over a wide geographic area and a large number of employers (Table 9). Nearby Massachusetts provides a large number of jobs, especially for the Town of Seabrook on the state line and convenient to I-95. With the exception of Seabrook, more residents work in their own community than any other.

TABLE 9

PLACE OF EMPLOYMENT (1978)[21]
Work Force by Town

	% same town	% Mass.	% Portsmouth Navyyard	% Seabrook Power Plant	% Balley Corp.	% Airforce base	% Seabrook Dog Track
Seabrook	16.6	17.0	0.7	0.5	1.4	0.1	1.1
Hampton	13.3	7.2	1.5	0.6	0.1	0.6	0.3
Exeter	18.8	4.6	1.1	0.4	0.3	0.3	0.1
Dover	18.0	0.7	2.9	0.2	0.0	1.5	---
Stratham	9.0	3.4	3.0	0.3	0.2	1.0	0.1

NOTE: % are of those surveyed; not total population.

None of the five communities examined appears to be a "company town" in the sense that any single employer provides a disproportionate number of total available jobs. This certainly appears to be true of Seabrook and its power plant which provided relatively low numbers of jobs for those surveyed relative to other sources (see Table 9 and Table 10).

TABLE 10[22]

EMPLOYMENT LEVELS BY PLACE OF EMPLOYMENT (1978)

Town	Seabrook Plant	Navy Yard	Balley Corp.	Air Base	Seabrook Dog Track
Seabrook	38	48	96	10	77
Hampton	52	143	178	19	143
Exeter	42	136	40	36	11
Dover	54	723	4	380	0
Stratham	6	74	4	23	2

NOTE: Numbers reflect those surveyed divided by sample size as percentage of total population to give estimate of total number employed.

The total size of the work force in the five study area communities as extrapolated from Census Project data is indicated in Table 11.

TABLE 11[23]

SIZE OF LOCAL WORK FORCE (1978)

Town	Full-time workers	Part-time workers
Seabrook	2,752	463
Hampton	3,091	572
Exeter	3,960	796
Dover	8,241	1,494
Stratham	843	126

NOTE: Numbers reflect those surveyed divided by sample size as percentage of total population to give estimate of total number employed.

It should be noted that all the above employment estimates are doubtless low since the time of day during which sampling was conducted (8:00 A.M. - 5:00 P.M.) should have created a bias against households in which more than one adult was a wage earner.

Occupation:

The picture of a diversified work force obtained from Census Project data is verified by data maintained by the New Hampshire Department of Employement Security (Table 12). However, this county-level data reveals a significant difference in the overall composition of the Rockingham and Strafford county work forces with Strafford having a considerably higher proportion of its wage earners employed in the manufacturing sector while Rockingham's largest sector (two-thirds of total employment) is non-manufacturing.

TABLE 12 [24]

AVERAGE EMPLOYMENT BY SECTOR (1978)

Sector	Rockingham	Strafford
Manufacturing	15,459	12,490
Durable Goods	10,019	5,324
Nondurable Goods	5,440	7,166
Non-Manufacturing	33,112	10,869
Construction/mining	4,931	856
Transportation/communications/ Utilities	1,491	524
Trade	15,786	5,723
Finance/insurance/real estate	2,107	898
Services and Other	8,797	2,868
TOTAL	48,751	23,359

As one might expect given its relatively high percentage of college graduates, the Town of Hampton shows the highest percentage of workers in professional or managerial positions with Seabrook more in line with its other neighbors (Table 13). Exeter's status as a regional commercial center clearly shows up in its relatively large sample of clerical/sales and service workers.

The employment impact of Seabrook's "industrial" employers, Bailey Corporation in particular and the Seabrook power plant probably to a lesser extent, shows up in the relatively high percentage of survey respondents who indicated employment in machine trades and bench work, while the power plant's work force doubtless accounts in large measure for the town's relatively larger percentage employment in structural trades.

TABLE 13

OCCUPATION (1978)[25]

Town	% Professional Technical Managerial	% Clerical Retail Sales	% Service	% Farm Fishing Forestry	Industrial % Machine Trades	% Bench Work	Construction % Structural Work
Seabrook	13.2	7.6	6.1	1.5	2.6	6.8	5.4
Hampton	19.4	7.4	4.6	0.4	0.7	1.3	3.1
Exeter	8.7	9.2	8.5	0.6	3.2	2.8	3.0
Dover	13.3	7.1	4.6	0.3	2.0	3.6	3.8
Stratham	11.6	8.3	4.0	0.9	4.3	1.5	3.9

Unemployment Patterns:

Levels of unemployment in New Hampshire as a whole have in recent years been among the lowest in New England. Rockingham County in which the Town of Seabrook is situated has during the period surveyed consistently had among the state's lowest rates, while Strafford County has as consistently exceeded the state average by small amounts (less than one percentage point) (Table 14). These low unemployment levels coupled with the region's high population growth rate gaain gives evidence of a healthy economic climate.

TABLE 14[26]

AVERAGE ANNUAL UMEMPLOYMENT RATES (%)

Area	1974	1975*	1976	1977	1978	1979
All New Hampshire	4.3	7.7	5.0	3.7	3.3	3.1
Rockingham County	3.9	7.2	4.1	3.4	3.4	3.0
Strafford County	4.9	8.4	5.7	4.0	3.3	3.3

*According to New Hampshire officials the jump in unemployment levels during 1975 indicates the effects of the national recession resulting from the Arab oil embargo of 1974. By late 1975 and early 1976 the state had begun to recover.[27]

Wages:

I978 wage statistics compiled by the New Hampshire Department of Employment Security show Rockingham and Strafford County average wage levels in nearly all job sectors trailing state averages by varying amounts (Table 15). A significant exception, however, is constuction and mining in which sector Rockingham County residents earned on an average some 20% more per week than the state-wide norm. It is interesting to note, in fact, that Rockingham County construction and mining wage levels are the highest of any job sector.

TABLE 15[28]

AVERAGE WEEKLY WAGE
BY JOB SECTOR (1978)

Job Sector	All New Hampshire	Rockingham C.	Strafford C.
Overall Average	$195.55	$192.76	$182.50
All Manufacturing	$224.48	$235.88	$205.96
Man.'g Durable Goods	$238.46	$262.41	$233.95
Man.'g Nondurable Goods	$204.22	$187.04	$185.16
All nonmanufacturing	$178.88	$172.63	$155.53
Construction and Mining	$245.55	$290.52	$191.65
Transportation/Communications/ Utilities	$286.61	$245.49	$254.48
Trade	$152.89	$137.74	$137.58
Finance/Insurance/Real Estate	$201.22	$181.47	$189.01
Services and Other	$162.06	$154.71	$152.00

Household Income:

Of the five communities examined, only rural Stratham approaches the national median household income of $18,000 with a median range of between $16,000 and $18,000 (Table 16). Seabrook exhibits the lowest median in the range of $10,500 - $12,000 which places it in the company of Dover and Exeter both slightly higher and all well below levels in Hampton and Stratham. Similar patterns reveal themselves with regard to the proportion of surveyed households in the low income (less than $10,000) and higher income (more than $20,000) categories. In the former instance Seabrook had among the largest sample of low income households and among the lowest of households with incomes in excess of $20,000 (Table 16). By contrast, Hampton and Stratham appeared to be considerably more affluent communities.

TABLE 16

HOUSEHOLD INCOME (1978)[29]

Town	% $10,000 and less	% $10,000 - $20,000	% $20,000 plus	Median Range
Seabrook	38.1	32.9	19.1	$10,500-$12,000
Hampton	27.2	39.4	33.5	$15,000-$17,000
Exeter	36.5	42.4	20.8	$11,000-$13,000
Dover	40.6	42.2	17.1	$11,000-$13,000
Stratham	19.6	45.4	35.0	$16,000-$18,000

NOTE: Percentages and projections are of those sampled; not the entire population

Inflationary Impacts:

As will be surprise to on one, the purchasing power of the dollars earned by residents in the study area and the dollars spent by municipal governments had been eroding constantly over the period studied due to the effects of inflation (Table 16). Between 1970 and 1977, in fact, the purchasing power of these dollars had declined by nearly a third with even higher inflationary trends in the closing years of the decade. The effect of this trend on municipal spending levels as noted in a study of the Millstone nuclear plant prepared by the authors is frequently overlooked and results in a perception that real spending levels have increased considerably more than in fact they have. Much of the increase in municipal spending levels we will see in Hampton and Seabrook will therefore evaporate when declining purchasing power is accounted for (nearly half of 1979 expenditures, for instance).

TABLE 17[30]

INFLATION AND PURCHASING POWER

	Consumer Price Index (January 1, 1970 Base)	Purchasing Power of Dollars in terms of 1970 Value
1970	$1.00	$1.00
1971	$1.05	$ .95
1972	$1.09	$ .92
1973	$1.12	$ .89
1974	$1.23	$ .81
1975	$1.38	$ .72
1976	$1.47	$ .68
1977	$1.55	$ .65

FOOTNOTES

1. Strafford Rockingham Regional Council, The Municipal Impacts of Construction of the Seabrook Nuclear Power Station, p. 5

2. Ibid., p. 6

3. Rockingham Strafford Census Project, Socio-economic Profile, Dover, p. 1

4. Ibid., Socio-economic Profile, Stratham, p. 1

5. Ibid., Population Growth of Selected Communities

6. Ibid.

7. Op. cit.; Strafford Rockingham Regional Council, Appendix 1, p. A-1

9. Op. cit.; Socio-economic Profile, Seabrook, pp. 1-2

10. Ibid.

11. Rockingham Strafford Census Project Household Survey Computer Printouts, Towns of Seabrook, Hampton, Exeter, Dover, Stratham; Variable #43, "Previous Residence"

12. Op. cit.; Strafford Rockingham Regional Council, p. 4

13. Op. cit.; Socio-economic Profile, Seabrook, p. 1

14. Ibid., p. 2

15. Op. cit.; Rockingham Strafford Census Project Computer Print Outs; Variable #39, "Race"

16. Ibid., Variable #33, "Age"

17. Ibid., Variable #29, "Number of Persons Per Household", Variable #29, "Age of Head of Household", Variable #30, "Sex of Head of Household", Variable #32, "Relationship to Head of Household."

