

ENERGY NEW TOWNS:  
A LOOK AT POPULATION AND SOCIOECONOMIC PROBLEMS AND SOLUTIONS

by

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A MASTER'S REPORT

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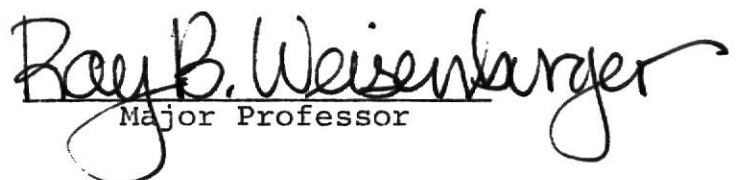
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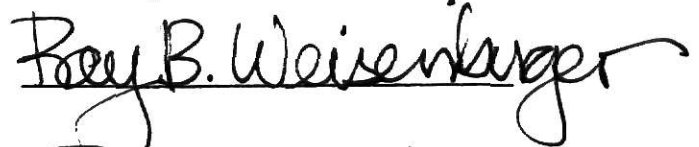
To my wife Carol, who's constant support, encouragement, thoughtfulness and typing skills, made Graduate School and this report possible. And to our daughter, Kirsten, who for the first 14 months of her life contributed more to the completion of this report than she will ever know.

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## CHAPTER 1

### INTRODUCTION

#### Background

If an energy producing power facility is built in a relatively isolated area with a sparse population, in all likelihood it will have an important influence on the areas economic pattern, level of government service, social structure, activities and quality of life. Conversely, if a plant is built relatively close to a highly populated center of economic activity, its potential socio-economic impact will be less significant.

During construction and operation an energy facility will draw into the local area a body of highly paid workers. While most of this work force and its payroll will depart when the plant starts up, the facility is a sizeable addition to the local tax base. The revenue from it, however, will be offset partially by increased demand for services such as water, roads, traffic control, police, fire and health protection and sewage disposal. There is also commercial activity which a power facility may stimulate such as additional banks, retail stores and

service organizations.

Planning for the improvements in community facilities which may be needed to accomodate a new energy power plant, with its association employment and service enterprises, could lead to a general upgrading which would stimulate the broad economic growth of a particular area.

Obviously, it is imperative that one recognize and plan for the many impacts that can result from the construction of massive energy facilities. The following quote exemplifies that need:

Our projections suggest that in the next two decades we will triple the present electrical power generating capacity but we can do so with far fewer new sites than the number the industry presently occupies. The reason is that most of the new capacity in the next twenty years will come from some 250 huge power plants of 2 to 3 million kilowatts each. By contrast there are some 3,000 power plants in existence today. While there will certainly be small plants in addition to the 250 or so large plants, the siting problem in the future will not be one of finding room for a proliferation of energy power plants, but rather being sure that the relatively small number of mammoth-sized plants are adequately planned and located to meet the twin goals of low-cost, reliable power and energy while preserving the quality of our environment and life. The need for coordinated planning to identify the prime sites that will best satisfy the main economic and environmental requirements for future energy plants is rather obvious. Each of these plants with an on-site investment of some \$300 to \$400 million will be among the largest industrial establishments in the nation. In the aggregate they will represent upwards of \$80 billion of investment profoundly affected by the public interest.<sup>1</sup>

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<sup>1</sup>The Energy Policy Staff, Office of Science and Technology, Considerations affecting Steam Power Plant Site Selection, (U.S. Government Printing Office, Washington D.C., May, 1969), P.VIII.



As evidenced by the above quotation, construction of massive energy facilities is planned in the near future for this nation.

The question remains, how does one plan for the impact of such construction? How should sudden population increases be handled with the realization that declines are imminent upon completion of construction? How will population increases alter various community services such as housing, police and fire protection and the tax base? What will it mean to the local citizen? Who really gains and loses from such a massive and limited influx of capital into an area?

Before one can begin to analyze the many problems created by massive energy facilities we must first have a basic understanding of the "cause" and "effect" relationship of the energy crisis to construction of energy facilities.

#### General Energy Related Problems of the Nation

In one sense the term energy crisis means simply that the supplies of fuels and power are less than one wants or, that they might cost much more in the future. In another sense, an enlargement of the first, it refers to a tangled web of problems concerning the quality of the environment and the availability, marketing and growing demand for energy resources. Figure 1 is a