18. Ibid., Variable #40, "Years of Education"

19. Ibid., Variable #09, "Own or Rent"; Variable #08, "Housing Type"; Variable #20, "Number of Rooms"; Variables 11-13, "Bath, Kitchen, Running Water

20. Ibid., Variable #42, "Years at Present Address"

21. Ibid., Variable #37, "Place of Employment"

22. Ibid.

23. Ibid., Variable #38, "Hours Worked"

24. Wesley S. Noyes, Jr., New Hampshire Department of Employment Security, Employment and Wages By County, New Hampshire, Year 1978

25. Op. cit.; Rockingham Strafford Census Project Computer Printouts; Variable #36, "Occupation"

26. New Hampshire Department of Employment Security, computer printouts

27. Wesley S. Noyes, Jr., Supervisor Economic Analysis and Reports, New Hampshire Department of Employment Security, letter of March 7, 1980

28. Op. cit.; New Hampshire Department of Employment Security, Employment and Wages By County

29. Op. cit.; Rockingham Strafford Census Project Computer Printouts; Variable #23, "Household Income"; Variable #45, "Household Income"

30. U.S. Department of Labor, Bureau of Labor Statistics

SECTION II

IMPACTS OF THE SEABROOK POWER STATION ON THE PEOPLE AND ECONOMY

Inmigration:

If it is difficult to establish the approximate size of the Seabrook plant construction force at any given point in time given its fluctuating nature and the utility's rather secretive personnel policies, it is nearly impossible to definitely establish the numbers of workers who moved into the study area for the principal purpose of working on the plant (inmigrants). Callaghan and Comerford[1] provide some of the most reliable numbers on plant employment derived from utility sources, but these sources do not differentiate between new and prior New Hampshire residents and their numbers for Maine, Massachusetts and "other" workers probably reflect a high proportion of day and work week commuters who are not "inmigrants" in the full sense of the word (Table 18).

TABLE 18

COMPOSITION OF SEABROOK CONSTRUCTION[2] FORCE BY PLACE OF RESIDENCE

		New Hampshire		Mass. & Maine		Other	
	Avg. Total Employment	Avg. Total Employment	% Total Work Force	Avg. Total Employment	% Total Work Force	Avg. Total Employment	% Total Work Force
Aug.-Dec., 1976	530	383	72%	140	22%	8	1.2%
Aug.-Dec., 1977	1,103	771	71%	317	28%	15	1.4%
Jan.-May, 1978	2,026	1,294	64%	671	33%	61	3%

We are left, therefore, with extrapolations and projections made on the basis of less reliable data sources the most relevant of which is the Rockingham-Strafford Census Project whose various methodological shortcomings have been previously noted. Based on Census Project data and some rather arcane manipulations of unemployment claims statistics, Simpson projects the following breakdown of a known June, 1978 construction force of 1,816 workers:[3]

Seabrook Residents.....100

Rest of Strafford & Rochingham Counties.....780

Rest of New Hampshire.....336

Massachusetts.....391

Maine.....164

Other..... 45

Of the 47% of this work force residing in Strafford and Rockingham counties, Simpson projects on the basis of census projection results that a minimum of 28% of 247 workers with a mean family size of 3.0 (for a total population of 746 individuals) are new residents who came to the area for the specific purpose of working on the plant.[4] Based on these projections, Simpson then goes on to project the following numbers of plant related inmigrants into the five area towns examined in this study:[5]

TABLE 19

CONSTRUCTION FORCE INMIGRATION (1978)

Town	Total Employment at Seabrook Plant	Number of Inmigrants Employed	Total Inmigrants and Families
Seabrook	100	28	85
Hampton	79	28	85
Exeter	57	27	82
Dover	90	10	30
Stratham	9	2	6

A more direct projection method employed by the authors of this report was to simply correct the number of Census Project respondants who indicated that they worked at the Seabrook plant site in 1978 to account for the size of the sample which varied from a high of 54% of all households in Hampton to a low of $45% in Exeter. This results in rather different numbers for total resident employment at the plant:

Seabrook.....38 individuals

Hampton.....52 individuals

Exeter.....42 individuals

Dover.....54 individuals

Stratham..... 6 individuals

Further manipulation of census project data gives some insight into the number of those employed at the plant who are most likely to have moved into the community for that purpose. Here it is possible to identify the percentage of survey respondants who indicated that they had lived at their present address for two years or less which since the survey was conducted in the late summer and fall of 1978 while construction on the plant began in July 1976 would capture probable inmigrants. This number was then further corrected to reflect the percentage of respondants who in each community indicated that their previous place of residence was in a different New Hampshire county or other state, again in an effort to isolate inmigrants. Here again, the resultant projection looks very different from Simpson's and in this case is considerably lower:

TABLE 20

SEABROOK INMIGRANT EMPLOYEES[6]

Town	% Residents two years or less	Previous Residence Other N.H. County	Previous Residence Other State
Seabrook	35.6	1	7
Hampton	31.7	2	7
Exeter	34.2	2	5
Dover	34.9	2	4
Stratham	36.6	1	1

We believe two factors are at work here. First, the inherent procedural bias of the Census Project methodology is reflecting an unreasonably low number of employed individuals of any sort, Seabrook construction workers included. It is certainly difficult to believe that the plant attracted only thirty workers who might reasonably be categorized as inmigrants into the five communitites examined. Second, it appears that Census Project data as one might expect did not "capture" the large commuting work force reflected in Callaghan and Comerford's data as Massachusetts, Maine and "other" residents (Table 18).

At least some of this commuting force appears to have established a more permanent presence in the region surrounding the Seabrook plant, inhabiting local motels and winter beach front rentals on a weekly basis during the off season. Again, the number of commuters who have taken up temporary residence cannot be readily established, although we were told it is "large" by a number of sources.[7] From these same sources, however, it was possible to establish a reasonably clear profile of these "migrants." Most have left their families behind and return home on weekends to visit. Most live with other plant workers, many in shirts to reduce living expenses and accommodate their working schedules. Most are skilled manual laborers, many American Indian steel workers from Maine and elsewhere in northern New England.

Population:

As previously noted (see Table 1, P.113), the study area has been since 1960 among the fastest growing in New Hampshire, itself the fastest growing state in New England. The area's rapid growth curve begins well before construction of the Seabrook plant was even proposed and peaks before construction began, both for reasons unrelated to the plant. This is not to suggest that the Seabrook plant has had no impact on growth, however, although it does suggest that this impact is one of many and by no means either the first or the most important.

While the exact number of area inmigrants attributable to the Seabrook station is open to some debate, that it constitutes a small percentage of total area growth is not. Again, Census Project data for all its short-comings is our primary information source. Projecting on the basis of those respondants who

in 1978 indicated previous residence in another New Hampshire county or state within the proceeding two years, one sees that plant inmigrants constitute considerably less than one percent of total inmigration in any of the five communities examined (Table 21).

TABLE 21

SEABROOK INMIGRANT EMPLOYEES[8] RELATIVE TO TOTAL INMIGRATION (1978)

Town	Residents two years or less	Previous Residence Other N.H. County	Previous Residence Other State	Seabrook Plant Inmigrants as % of Total
Seabrook	2,479	253	1,224	0.3
Hampton	2,983	337	1,253	0.3
Exeter	4,096	594	1,323	0.2
Dover	8,683	1,042	1,893	0.07
Stratham	915	815	553	--

This relatively low level of population impact is consistent with the falling off of overall growth rates evident among the five communities examined since 1975, the year before construction on the nuclear plant began.

Simpson estimates considerably higher growth impacts on the Seabrook work force, believing it to constitute at least 7.6% of the region's 1975-1977 population increase.[97] As noted elsewhere we believe Simpson's estimates to be somewhat inflated while those based more directly on Census Project data are probably equally low, suggesting that the two sources be taken as a reasonable high-low range.

Land Use Controls:

The interrelationship between the growth pressures that began to affect the study area in the 1960's and local land use controls is readily apparent when one examines the differing experiences of the towns of Seabrook and Hampton. During the 1960's Hampton which did not initiate a zoning ordinance until 1968 grew at a rate well in excess of any of its neighbors (Table 1, p. 113). After a strong ordinance was passed, however, growth fell off precipitously, dropping to less than a quarter of its previous rate (Table 1). Seabrook, whose zoning ordinance was repealed in 1969 and not reinstituted until 1974 and even then in the form of a relatively loose framework of controls continued to grow rapidly well into the seventies, atually increasing its rate of growth in the 1970-75 period (Table 1).

The differing effects of local land use control efforts in Hampton and Seabrook is also visible in community housing characteristics (Table 7, p. 117). Here Seabrook's considerably more permissive attitude towards multi-unit rental development and mobile home living is readily apparent in the proportion of total 1978 housing units falling into those categories.

It should be noted that the various phenomena described above reflect municipal reactions to rapid growth that predates and appears only marginally related to construction of the Seabrook plant. We can, in fact, find no evidence either through data analysis or interview to suggest that plant construction and/or work force inmigration imposed serious strains on local land use controls in the communities examined, although they may have served as a catalyst for the Town of Seabrook in adopting a zoning ordinance. Simpson, while he projects higher numbers of Seabrook related inmigrant residents than we believe justified, agrees that the level of inmigration was not sufficiently large to significantly increase land use pressures in the study area.[10]

Housing and Land Values:

The towns of Seabrook and Hampton are located on New Hampshire's sixteen miles of ocean front and both have excellent beaches. As a result land values in both communities are considerably inflated relative to their inland neighbors, a fact which has been true for many years and which has not been noticeably affected by plant construction. Land values have been reported to be rising at a rate roughly comparable to inflation, from 12 to 15 percent per year according to Hampton's tax assessor who also noted that land values do not seem to have been affected by the visibility of the plant from many coastal sites.[11]

There is some reason to believe that had the Seabrook plant been sited in an area where land values were not already artificially high because of proximity to the shore that construction force inmigrants might have bid the cost of housing up. There is, however, no evidence that this has occurred in Seabrook or its environs. Land values were already sufficiently high and the number of inmigrants sufficiently small for the market to absorb the demand for new housing without any marked reaction. Even Simpson who projects a much higher resident inmigrant impact on the regional housing market than we believe justifiable (247 units or 7.2% of all new housing built in 1976-77) does not cite any impact on availability or cost.[12]

Given the low price impact of Seabrook related inmigration on housing costs it would appear that displacement of existing population elements (young, low income) should not be a problem.

Local officials in fact haveconfirmed this to be the case, citing the extremely high cost of housing in Hampton in particular (which they do not trace to the plant's presence) as being the principal force behind such displacement as has occurred.[13]

Interviews with local officials indicate that with respect to the area around Seabrook, the nature of the demand for housing attributable to the plant construction force is probably more important than the level of demand which in terms of year-round rental or purchase has apparently been small. In this regard, the most frequently cited impact is that of the transient work force on off season motel and beach front rental occupancy levels and rates. As noted previously, this transient work force is composed primarily of skilled manual laborers who commute to homes out of daily commuting range each weekend. Their impact on this previously unexploited housing market has proportedly been considerable with a significant escalation in conversion of seasonal homes to year-round use, a rise in the number and cost of off season rentals and increased off season motel occupancy.[14]

The changing winter rental picutre does not appear to have had any appreciable impact on preexisting housing demands since new demands were focused on a housing sector which had not previously been expoited by any resident age or income group. Displacement of any element of the existing rental population does not, therefore, appear to have been a problem in the communities examined. It should, however, be expected that a very different picture would emerge if winter rentals were a major housing source prior to commencement of plant construction as they are along Rhode Island's south shore. Displacement of the summer season rental population was also not seen as a problem since escalation of seasonal rates drove transient plant workers to more reasonably priced accommodations further inland.[15]

Population Characteristics:

Simpson paints the most detailed picture of the new residents (workers and families) attracted to the study area as elements of the Seabrook work force. They are somewhat younger than the area average, 26 years old[16] as opposed to a median in the 30-34 year age bracket for four of the five study area communities (Table 4, p. 115). Their families tend to be slightly smaller (average of 3.03 individuals as opposed to a regional norm of 3.24).[17] They are considerably better educated on the average with better than twice as large a proportion of high school graduates among their numbers (Table 22).

TABLE 22

SEABROOK INMIGRANT EDUCATION LEVELS[18]
VS. COMMUNITY MEANS (1978)

Town	Percent total population high school graduates	Percent resident Seabrook inmigrants high school graduates
Hampton	33.7	87.5
Exeter	36.6	80.4
Dover	39.1	79.8
Stratham	36.6	85.7

Their racial composition is similar to the region's with a larger but still extremely low minority component; 3.3% black[19] as opposed to a norm of 0.4 black for the five communities studied (Table 3, P. 114). They are considerably more skilled with a higher proportion (40%) in the professional/managerial sector[20] than is typical of study area communities where this proportion runs in the range of nine to 20 percent (Table 13, P. 121). They are better paid even than fellow Seabrook workers already residing in the area whose mean household income is some $5,000 less at $16,508.[22]

While there is no reason on the basis of data examined by us or evidence provided by interviewees to dispute this characterization of the Seabrook inmigrant, there is considerable reason to believe that it is not this individual or his family which have most affected the resident population in place at the time plant construction began. Rather, it is clear from the opinions expressed by numerous interview subjects that the primary source of impacts on the characteristics and sensitivities of area residents has been transient workers, the weeday renters who have been referred to previously.[23] These individuals in numbers apparently much greater than longer term inmigrants appear to fit a rather different mold than that described by Simpson. They are not nearly so well educated and are more likely to be skilled tradesmen and laborers than managerial personnel. Many are racially distinct as American Indians from the resident population, single and young. They have not brought their families with them and take much of their incomes back to their homes elsewhere. Judging by the number of unsolicited comments on their behavior they share a lifestyle which is at some odds with the more conservative sensibilities of their yankee neighbors. Numerous complaints of general rowdiness, public drunkedness, vandalism, burglaries, drug abuse and sale were made, some with racial overtones. It is clear that at the very least this element of the plant work force sets an example for resident youths which sits very uneasily with their elders. This attitude is in sharp contrast to reactions to inmigrants who have moved into study area communities on a long term basis with their families. These individuals are apparently so small in numbers and/or discrete in habits that while everybody agrees they're present nobody seems to know who or how many they are.

Employment and Unemployment:

As noted on pp. 119, Rockingham and Strafford counties exhibit a diversified and growing economy within the context of which the Seabrook construction force at some 2,000 plus is an important, but by no means pivotal element in an average employed 1978 work force of some 129,000.[24] At no point, in fact, during the years for which regional employment statistics were available did the Seabrook force constitute more than 1.7 percent of total employment (Table 23).

TABLE 23

SEABROOK EMPLOYMENT VERSUS[25]
TOTAL REGIONAL EMPLOYMENT

Average Monthly Employment	1974	1975	1976	1977	1978
Rockingham County	64,860	62,087	68,989	83,430	80,630
Strafford County	31,820	31,586	33,113	33,870	39,500
Seabrook Power Plant*	--	--	530	1,103	2,026
Seabrook % of Total Rockingham-Strafford	--	--	0.5	0.9	1.7

*1976 and 1977 averages from Aug. - Dec.
1978 averages for Jan. - May

Looking at a more local level, construction of the Seabrook plant understandably appears to have had greater employment impacts. Here again, however, Rockingham-Strafford Census Project data indicate that the Seabrook plant is one of several major employers and by no means the largest (Table 10, p.119).

The region's healthy economy also shows up in annual average unemployment rates which except for the recession year 1975 are extremely low, especially by New England standards (Table 24). It is interesting to note in examining the Seabrook plant's impact on employment levels that neither Rockingham nor Strafford County statistics exhibit any anomolies which would indicate the influence of the plant construction force. Rockingham County unemployment rates typically trail state norms while Strafford's exceed them.

TABLE 24

AVERAGE ANNUAL UNEMPLOYMENT RATES[26]
PERCENT

	1974	1975	1976	1977	1978	1979
Rockingham County	3.9	7.2	4.1	3.4	3.4	3.0
Strafford County	4.9	8.4	5.7	4.0	3.3	3.3
New Hampshire	4.3	7.7	5.0	3.7	3.3	3.1

Regional unemployment levels however, appear to have responded in the short term to shut downs of construction activity at the Seabrook facility (Table 24).

TABLE 25

UNEMPLOYMENT IMPACTS OF SEABROOK[27]
SHUT DOWN OF JAN.-JULY, 1977

Monthly rates (%)

	10/76	11/76	12/76	1/77	2/77	3/77	4/77	5/77	6/77	7/77
Rockingham County	3.3	3.5	3.6	4.4	4.1	3.7	3.2	2.9	3.5	3.6
Strafford County	4.4	4.5	4.4	4.9	5.3	4.4	3.9	3.3	3.2	4.5
New Hampshire	3.8	4.0	4.4	4.9	4.7	4.4	3.8	3.3	3.6	3.8

	8/77	9/77	10/77
Rockingham County	2.8	3.3	3.3
Strafford County	3.3	3.6	3.8
New Hampshire	3.1	3.1	3.4

These figures show a sharp regional reaction to initial layoffs, although given the almost equally large jump at the state level one must suspect that other and larger influences were also at work. Within two months, however, the resiliancy of the regional economy begins to manifest itself and by April and May the regional unemployment picture had actually improved over pre shut-down levels.

Wages and Income:

If the Seabrook construction force does not appear to have had a significant impact on regional employment levels given the size of the total work force, it does appear to have had a major impact on wage levels in the construction trades. As Table 15,p. 122will readily show, the construction/mining job sector in Rockingham County (the plant site is located here) has an average weekly wage some $45 higher than state norms and nearly $100 higher than neighboring Strafford County. In fact, weekly wages in the Rockingham County construction trades are higher than that of any other job sector in the County or the state, for that matter. This would appear to confirm at least in part Simpson's conclusion that Seabrook plant workers in general and inmigrant workers in particular have considerably higher household incomes than other regional residents.

Since union representatives[29] indicated that wages at the Seabrook site were union scale for the trades and skill levels employed, it would seem that the primary explanation for the high wage impacts experienced is that construction of the plant represented a significant addition to union employment levels in the region's construction trades coupled with a significant increase in the number of high skill trade positions available to those union workers.

Retail Sales:

Retail sales data maintained by the New Hampshire Division of Economic Development and the State Planning Office is on too gross a scale to give any real feeling for the impact of the Seabrook work force on either complyment or sales in the retail sector, although Simpson, based on a regional multiplier of 1:7, projects that inmigrants alone support 420 additional jobs in other economic sectors.[30] However, it is possible on the basis of regional plant employment patterns and the experience of the Millstone facility in Connecticut to make some projections as to broad impacts. As in Connecticut, in-state employees appear to be dispersed over a relatively wide area and would be presumed to have a significant collective impact on the retail sector through purchases of food, clothing, housing and other goods and services. However, the impact on any given community would not be expected to be appreciable.

The Seabrook experience appears to deviate from the Connecticut situation somewhat in the level of retail impact on the immediate plant environment, principally a commercial strip along Lafayette Road in the Town of Seabrook itself. Based on a survey of 18 of 94 retail establishments in this area, Simpson concludes that 65% of businesses experienced an increase in activity attributable to the plant work force, 30% experienced no impact, and 5% (one business) experienced a decrease in business.[31] Broken down further, retail outlets catering to commuting workers appear to have benefitted the most. These include lunch counters, convenience stores, gas stations and banks. Restaurants, also appeared to have benefitted although to a lesser extent while facilities catering to more permanent residents such as clothing and

general merchandising stores reported no effects. All outlets serving the plant work force alleged sharp drops in trade during construction stops ordered by courts and regulatory bodies.[32] The general picture painted by Simpson was confirmed by independent interviews.

Work force related retail activity did not, however, appear to be sufficiently extensive to stimulate major expansion of Seabrook's commercial community. Only three of the businesses surveyed had been established after construction began in 1976, while seven had been built between 1970 and 1976 and seven prior to 1970.[33] Simpson's conclusion that increased commercial activity in Seabrook and surrounding communities is more attributable to other growth factors than to plant construction therefore seems reasonable.

Construction Related Purchases of Goods and Services:

Callaghan and Comerford indicate that as of May 1978, expenditures within the State of New Hampshire for materials, equipment and services had exceeded $63 million, an average of some $5 million per active construction month.[34] (Table 26). Throughout the period examined the volume of New Hampshire purchases relative to other sources grew considerably (Table 26), although how much of this activity directly benefitted the five communities in the study area is not known.

Competition for Labor:

It has proved extremely difficult to determine whether the Seabrook plant's high wage scales have attracted sufficient numbers of individuals from other job sectors as to cause shortages. The rapid growth of the region's work force (Table 23,p. 132) would, however, lead one to anticipate that this would not be a major problem. Information obtained from the New Hampshire Department of Employment Security on the job supply/demand picture in Rockingham and Strafford Counties tends to support this hypothesis, indicating that considerable labor surpluses (923 applicants for 278 job openings in December 1978) exist in the structural (construction) job category.[36] One would not expect this 3 to 1 surplus if Seabrook construction was placing a strain on the regional availability of construction workers.