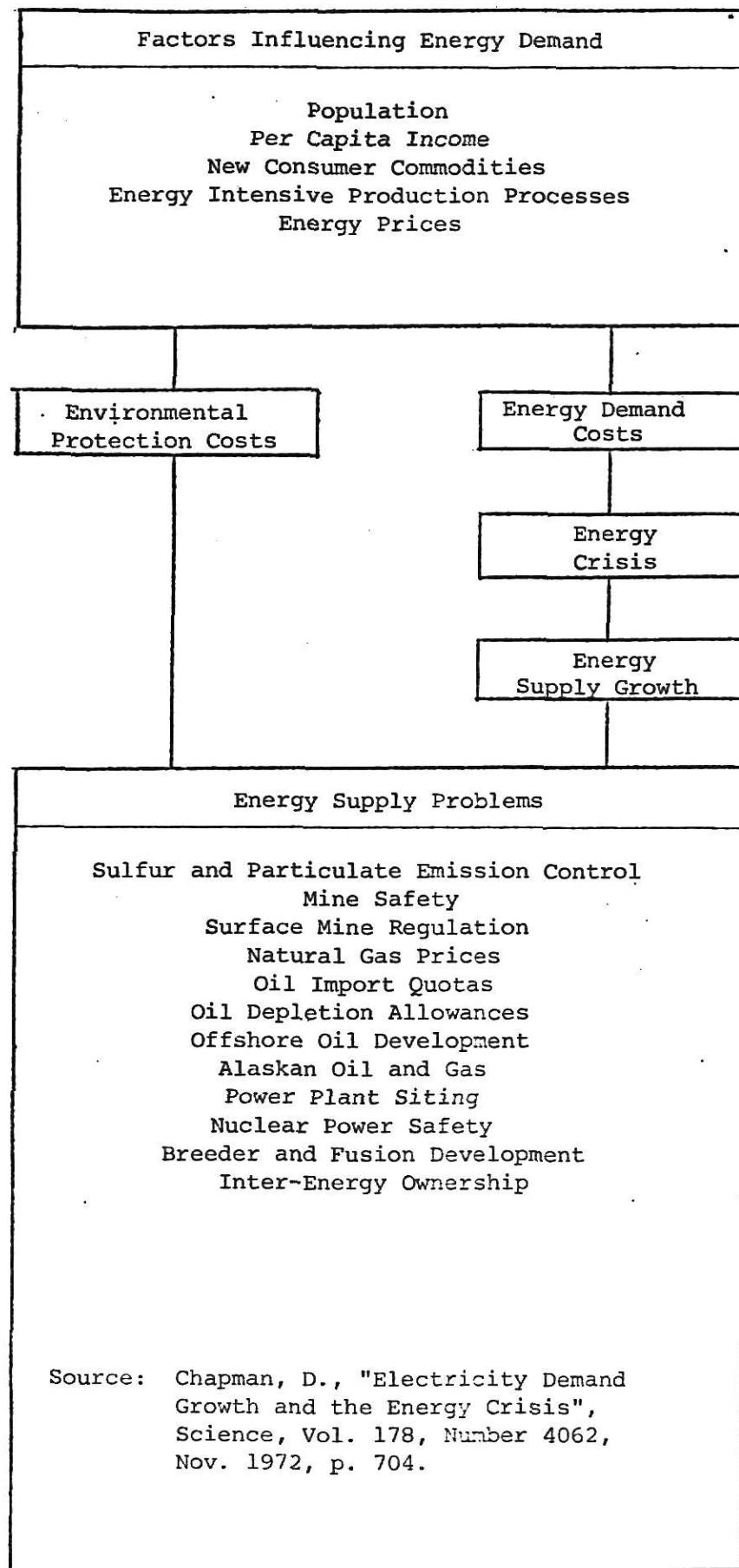
diagram of these problems. We can see, for example, that our perception of the need for power plant siting is influenced by our understanding of the energy crisis. In turn, our view of this possible crisis is affected by our beliefs about the growth of the demand for energy. If energy prices significantly influence this growth, then our energy system has some interesting problems. Regulation of surface mines, for example, could reduce the demand for the development of power plants through the mechanism of higher costs and prices and reduced growth rates for demand and supply.

However, I believe that the growth of demands for electrical power will be autonomous. That is, demand will grow independently of any changes in the factors box at the top of Figure 1 or these factors will themselves continue to develop according to past patterns. However, it is not the intention of this report to discuss the energy crisis of this nation. These basic and general facts are presented in this context only to serve as supporting or background material for the emphasis of the research.

From Figure 1 we can see growth, as based on the energy demand factors, in the fast pace development of energy towns. In a strict sense, problems of energy towns are directly related to factors influencing energy

FIGURE 1  
ENERGY SCHEMATIC

-5-



demand as seen in Figure 1.

That is to say, that the problems of energy towns are synonymous with the factors influencing energy demand. For example, an increase in demand for electrical power induced a power company to build a new energy producing facility in order to meet this demand. Depending on many factors, such as the size of the facility, location, etc., the construction of the power plant may further increase the demand for electricity in that area. To what degree will depend on uncertainties such as, size of construction force, induced employment and construction time line. Therefore it is apparent that the many problems of energy towns "feed on" the factors influencing energy demands.

#### Purpose

As a direct result of the energy crisis of recent years, our nation has witnessed tremendous increases in the demand for power or energy.

Studies have indicated that for the past 30 years, electric power loads have grown at an average rate of 7 percent per year requiring an approximate doubling of electric power facilities in each decade. Forecasted load growth during the years to 1990 indicate that expansion can be expected to continue in much the same pattern as that experienced in the last three decades.<sup>2</sup>

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<sup>2</sup>Ibid., p. 2.

Power company officials presently are receiving tremendous amounts of pressure from governmental and manufacturing sources as well as the private citizenry to provide methods of satisfying the projected energy demands for this nation.