Interview results also indicate that labor force "pirating" has not been a significant problem in the Rockingham-Strafford area. Union officials point to the large available skilled work force as one reason why this has not been a problem.[37] A local official, however, indicated that some shortages of skilled tradesmen had occurred in the immediate plant vicinity causing minor inconvenience to area homeowners looking for plumbers, electricians and the like.[38]

TABLE 26

CONSTRUCTION RELATED PURCHASES OF GOODS AND SERVICES[35]
(Millions of Dollars)

	Through 12/31/77	1/78	2/78	3/78	4/78	5/78	Total Through 5/31/78
New Hampshire	$37.359	$5.730	$5.915	$5.387	$4.536	$4.650	$63.577
Connecticut	1.516	0.001	0.011	0.009	0.646	0.018	2.201
Massachusetts	58.321	5.298	2.476	6.230	1.206	1.035	74.566
Rhode Island	0.025	0.001	0.002	0.005	0.001	0.006	0.040
Vermont	0.209	0	0.001	0.001	0.002	0.005	0.218
TOTAL	$99.315	$11.111	$8.486	$11.726	$6.461	$5.822	$142.921
New Hampshire % Total	37.6%	51.6%	69.7%	45.9%	70.2%	79.9%	45.5%

Source: J. Harrington, NEP 1 & 2 Project Manager, NEPCO, July 6, 1978

FOOTNOTES

1. Callaghan-Comerford Associates, Potential Employment of Rhode Island Labor in the Construction of the NEPCO 1 and 2 Nuclear Power Plants Proposed for Charlestown, Rhode Island

2. Ibid., Table 8, p. 80

3. Strafford Rockingham Regional Council, The Municipal Impacts of Construction of the SeabrookNuclear Power Plant, Appendix 4

4. Ibid.

5. Ibid.

6. Rockingham Strafford Census Project, Household Survey Computer Printouts, Towns of Seabrook, Hampton, Exeter, Dover, Stratham; Variable #42, "Years Living at Present Address"; Variable #43, "Previous Residence"

7. Richard Sevigny, Town Manager, Hampton; telephone interview March 5, 1980. John Medlock, Building Inspector Town of Hampton; telephone interview March 5, 1980

8. Op. cit.; Rockingham Strafford Census Project

9. Op. cit.; Strafford Rockingham Regional Council, p. 1

10. Ibid.; pp. 42-43

11. James Fennesy, Tax Assessor Town of Hampton; telephone interview March 5, 1980

12. Op. cit.; Strafford Rockingham Regional Council. p. 25

13. Op. cit.; Fennesy

14. Op. cit.; Fennesy, Sevigny, Medlock

15. Op. cit.; Sevigny

16. Op. cit.; Strafford Rockingham Regional Council, p. 22

17. Ibid., Appendix 5, Table 1

18. Ibid., p. 25

19. Ibid., p. 23

20. Ibid., p. 24

21. Ibid., pp. 26-27

22. Ibid.

23. Op. cit.; Fennesy, Seivgny, Medlock

24. New Hampshire Department of Employment Security computer printouts

25. Op. cit.; Callaghan and Comerford, Table 8, p. 80; New Hampshire Department of Employment Security

26. Op. cit.; New Hampshire Department of Employment Security

27. Ibid.

28.

29. Joseph Moriarty, Construction Trades Union; interview January 9, 1980

30. Op. cit.; Strafford Rockingham Regional Council, p. 56

31. Strafford Rockingham Regional Council, Effects of Power Plant Construction On Net Retail Business and Traffic, p. 1

32. Ibid., p. 3

33. Ibid., p. 1

34. Op. cit.; Callaghan and Comerford; Table 14, p. 92

35. Ibid.

36. New Hampshire Department of Employment Security, Annual Planning Information; Rockingham-Strafford Area Fiscal Year 1980, pp. 6-7

37. Op. cit.; Moriarty

38. Op. cit.; Medlock

SECTION III

IMPACTS OF THE SEABROOK POWER STATION ON MUNICIPAL GOVERNMENT

Town-Utility Relations:

Relations between the Town of Seabrook and the utility, never as friendly as between the Town of Waterford and the builders of the Millstone nuclear plant, have been deteriorating since construction began in 1976. The town's senior elected official, the Chairman of Selectmen, believes that the plant site is among the worst that could be chosen and was selected principally because Seabrook's lack of zoning posed so few procedural obstacles to the utility.[1] To quote, "We were hoodwinked; they promised us the world, but gave no guarantees."[2]

Relationships are so strained that the town and the utility are presently in court on two unrelated matters; one the size of the plant's 1978 tax assessment and the other the volume of town water consumed during plant construction.

The stiuation overall is perhaps most eloquently characterized by the words of the Chairman of Selectmen:[3] "The tax revenues generated by the plant aren't worth all the grief that have and will go with it."

Municipal Revenues:

As might be anticipated, construction of the nuclear power station in the Town of Seabrook has had tremendous impacts on the town's tax base and hence property tax derived revenues. The size of the Town Grand List (the assessed value of property in which taxes are collected) increased nine fold between 1973 and 1978 alone (Table 27).

TABLE 27

TOWN OF SEABROOK GRAND LIST[4]

Year	Land	Buildings	Industrial	Mobile Homes	Utilities	Commercial	Total
1973	$ 9,486,355	21,508,650	4,009,450	606,150	629,050	NA	$36,401,678
1977	$37,054,325	60,788,500	6,860,750	4,104,500	8,892,700	11,039,450	$101,947,735
1978	$36,765,435	155,250,000	110,971,585	4,490,500	*	12,517,585	$319,995,300

*Utility sector incorporated in industrial sector total

Total tax collections increased nearly five fold between 1970 and 1979 (Table 28).

TABLE 28

TOWN OF SEABROOK TOTAL
PROPERTY TAX COLLECTED (WARRANT)[5]

1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
333,898	$908,043	$989,390	$639,328	$2,109,871	$1,461,128	$1,968,000	$2,371,005	$2,201,686	$4,317,346

And since 1976 the proportion of taxes collected from the plant to total collections has increased geometrically indicating that much of this increased tax revenue is directly attributable to the nuclear plant (Table 29).

TABLE 29

NUCLEAR PLANT TAXES RELATIVE TO TOTAL TAX COLLECTIONS[6]

	1976	1977	1978	1979
Nuclear Plant	$27,192	$237,917	$1,151,540	$3,500,873
Nuclear Plant % Total Coll's.	1.4%	10%	52.3%	81.1%

What is all the more remarkable given this astronomical rate of increase is that only one of the two scheduled nuclear units is presently under construction and even that is far behind schedule. As construction proceeds, then, one would expect the plant to pay an even greater proportion of the total property tax levy as residential growth continues to taper off.

The Tax Rate and the Taxpayer:

The property taxpayer in the Town of Seabrook has been the principal and greatest beneficiary of the plant's presence (at least in a short-term and purely monetary sense). Between 1970 and 1975 property tax rates were increasing yearly, up by nearly 50% by 1975 (Table 30).

TABLE 30

TOWN OF SEABROOK TAX RATES[7]

(Taxes per $1,000 assessed value)

1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
$30.00	$31.00	$32.00	$37.80	$37.60	$43.00	$21.70*	$23.40	$11.30	$13.70

*This drop in rates reflects a general reevaluation of all taxable holdings in 1976

However, starting in 1978 when the full weight of plant tax revenues began to be felt the tax rate dropped precipitously and still remains extremely low relative to neighboring communities. For instance, Hampton's 1978 rate was $53.80/$1000 and its 1979 rate dropped to $18.30/$1000 only after a general reevaluation and upping of the tax assessment to 100% market value.[8]

The magnitude of the taxpayer's gain becomes apparent when one considers the increase in the town's tax base (up almost nine times) to increases both in tax collections and municipal expenditures (both up about five times). Clearly, the town fathers have chosen to return much of their new found largesse to the taxpayer's pocket in the form of lower rates.

Overall Non-Educational Spending:

As previously noted, spending by the Town of Seabrook for municipal services (excluding education) increased some five fold between 1970 and 1978 while Hampton's expenditures have grown at a more modest rate, doubling between 1970 and 1977 (Table 31).

TABLE 31

TOTAL MUNICIPAL SPENDING OTHER THAN EDUCATION[9]

	1970	1971	1972	1973	1974	1975	1976	1977	1978
Seabrook	$336,105	345,346	415,341	599,674	2,103,846	881,007	981,484		1,713,985
Hampton	$1,428,434	1,600,036	NA	1,952,667	3,077,284	2,381,529	2,841,916	3,194,639	NA

The factors appear to be at work here and are readily apparent when one examines the yearly pattern of expenditures. First it is clear that prior to 1976 expenditure levels are reacting both to the increased tax revenues and demands for services that a rapidly-growing population generate. Seabrook's more rapid growth rate during this period shows up in a tripling of spending levels as opposed to Hampton's doubling. As explained previously this rapid pre-1976 growth does not appear related to construction of the Seabrook nuclear station.

However, beginning in 1976 it would appear that construction of the nuclear plant began to effect Seabrook spending levels which doubled again between

1976 and 1978 while Hampton's only increased marginally. Some of this increased Seabrook spending is doubtless attributable to service demands imposed by new residents and transients working at the plant site. Based on projected plant related immigration of twenty-eight inmigrant families, Simpson estimates that total municipal service costs to the Town of Seabrook increased by some $53,368 in 1979.[10] However, he projected similar levels of inmigration and the same $53,368 increase in spending for the Town of Hampton whose overall spending increased considerably less than Seabrook's as noted above. Clearly, then, something in addition to increased demand for service is at work here and it is most likely the availability of a significant new revenue source in the form of taxes paid by the plant.

It is important to recognize, however, even as one traces the influence of new tax revenue on Seabrook spending levels that this has not as yet resulted in anything near as dramatic a change in the type of government or level of service the people of the community enjoy. This becomes immediately apparent when one compares per capita spending levels over time in Seabrook and Hampton (Table 32).

TABLE 32

TOTAL PER CAPITA SPENDING[11]
OTHER THAN EDUCATION

	1970	1971	1972	1973	1974	1975	1976	1977	1978
brook	$110.09	102.05	111.80	148.21	480.66	187.05	195.51		303.84
ampton	$178.31	194.79	NA	226.53	348.78	263.79	303.20	328.85	NA

In the last several years the amount the Town of Seabrook spends per citizen has grown considerably, but it still lags well behind Hampton suggesting that the presence of the plant has not as yet resulted in any major transformation. With on revenue from the plant, Hampton still provides a higher level of service through a larger municipal government.

Educational Spending and Enrollment:

Based on Rockingham-Strafford Census Project data Simpson concludes that the biggest impact on municipal services attributable to the Seabrook plant is an increase in school expenditures and enrollment caused by children of inmigrant construction personnel.[12] However, our examination of town and school district records did not uncover sudden increases in spending or enrollment which would indicate an influx of new students (and families) into either Hampton or Seabrook. Indeed, since before plant construction began in 1976 enrollment levels in the Seabrook and Hampton elementary schools and the Winnacannet Regional High School have all been declining (Table 33). Hampton's enrollment had peaked in 1972 well before construction began while Seabrook's began declining during the first year of construction. Both

phenomena seem to reflect population growth curves predating and not significantly influenced by the Seabrook plant.

TABLE 33

FIRST DAY SCHOOL ENROLLMENT[13]

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Hampton K-8	1461	1508	1528	1410	1388	1328	1279	1272	1182	1106
Seabrook K-8	557	598	646	641	743	783	765	702	671	632
Winnacunnet Regional H.S.	1010	1095	1155	1221	1284	1350	1320	1328	1318	1275

School officials interviewed noted these generally declining enrollments while also expressing the opinion that levels of inmigration were high.[14] While initially at somewhat of a loss as to the reason for these seemingly contradictory observations, we believe on the basis of other interviews[15] that many of the inmigrants referred to by school officials were transient workers who had not brought their families with them (see pp. 132) and therefore had no effect on school enrollment levels.

While enrollments in Seabrook and Hampton school systems were declining actual expenditures were increasing, principally in response to inflationary pressures and rising teacher pay scales[16] (Table 34). There is no conclusive evidence, however, that the Seabrook plant has as yet affected educational spending in the Town of Seabrook either through its impact on municipal revenues or the demands of construction workers and their families. In fact, Seabrook spending increases have been surprisingly modest, especially when compared to Hampton (up only one quarter million dollars from 1973 to 1980 versus nearly one million).

TABLE 34

MUNICIPAL EDUCATIONAL SPENDING[17]
(Grades K-8)

	1973	1974	1975	1976
Seabrook	$974,457	781,500	851,539	982,903
Hampton	$1,438,946	1,605,843	2,081,835	1,814,115

	1977	1978	1979	1980
Seabrook	996,668	1,070,322	1,036,203	1,200,130
Hampton	1,964,199	2,083,571	2,275,781	2,425,922

On a per capita basis, Seabrook educational spending has actually declined slightly since the beginning of plant construction in 1976, again in sharp contrast to Hampton where spending over the same period increased by some $25 per head (Table 35).

TABLE 35

EDUCATIONAL SPENDING PER CAPITA[18]

(K-8)

	1973	1974	1975	1976	1977	1978	1979
Seabrook	$240.84	178.55	180.88	195.80	186.96	189.74	183.69
Hampton	$166.93	182.01	230.60	193.55	209.56	207.07	218.68

General Government:

Spending for general government covers administrative services, running the town hall, board of selectmen and other town boards and commissions. As Table 36 shows, while overall spending in this sector has increased by considerably greater margins in Hampton, spending by the Town of Seabrook has picked up greatly since 1976 with as much money spent in the ensuing two years as in the preceeding six.

TABLE 36

MUNICIPAL SPENDING FOR GENERAL GOVERNMENT[19]

	1970	1971	1972	1973	1974
Seabrook	$55,779	48,975	49,660	64,660	72,526
Hampton	$97,353	117,469	NA	203,932	223,862

	1975	1976	1977	1978
Seabrook	87,600	95,300	80,304	138,085
Hampton	189,046	202,134	234,380	NA

The phasing of spending increases within these two communities with greatest increases in Hampton prior to 1974 and Seabrook after 1976 suggests in part the influence of overall population growth trends discussed previously. However, the suddeness and extent of the post 1976 Seabrook increase also doubtless reflects the growing tax revenue available to the town in those years.

Again, though an examination of per capita spending (Table 37) while not diminishing the revenue impact of the power plant or the service demands of its work force suggests that neither has as yet been sufficiently persuasive

as to change the relatively low keyed tenor and pace of the town administration. Seabrook continues to spend considerably less on a per person basis than its neighbor in this area, reflecting the smaller size of its full time salaried staff.

TABLE 37

PER CAPITA GENERAL GOVERNMENT SPENDING[20]

	1970	1971	1972	1973	1974	1975
Seabrook	$18.27	14.47	13.44	15.98	16.57	18.98
Hampton	$12.15	14.30	NA	23.66	25.37	20.94

	1976	1977	1978
Seabrook	18.98	15.06	23.20
Hampton	21.57	24.12	NA

Police Protection:

As Table 38 readily shows, police spending in the towns of Seabrook and Hampton has increased substantially since 1970, in both cases nearly five fold. A similar spending pattern persists in both communities moreover with greatest increases (up four fold) in the period preceeding the beginning of plant construction in 1976.

TABLE 38

SPENDING FOR POLICE PROTECTION[21]

	1970	1971	1972	1973	1974	1975
Seabrook	$43,833	53,346	77,559	117,258	133,000	153,800
Hampton	$188,600	236,116	NA	306,391	343,781	417,291

	1976	1977	1978
Seabrook	162,000	177,754	205,385
Hampton	476,598	542,100	NA

Throughout the study period including both pre and post 1976 Hampton's spending levels exceed Seabrook's by substantial amounts both in total dollars and per capita expenditures (Table 39).

TABLE 39

PER CAPITA SPENDING FOR POLICE PROTECTION[22]

	1970	1971	1972	1973	1974	1975
Seabrook	$14.36	15.76	20.88	28.98	30.39	32.66
Hampton	$23.54	28.75	NA	35.54	38.96	46.22

	1976	1977	1978
Seabrook	32.27	33.34	36.41
Hampton	50.85	55.79	NA

The similarity of experience between these two communities together with the timing of increases relative to start up of plant construction suggests that the plant, its tax impacts and/or its work force are not as yet major influences on police spending by either community. This conclusion is supported by Simpson's projections which trace relatively minor police spending increases to construction force inmigrants, only $2,796 (1978) for the Town of Hampton by example.[23]

The fact that plant construction has not affected local police spending to any appreciable degree does not mean that it has had no effect on police services and public safety. To the contrary, several very significant impacts were noted by local officials, some considerably more disturbing to them than would be the need to spend more money. Four impact areas in particular were cited, all of which to varying degrees generated conflicts with existing community life styles or value systems and which therefore served as unwanted and largely unanticipated devisive and disruptive influences. These impact areas were roudiness and petty crime associated with "transient" workers, civil disorder and disobedience associated with anti-nuclear demonstrations, drug abuse and sales by construction workers on and near the plant site, and traffic congestion during shift changes and demonstrations. We will treat each briefly in turn. To understand their impact on the communities in question, we must appreciate their essential white collar and conservative sensitivities and seasonal dependence on tourism and beach use.

We have already spoken of the considerable influx of "transient" workers, those boarding in off-season beach rentals and motels on a weekly basis and travelling home on days off. Many of these workers have been described to us as young, unattached, and prone to rowdiness and general hooliganism during off hours; behavior which sits rather poorly with local residents.[24] Of greater concern are increases in burglaries, vandalism and petty larceny which are attributed to laid off transient workers.[25] It is

difficult to establish with any degree of confidence whether and to what extent transient workers are actually responsible for felonious behavior especially since there seem to be at least some racial overtones to the controversy (many of the workers were identified as being Indians). However, the fact that they stand accused is perhaps of greater significance than their guilt or innocence indicating as it does the levels of tension that their presence has generated.

Anti-nuclear demonstrations and the behavior of demonstrators has also created frictions with elements of the resident populations of Seabrook and Hampton. Local concern appears primarily directed towards the civil disobediance activities of demonstrators and the "lack of respect" shown local and state law enforcement officials and institutions.[26] This more than the disruption of normal community life was cited as a major complaint.

Demonstrations have placed a considerable burden on local police and has resulted in some increases in local spending, particularly for riot gear and crowd control training. Both Hampton and Seabrook officials cited expenditures in the range of $5,000 for such gear and anticipated further spending in this area.[27] The major financial and organizational responsibility for preserving public order has, however, been assumed by the state with direct local participation at relatively low levels. Without such state intervention, local police capabilities would clearly have been overwhelmed on several occasions by the sheer size and organization of demonstrations.

Recent disclosures and arrests related to large scale drug sales and abuse at the plant site are of grave concern to a conservative solidly middle class population apparently appalled at the prospect of drugs being so readily available to the youth of the community.[28]

Traffic congestion during shift changes at the plant and demonstrations is both a petty annoyance to local citizens and a major concern to tourist dependent businesses. Congestion is particularly troublesome during the summer because the plant is served by a route which is also the major access road for summer beach users and visitors to Seabrook's commercial area. In order to reduce congestion to tolerable levels actions have been taken by the utility, the Town of Seabrook and the state. The utility has constructed several access roads to and from the plant to relieve pressure on local streets.[29] The town, in turn, has instituted major modifications of traffic flow patterns with many formerly two-way streets converted to one-way use.[30] Finally, the state has attempted to relieve beach use pressures by rerouting traffic from I-95 to an exit which provides beach access by a less direct route not used by construction worker commuters. Collectively, these efforts have reduced problems considerably, but congestion remains a common complaint.

Fire Protection:

Spending patterns for fire protection by the towns of Seabrook and Hampton closely parallel each other and are quite similar to those for police protection (Table 40).

TABLE 40

SPENDING FOR FIRE PROTECTION[31]

	1970	1971	1972	1973	1974	1975
Seabrook	$37,331	37,096	46,342	64,000	100,500	141,900
Hampton	$208,583	231,968	NA	307,300	346,219	611,625

	1976	1977	1978
Seabrook	159,500	156,895	198,084
Hampton	483,081	504,184	NA

Again, while spending levels overall increased substantially, the bulk of this increase took place prior to 1976 and does not appear related to construction of the nuclear power plant. There is no evidence that the plant itself generated any increased demand for fire protection, that responsibility being assumed by the utility. There is likewise little evidence that the plant attracted sufficient new residents into the area to substantially increase fire protection spending. Simpson on the basis of his projected Hampton plan inmigration of 85 individuals only projects increased 1978 spending at $2,680, for instance.[32] The availability of plant tax revenues doubtless affected spending for fire protection favorably with spending increases between 1977 and 1978 larger than for most other sectors.

Civil Preparedness:

Throughout the course of the study period, neither Seabrook nor Hampton has committed more than token sums to civil preparedness (Table 41) a fact which has not been altered by construction of the power plant despite official skepticism as to the adequacy of emergency evacuation plans.

TABLE 41

SPENDING FOR CIVIL PREPAREDNESS[33]

	1970	1971	1972	1973	1974	1975
Seabrook	$ 640	1,007	828	502	1,000	500
Hampton	$1,057	524	NA	1,008	1,000	65

	1976	1977	1978
Seabrook	1,000	897	1,000
Hampton	57	149	

The principal objection to these evacuation plans which would be implemented in the event of a major nuclear accident at the plant lies in the inadequacy of the existing road system to handle the demands that would be placed on it.[34] Local officials are most concerned with the summer months during which the resident population of both Seabrook and Hampton swell, particularly during the weekends when public beaches can be jammed with up to 100,000 visitors.[35] However, the plant evacuation plan remains untested and unmodified while no new evacuation routes have been constructed or proposed. Officials continue to fear, therefore, that in the case of a genuine emergency bottlenecks would soon develop within the area slated for evacuation, trapping many would be escapees.

Highway and Public Works:

Highway and public works expenditures in the towns of Seabrook and Hampton have more than doubled since 1970, although most of this increase took place prior to the beginning of plant construction in 1976 (Table 42).

TABLE 42

HIGHWAY AND PUBLIC WORKS SPENDING[36]

	1970	1971	1972	1973	1974	1975
Seabrook	$59,841	58,603	63,513	105,981	108,484	110,881
Hampton	$546,175	492,747	NA	474,926	852,913	641,388

	1976	1977	1978
Seabrook	121,508		116,460
Hampton	730,303	918,828	NA

As noted previously, while some new road construction was initiated to alleviate traffic congestion, this was paid for by the utility. Other than redesigning traffic flow patterns in the downtown area the Town of Seabrook has not undertaken any major highway expansion or upgrading projects in response to the plant's presence. Neither is there any reason to presume that inmigration of construction workers has generated significantly increased demands on the town's highway department. Simpson projects that Hampton 1978 road maintenance costs increased by only $3,245 in response to inmigration of 85 individuals, a number identical to projected Seabrook inmigrantion.[37] It remains too early to tell whether increased traffic generated by plant construction, especially by heavy vehicles, will result in higher road maintenance costs to the Town of Seabrook. As yet no pattern has emerged which would indicate this possibility and in any event major access roads are maintained by the state.

Solid Waste Collection and Disposal:

Solid waste collection and disposal costs in both Seabrook and Hampton have climbed throughout the study period on both an overall and to a less consistent extent per capita basis. Seabrook has consistently spent more by large margins in this sector than its more populous neighbor, a penalty for the rampant development experienced in the 1969-1974 period when it alone among its neighbors was unzoned (Table 43).

TABLE 43

SPENDING FOR WASTE COLLECTION AND DISPOSAL[38]

	1970	1971	1972	1973	1974
Seabrook Total	$18,335	20,262	32,400	32,400	35,000
Seabrook Per Capita	$6.00	5.99	8.72	8.01	8.00
Hampton Total	$18,630	14,860	NA	19,600	20,590
Hampton Per Capita	$2.33	1.81	NA	2.28	2.33

	1975	1976	1977	1978
Seabrook Total	56,500	100,000	200,512	184,000
Seabrook Per Capita	12.00	19.92	37.61	32.62
Hampton Total	21,646	22,624	32,628	NA
Hampton Per Capita	2.40	2.41	3.36	NA

It is tempting to draw links between the marked increase in spending in this sector since 1975 and the beginning of nuclear plant construction in 1976. However, town officials believe this to be largely coincidental since the plant disposes of its own wastes at no municipal expense.[39] Rather, they cite the development surge of the early seventies as the principal cause, noting that a delayed demand on refuse collection and disposal services was experienced.[40]

Water and Sewer:

The availability of potable water in coastal New Hampshire is severely limited and during the period in which Seabrook's zoning ordinance was repealed (1969-1974) served as the principal constraint on development.

Even so as noted previously Seabrook residential development surged during this period with the result that the town's water system was strained to its limits and expansion was necessary to meet demand. Increased demands on the system readily reveal themselves in spending patterns over this period (Table 43).

TABLE 44

SEABROOK SPENDING FOR TOWN WATER[42]

	1970	1971	1972	1973	1974
Overall	$34,139	34,000	41,000	24,000	50,000
Per Capita	$11.18	10.05	11.04	5.93	11.42

	1975	1976	1977	1978
Overall	86,900	75,000	NA	115,000
Per Capita	18.45	14.94	NA	20.39

While overall developmental expansion thus accounts for much of the spending increases in this sector the marked jump between 1976 and 1978 spending shows the influence of nuclear plant construction according to town officials.[43] The plant is currently one of the two largest water consumers in the community along with another large industrial facility, the Bailey Corporation.[44] Much of this water is used in the mixing of concrete at the plant site a source of considerable citizen resentment given the scarcity of potable water for domestic consumption.[45] Competition for water and plant consumption of water has in fact become so heated an issue that the town and the utility are presently in court on the matter. Both are presently acting under a court injunction which limits the amount of water the plant can purchase and prohibits the town from cutting off deliveries to the plant altogether as had been proposed.[46]

Town-utility friction over water consumption is expected to continue given the absence of alternative sources for the plant and the growing demand as construction proceeds. This friction is not expected to abate when the construction phase is complete and operation begins given the continued fresh feed water requirements of the reactor cooling and generator systems.[47] Recent drought conditions throughout the Northeast have already closed two of the town's well sites and will further aggrevate the situation.[48]

The Town of Seabrook currently does not have a sewer system although a sewer study has been in progress for several years. Sewers are badly needed in several areas of the community according to local officials, but the intensive development of mobile homes and apartment complexes which generate this need predates and appears only marginally related to plant construction.[49]

Health and Social Services:

Spending levels for public health services in the Town of Seabrook increased five fold between 1970 and 1978 while welfare assistance payments nearly tripled (Table 45).

TABLE 45

SPENDING FOR PUBLIC HEALTH AND WELFARE[50]
TOWN OF SEABROOK

	1970	1971	1972	1973	1974	1975	1976
Health	$3,982	7,170	10,227	11,500	13,000	17,500	19,000
Welfare	$12,135	11,939	20,489	20,500	20,000	42,000	41,000

TABLE 45 (cont.)

	1977	1978
Health	19,055	19,500
Welfare	NA	30,000

Nearly all the increase in health spending occurred prior to 1976, while welfare payments actually declined after 1975. There is strong circumstantial evidence, therefore, that employment opportunities at the plant site have at least in part reduced town obligations in this area by providing more and better paying jobs to local residents. However, it should be at the same time noted that the types of jobs available at a nuclear plant construction site would not normally be open to many of those receiving public assistance. If the positive impact of plant construction on public assistance obligations is therefore largely conjectural, the negative is considerably less so. There is no evidence either in spending data, Simpson's investigations or our interviews to suggest that the construction work force has imposed any additional burdens on health and public assistance programs. The probable reason for this is that most of those new residents attracted to the area by plant construction have good paying jobs while other (also well paid) workers commute from outside the region or state with the consequence that they and their families cannot readily impact local social service programs.

Recreation:

Recreational spending by the Town of Seabrook increased by a factor of five between 1970 and 1978, roughly comparable to spending increases overall (Table 46). Again, however, all but a very small amount of this increase took place before plant construction began and taxes began to flow, indicating that the plant and/or its work force were not significant factors.

TABLE 46

SPENDING FOR RECREATION[51]

	1970	1971	1972	1973	1974	1975
Seabrook	$4,596	5,124	5,485	6,000	11,406	14,000
Hampton	$17,301	15,576	NA	40,039	39,818	43,994

	1976	1977	1978
Seabrook	17,000	NA	18,650
Hampton	62,428	58,017	

Per capita recreational spending patterns reveal this even more dramatically, indicating an actual decline in Seabrook spending per citizen between 1976 and 1978 (Table 47).

TABLE 47

PER CAPITA SPENDING FOR RECREATION[52]

	1970	1971	1972	1973	1974	1975
Seabrook	$1.51	1.51	1.48	1.48	2.61	2.97
Hampton	$2.16	1.90	NA	4.64	4.51	4.87

	1976	1977	1978
Seabrook	3.39	NA	3.31
Hampton	6.66	5.97	

FOOTNOTES

1. James Falconer, Chairman of Selectmen Town of Seabrook; telephone interview March 21, 1980
2. Ibid.
3. Ibid.
4. Town of Seabrook, Town Annual Reports
5. Ibid., Frederick Felch, Tax Collector Town of Seabrook; telephone interview March 20, 1980.
6. Ibid., Felch
7. Ibid.
8. James Fennesy, Town of Hampton Tax Assessor; telephone interview March 20, 1980
9. Towns of Seabrook and Hampton, Town Annual Reports
10. Strafford Rockingham Regional Council, The Municipal Impacts of Construction of the Seabrook Nuclear Power Plant; Table XXV, p. 45
11. Op. cit.; Towns of Seabrook and Hampton
12. Op. cit.; Strafford Rockingham Regional Council; pp. 32-33
13. Alice Cummings, Office of Superintendent of Schools, School Administrative Unit #21, Hampton; enrollment lists
14. Ibid., Louis Nardello, Superintendent of Schools Town of Seabrook; telephone interview March 5, 1980
15. Op cit.; Fennesy. Richard Sevigny, Hampton Town Manager; telephone interview March 5, 1980. John Medlock, Hampton Building Inspector; telephone interview March 5, 1980
16. Op. cit.; Nardello
17. State Tax Commissioner; school appropriation data
18. Ibid.
19. Op. cit.; Towns of Seabrook and Hampton
20. Ibid.
21. Ibid.
22. Ibid.

23. Op. cit.; Strafford Rockingham Regional Council, pp. 37-38

24. Op. cit.; Sevigny, Medlock

25. Ibid.

26. Op. cit.; Sevigny, Falconer. Paul Cronin, Town of Seabrook Chief of Police; interview January 6, 1980

27. Ibid., Sevigny, Cronin

28. James Falconer, Chairman of Selectmen Town of Seabrook; interview January 6, 1980. Diane Garand, Seabrook Clamshell Alliance; interview January 8, 1980

29. Op. cit.; Cronin

30. Ibid.

31. Op. cit.; Towns of Seabrook and Hampton

32. Op. cit.; Strafford Rockingham Regional Council, pp. 36-37

33. Op. cit.; Towns of Seabrook and Hampton

34. Op. cit.; Sevigny, Falconer. Gerome Healy, Chairman of Selectmen Town of Hampton Falls; telephone interview January 9, 1980

35. Ibid.

36. Op. cit.; Towns of Seabrook and Hampton

37. Op. cit.; Strafford Rockingham Regional Council, pp. 38-39

38. Op. cit.; Towns of Seabrook and Hampton

39. Op. cit.; Falconer; telephone interview March 21, 1980

40. Ibid.

41. Ibid.

42. Op. cit.; Towns of Seabrook and Hampton

43. Op. cit.; Falconer

44. Ibid.

45. Ibid.

46. Ibid.

47. Ibid.

48. Ibid.

49. Ibid.

50. Op. cit.; Towns of Seabrook and Hampton

51. Ibid.

52. Ibid.

THE SOCIO-ECONOMIC IMPACTS OF NUCLEAR POWER PLANTS AT THE LOCAL LEVEL: IMPACT VARIABLES AND INTERACTIONS

A Report From The Literature
Prepared For

THE REGIONAL COASTAL ENERGY IMPACT PROGRAM

by

INTERFACE

April 9, 1979

OBJECTIVES:

The central purpose of the literature survey conducted by Interface to date has been to extract from this literature information and insights into the range of socio-economic impacts associated with nuclear power plant siting, construction and start up. A further objective has been to obtain a clearer appreciation of the various factors (variables) which contribute to the nature and magnitude of impacts in particular situations. A final objective has been to trace in the analyses conducted by other investigators the various relationships or lines of cause and effect which seem to link distinct variables and/or impacts to create other or more significant impacts.

We have made no effort to conduct a comparative analysis of alternative impact assessment methodologies. Therefore, while numerous econometric and other "modelling" studies were reviewed, no description or critique of these approaches is contained in this document. Rather our concern was to identify within the model the same information on impact "candidates," variables and causal relationships we sought in more empirical studies. To our surprise, a considerable body of information in these areas was obtained from "modelling" studies. While little of this broke new ground, it at least confirmed similar information contained in empirical case studies.

GENERAL CRITIQUE:

We were gratified to find that our initial premise, e.g., that the magnitude and nature of impacts is determined (or at least heavily influenced) by definable factors and relationships, is

supported by the literature. We were, however, surprised by the relatively small number of studies which specifically recognized or addressed this fact. In the majority of cases we rather found it necessary to extract the information we sought from data whose compilers apparently did not see in it the same significance that we do.

In the relatively limited number of empirical (case) studies reviewed we found a general absence of clear methodological description, especially as to the types of individuals interviewed, the questions asked and the hard data sources referenced. Notable exceptions to this weakness were NUREG 0203 (see Bibliographic Ref. #) and Purdy et al. (Ref. #). Absence of such methodological information has greatly complicated the task of evaluating the utility and credibility of information produced by these studies; a weakness we intend to avoid.

In terms of the substance of studies reviewed, we found a major gap in the geographic focus of impact assessment. The majority of empirical studies limit themselves in all but the most offhanded manner to the community actually hosting a given facility. Modelling studies on the other hand characteristically deal with much larger areas either directly or inferentially through the scale of their inputs. A clear consideration of the range of impacts experienced by communities in the immediate vicinity of a siting appears in most cases to have slipped through the cracks.

Another substantive difficulty in extracting useful information from studies reviewed is the frequent failure to consider

non-plant related factors and trends in attributing the cause of various socio-economic phenomena to a plant siting. While the isolation of such contributing factors would admittedly be difficult in many cases since most major phenomena would have a variety of root causes, the failure to confront this fact again complicates the task of evaluting the credibility of information reviewed.

A final area of substantive difficulty was found in the many studies which deal with major energy facilities at the generic level and thereby aggregate their socio-economic parameters. While some general similarities doubtless exist between such facilities, the effect of such aggregation is to camoflage very real and significant distinctions in the real world impacts generated by siting. Since in any given situation a community will be dealing with a specific facility, this generic level treatment provides little useful data and may actually generate unrealistic expectations, whether good or bad.

FORMAT OF THIS REPORT:

It is our belief that this report will be most useful to RCEIP as well as to ourselves if it addresses directly and clearly the central objective of identifying the variables and the interrelationships between variables which influence the range and magnitude of socio-economic impacts associated with nuclear plant sitings. In the interest of such directness and clarity we have adopted an outline format with the major impact variables under each impact category identified followed by a brief description of the socio-economic phenomena they may impact (or better said, interact with). Where the literature or our own intuition suggests

a likely hard data or personal information source these too are identified. We have made no effort to identify the specific source of individual pieces of information in that most have multiple references or no identifiable source at all, rather representing a cumulative appreciation of the literature as a whole. We have, however, identified in the attached bibliography all literature reviewed by us which is relevant to the assessment of nuclear plant socio-economic impacts.

IMPACTS, VARIABLES AND RELATIONSHIPS:

I. DEMOGRAPHIC IMPACTS:

General: Changes in regional demographic parameters are perhaps the single most pervasive driving force behind impacts on all other economic sectors both public and private. Where plant construction results in significant in-migration of workers the potential for major economic and public service dislocations increases dramatically and may result in the so called "boom-bust" experience of the Rocky Mountain coal towns. As the below described variables suggest, however, the "boom-bust" phenomenon is by no means inevitable or even likely in many situations.

Variables and Interactions:

(1) Composition of labor force (especially during construction phase) in terms of (1) locally hired workers, (2) commuters from nearby labor markets and (3) temporary "migrant" residents. Depending on this mix, the following may be effected:

(a) Wages, employment and general economic activity
- competition from plant hiring ("pirating")
- plant related purchases of goods and services
- retail sales, public service demands generated by construction personnel (secondary impacts)

(b) General unemployment rates

(c) Unemployment rates in specific sectors, especially construction trades, retail sales, services, government administration

(d) School enrollment

(e) Public services (police and fire, water and sewers, solid waste, recreation, health)

(f) Housing availability and costs; land costs

(g) Roads and traffic

(2) Composition of labor force, especially likelihood of significant in-migration depends on:

(a) Proximity of site to major labor markets

(b) Commuting times to these markets; in turn dependent on distance and quality/capacity of road networks

(c) Skill levels of local labor force

(d) Availability of local labor (unemployment in construction trades)

(e) Competition for local labor

(f) Wage scales in sectors from which local labor source is drawn (mostly construction trades)

(g) Union hiring practices and policies

(h) State trade licensing requirements or restrictions

(3) Impacts associated with in-migration are generated by:

(a) Number of migrating workers

(b) Number and size of migratory families; especially number of school age children

(4) Magnitude of impacts associated with in-migration depends on above measured against:

(a) Local unemployment levels

(b) Surplus capacity (if any) of local retail sales and service sector

(c) Surplus capacity in schools

(d) Housing capacity (rentals especially)

(e) Surplus capacity in public service/facility sector (police, etc.)

(f) Surplus capacity and condition of road network

(g) Local zoning and planning policies (perhaps the most important variable where significant in-migration occurs)

(h) Local revenue sources to support increased public service demands (will differ significantly if impacts fall outside host (taxing) community)

(i) All of above effected by in-migration from any other source

DATA SOURCES:

(1) Interview:

(a) State labor statistics, unemployment and/or economic development officials

(b) State planning officials

(c) Utility officials

(d) Chambers of Commerce

(e) School superintendent

(f) State housing officials

(g) Town Manager

(h) Town planner

(i) Police and fire chiefs

(j) Public works director

(k) Recreation director

(l) Hospital administrators

(m) Union officials

(n) State transportation/highway officials

(2) Hard Data:

(a) U.S. Bureau of the Census, Consumer Income: Household Money Income and Selected Social and Economic Characteristics

(b) U.S. Bureau of the Census, Census of Population: Population Estimates and Projections; Subject Reports, Mobility for States and the Nation

(c) U.S. Department of Health, Education and Welfare, Vital Statistics of the United States; Mortality and Natality

(d) Local annual reports

(e) State annual reports

(f) State level statistics

(g) Utility reports and EIS'

II. GENERAL ECONOMIC IMPACTS:

General: Economic impacts will be of three principal sorts; (1) those generated by employment and local purchases during plant construction and operation; (2) impacts on jobs and economic activity in other sectors servicing construction workers and operating personnel; and (3) impacts related to expenditures within and through the government sector. Because of the magnitude of potential economic impacts associated with a large facility and the range of variables involved, the distribution and levels of positive and negative impacts in and between the above areas is typically uneven and complex.

Variables and Interactions:

(1) Direct plant related employment impacts are dependent on composition of construction and operating force, especially the % and number of locally hired construction workers. See (2) under Demographic Impacts for variables influencing the worker mix.

(2) Plant related impacts stemming from the local purchase of equipment, materials and services are dependent on the size and spread (over time) of these purchases. This in turn is dependent on:

(a) Cost and availability of locally produced products relative to other sources

(b) Purchasing/bidding policies of contractor

(c) Need for local knowledge in product sought (usually services)

(d) Amount of purchases of high volume low unit value products and materials where transportation costs are important

(3) Impacts on jobs and general economic activity in other sectors (commonly retail sales and services) servicing construction workers, operating personnel and their families dependent on:

(a) Number of plant workers who represent additions (especially temporary) to the local market for goods and services. (Again see (2) under Demographics).

(b) Number of plant workers who represent hirings from local unemployment pool as opposed to "pirating" of workers from existing jobs

(c) Existing level of local economic activity, especially in retail sales, services and housing construction; e.g., stable, increasing, decreasing, etc.

(d) Capital expansion climate in private sector, availability and cost of financing for expansion and new business starts

(4) Impacts related to expenditures within and through the government sector depend on:

(a) Whether the spending jurisdiction is receiving or will receive tax revenue from the plant

(b) If the community is the taxing jurisdiction whether:

- increased revenue is used to provide increased service or facilities while maintaining a stable tax rate, or
- increased revenue is funneled directly into the private sector through a tax rate roll back, or
- Some combination of the two

(c) If increased services or facilities are provided; whether local firms are hired

Data Sources:

(1) Interview:

(a) State labor statistics, unemployment and/or economic development officials

(b) State planning officials

(c) Utility officials

(d) Plant contractor

(e) Chambers of Commerce

(f) Town manager

(g) Town planner

(h) Union officials

(2) Hard Data:

(a) U.S. Bureau of Census, County Business Patterns; County and City Data Book

(b) U.S. Bureau of Census, Census of Manufacturing

(c) Chamber of Commerce of the United States, Economic Analysis and Study, What New Jobs Mean to a Community

(d) U.S. Water Resources Council, OBERS Projections; Economic Activity in the U.S., Vol. I-VII.

(e) State Employment Security Administration statistics

(f) Local annual reports

(g) State annual reports

(h) Other state reports and statistics

(i) Utility reports and EIS'

III. MUNICIPAL REVENUES:

General: The single greatest economic impact on the host community is liable to result from a massive infusion of property tax revenue from the plant (see (2) under General Economic Impacts).

Variables and Interactions:

(1) It cannot be assumed offhand that the host community will receive significant tax revenues, if any. Variables include:

(a) Ownership of the plant (public utilities are tax exempt)

(b) Ownership of the site (publicly held land is tax exempt, although various forms of revenue collection and distribution may be used)

(c) State taxing laws and policies re major facilities; e.g., redistribution of revenues between impacted communities.

(2) Impacts (direct and indirect) may include:

(a) Increase in tax revenues - property, sales, personal income, user charges

(b) Increase in taxable base

(c) Decreased pressure on other tax or revenue producing sectors as plant taxes increase during construction phase

(3) Above will result in increased revenue to taxing jurisdiction, impacts of which are dependent on:

(a) Municipal spending policies (see (4) under General Economic Impacts)

(b) Demands placed on public services and facili-

ties from plant work force, general demographic shifts and/or obsolescence; e.g., will revenue be used to add to/improve facilities or simply bring substandard facilities up to grade?

(c) Timing of revenue input relative to service demands; e.g., is there lag? Where lag exists, impact on community will depend on ability to optain "up front" revenue through tax prepayments borrowing (deferred payment bonds, etc.)

(d) Size of existing tax base, plant derived tax revenue as % of total base, tax rates and assessment ratios, sales tax and other revenue sources

(e) Ability to borrow (float bonds) against future revenue conditional on bonded debt limits established by law, existing indebtedness

(f) Size and general condition of government "machinery" in taxing community; budgets, employment

(g) Drains on local revenue generated by mandatory state or federal programs which are supported or partially supported by community

(4) Amount of actual revenue over time is negotiated variable between town and utility to maintain stable tax levels over depreciated life time of plant.

Data Sources:

(1) Interview:

(a) State planning, economic development, labor and tax officials

(b) Local tax officials

(c) Town manager

(d) Town planner

(e) Town budget officials, comptroller

(f) Utility officials

(2) Hard Data Sources:

(a) State tax statistics

(b) Town tax statistics

(c) Town annual reports

(d) Utility records and EIS

IV. HOUSING AND LAND USE IMPACTS

Variables and Interactions:

(1) The following impacts on the availability and cost of housing and on general land use patterns and trends may result from nuclear plant siting:

- (a) Purchase and rental prices may increase substantially resulting in displacement of low income groups, students, etc. with consequent alterations to population mix, community "character"
- (b) Housing shortages may develop
- (c) Pressure to site mobile homes and trailer parks may increase
- (d) Conversion of seasonal houses to year round occupancy may occur
- (e) Proliferation of low quality housing may be encouraged to meet demands
- (f) Plat development (subdivisions) may increase

(2) The following variables will effect the degree to which (if at all) any of the above impacts are actually experienced:

- (a) Pre-existing population movement and development patterns within the area
- (b) The extent to which and the speed of in-migration of construction workers and/or operating personnel occurs (see (2) under Demographic Impacts).

(c) Existing housing market (prices, availability, rental v. owner occupied, new-old, housing starts, etc.)

(d) Existing occupancy levels (rental and owner occupied) v. demand for housing

(e) Availability of supplemental housing, especially for "temporary" occupancy; e.g., motels, hotels, summer houses, etc.

(f) Community planning philosophy and zoning ordinances; attitudes towards and strength of land use controls including subdivision regulations, trailer ordinances, lot size, etc.

(g) Application of plant derived tax revenue by town government; e.g., stable or low tax rates, high level of public services serves as a "magnet" for secondary (non-plant related) development

(h) Quality and level of public services

(i) Synergistic effects between above, especially (f) and (g), (f) and (b)

(3) The following variables will effect the displacement of existing housing and/or the alteration of existing development patterns:

(a) Size, location and requirements of plant exclusion zone

(b) Same for low population zone

(c) Plant generated requirements for new or improved transportation links, especially roads

(d) Transmission corridor routing

Data Sources:

(1) Interview:

(a) State planning and housing officials

(b) Town planner/planning commission

(c) Town manager

(d) Chamber of Commerce

(e) Building Trades Commission

(f) Local realtors

(g) Building inspector

(h) Zoning Commission

(i) Local housing officials

(2) Hard Data:

(a) State annual reports and housing statistics

(b) Federal census data

(c) HUD, Urban Housing Market Analysis

(d) Local annual reports and statistics

(e) Building permit records

(f) Records of sales

V. TRANSPORTATION AND ROAD IMPACTS:

Variables and Interactions:

(1) Potential impacts include:

(a) Traffic congestion, especially during commuter hours, summer tourist season

(b) Increase in travel times incidental to above

(c) Increase in traffic accidents, violations

(d) Increase in fuel consumption

(e) Road damage from heavy vehicle traffic

(f) Pressure to build additional highways, expand or improve existing roads

(g) Nuisances in residential areas - noise, litter, traffic, etc.

(h) Delays in response time for emergency vehicles

(2) The following variables will effect the degree to which (if at all) any of the above impacts will be experienced:

(a) Numbers of workers commuting to plant site (see Demographic Impacts)

(b) Plant related in-migration of workers and their families

(c) Commuting patterns; e.g., dispersed over routes and time or concentrated along a few major arteries at certain times of day

(d) Location, condition and capacity of primary and secondary road network

(e) Existing traffic patterns, levels and peak usage periods

(f) Volume of heavy equipment movement on and off plant site, especially with reference to movement of high bulk materials such as sand, gravel and concrete. Policies relative to liability for damage to road bed

(g) Local traffic flow management capability; e.g., signs, signals, police, etc.

(h) Frequency and location of bottlenecks such as residential areas, business "strips"

(i) State and local commuting policies and programs such as:

- commuter parking lots
- car pool lanes
- restrictions on parking at plant site
- mandatory plant sponsored van pooling

Data Sources:

(1) Interview:

(a) State transportation officials

(b) Local highway/public works officials

(c) Town engineer

(d) Utility officials

(e) Plant contractor

(f) Town and state police officials

(2) Hard Data:

(a) State transportation reports and statistics

(b) Town transportation reports and statistics

(c) Utility reports and EIS'

(d) Police records (state and town)

VI. PUBLIC SERVICE AND FACILITY IMPACTS

General: The full range of so called "public services" including police and fire protection, general administration, recreation, health care, education, water supply, solid waste and sewer service may be impacted by a plant siting. To the extent that significant in-migration of a temporary work force occurs, the negative consequences of the "boom-bust" phenomenon may be anticipated. To the extend that it does not, substantial revenues may become available for major improvements of services and facilities.

Variables and Interactions:

(1) Two variables are of critical importance in determining the nature, range and magnitude of impacts experienced by any public service sector:

(a) The degree of "temporary" work force in-migration with consequent increases in local population (workers plus families). See Demographic Impacts

(b) The level, quality of existing services and facilities relative to demand; e.g., is there surplus capacity or expansion capability? If so, how much? How old are facilities, etc.?

(2) Several variables are of considerable significance in determining whether a community is capable of effectively responding to these impacts, regardless of the service sector effected:

(a) The size and "professionalism" of operating staff in town government

(b) Size of department budgets

(c) Revenue sources available to respond to plant related impacts:

- plant taxes (if impacts within taxing jurisdiction)
- plant tax prepayments (if impacts predate tax availability)
- bonded indebtedness (if debt limits not exceeded or if deferred payment bonding legal)

(d) Other demands on public facilities and services:

- general demographic trends
- seasonal tourism

(3) Impact variables particular to recreational facilities:

(a) Plant related traffic levels and routing relative to tourist, beach traffic

(b) Recreational use of portions of plant site

(4) Impact variables particular to schools:

(a) Existing teacher to student ratios, enrollment levels, expenditures/ student

(b) Existing classroom capacity v. use

(c) Existing scheduling (double sessions, terms, etc.)

(5) Impact variables particular to health care (including mental and physical health):

(a) Types and capacity of special or emergency treatment facilities required by law; e.g., radiological treatment, etc.

(b) Contributions of utility to cost of providing these

(c) Emergency treatment facilities at job site- who provides?

(d) Degree to which temporary work force causes significant dislocations with consequent effects on mental/emotional health services

(6) Impact variables particular to police and fire protection:

(a) Crime levels - misdemeanors and felonies

(b) Degree to which utility assumes responsibility for plant security and fire protection (direct or financial)

(c) Degree of public protest and demonstrations (as at Seabrook)

(7) Impact variables particular to water supply, sewers and solid waste disposal:

(a) Quality, source, and quantity of drinking water, especially new sources

(b) Water quality, quantity impacts of plant, e.g., lowered water table, salt water intrusion, etc.

(c) Availability of state and federal funds for sewers and waste disposal

(d) State and federal waste disposal regulations and policies; e.g., sanitary landfills, hazardous wastes, etc.

Data Sources:

(1) Interview:

(a) State recreation and planning officials

(b) Town recreation and planning officials

(c) Town manager

(d) State education department officials

(e) Town school superintendent

(f) State health department officials

(g) Town health department officials

(h) Hospital administration

(i) Town mental health officials

(j) State police

(k) Attorney General's Office

(l) Town police chief

(m) State Fire Marshall's Office

(n) Town Fire chief

(o) State water supply officials

(p) Town public works director

(q) Town engineer

(2) Hard Data Sources:

(a) State department reports and statistics

(b) Town department reports and statistics

(c) Town annual reports

(d) Center for Urban Policy Research, Housing Development and Municipal Costs

(e) Urban Land Institute, Do Single Family Homes Pay Their Way?

(f) National Board of Fire Underwriters, Standard Schedule for Grading Cities and Towns of the U.S. with reference to their Fire Defenses and Physical Conditions

(g) Office of Management and Budget, Standard Industrial Classification

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