This ever increasing demand for more efficient and improved energy sources has given rise to what is commonly referred to as "energy towns".

Energy towns will be referred to in this report as: Communities whose legal boundaries existed prior to construction of an energy producing power facility in close proximity to the community and whose population increased at such a rate so that the community could not adequately maintain existing services and the existing quality of life. Specific problems associated with this growth are discussed in Chapter 3 of this study, while the quality of life is defined on page 82 of this study.

The problem lies herein. How do we construct massive power plant facilities with the idea of satisfactorily meeting the increased demand without causing irreparable population and socio-economic damage to a particular area? Obviously many trade-offs must exist and a solution that will satisfy both energy demands while maintaining an adequate living environment must be reached.

The purpose of the Master's Report will be to

identify some of the trade-offs that must prevail if our nation is to become less energy dependent within the next decade while identifying problems and various methods of handling population and socio-economic considerations of the monster that is a direct result of the energy crisis and increasing demand, energy new towns. More specifically, the research will identify various population and socio-economic problems characteristic of energy town developments and discuss and analyze methods and financial assistance programs available for dealing with these complex problems.

## CHAPTER 2

### HISTORICAL CHARACTERISTICS OF RAPID GROWTH DEVELOPMENTS: FIVE CASE STUDIES

Historically speaking, the problems associated with rapid development can be witnessed throughout the growth of this nation. These problems are nothing new, they have just recently received a new emphasis with the increased awareness of the world energy situation.

In the 1800's, mining boom communities were commonplace in Colorado, California and Alaska. The majority of the communities most severely affected by the "gold rush" were practically nonexistent before gold was discovered in close proximity to the various communities. While many of the problems associated with the creation of mining boom communities were of a somewhat different nature from problems of more recent energy developments, there is an amazing similarity associated with the problems and difficulties of the two. For example, the lack of temporary housing, medical facilities, police and fire protection, transportation problems and an overall unavailability of various community facilities are problems common to any

rapid growth situation.

The 1930's saw the migration of midwestern farm operators to the west seeking new economic opportunities. Many communities of the west were unable to accept this unexpected influx of new population. The increased population caught many communities by surprise and shortages and inconveniences characteristic of rapid developments occurred.

The 1940's and 1950's saw the rapid expansion of the military industrial complex of this nation. Many communities experienced growth problems as a result of defense development.

This chapter will discuss briefly five such case studies which occurred in the late 40's and early 50's, all related to the rapid growth phenomenon. Specific problems associated with each case study will not be discussed in detail for reasons of brevity. However, similarities and differences between the five case studies will be and hopefully, general similarities between the defense developments of the 40's and the energy developments of the 70's will be identified. For specific details concerning each case study, please consult the bibliography or footnotes for references. Specific problems of energy developments are discussed in Chapters 3 and 4 of this Master's Report.



The case studies to be reviewed here are as follows:

1. Lower Bucks County, Pennsylvania
2. Grumman-Long Island, New York
3. Dover, Delaware
4. Sampson-Seneca County, New York
5. Savannah River Area

The five case studies which constitute Chapter 2 of this report were selected to illustrate different sizes and types of use, geographic areas, focal study areas, and varying kinds of sponsorship.

The first case study, the United States Steel Corporation's Fairless Works, deals with an integrated steel mill announced in December 1950 for construction in the lower part of Bucks County, Pennsylvania. The focal study area includes 18 minor civil divisions in lower Bucks County, all lying between the metropolis of Philadelphia and the city of Trenton. The population of this major impact area was 69,343 in 1950. The installation site comprised 3,840 acres, or about 6 square miles.<sup>3</sup> Placed in one corner of the lower Bucks County area, this major installation by private industry, but

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<sup>3</sup>Institute for Urban Studies, University of Pennsylvania, Accelerated Urban Growth in a Metropolitan Fringe Area: A Study of Urbanization, Suburbanization and the Impact of the U.S. Steel Plant in Lower Bucks County, Pennsylvania, Volume II-Project Report, 1954.

related to defense considerations, constituted a new large type of use in the fringe area of a metropolitan environment.

The second case study, the Grumman aircraft plant on Long Island, New York, examines a "Naval shore establishment", in the sense that particularly during its period of initial development the Grumman aircraft plant was primarily devoted to the production of aircraft for the United States Navy. The Grumman focal study area embraces parts of Nassau and Suffolk Counties on Long Island in New York State. Together these counties had a population of 948,894 in 1950. The site of the installation covered 4,500 acres, or about 7 square miles.<sup>4</sup> It involved a large industry requiring highly skilled workers, located in a suburban area of a great metropolis, New York City.

The third case study investigates a United States Air Force Base reactivated in mid-1952 in the vicinity of Dover, Maryland. Its primary impact area consisted of the city of Dover and environs in Kent County. The 1950 Census for Kent County showed a population of 37,870. The site occupied 3,312 acres, or about 5.2 square

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<sup>4</sup> Cahill, H.P. and Klingenstein, R.J., A Case Study of the Environmental Growth and Development of the Grumman Aircraft Engineering Corporation as a Component of the Naval Industrial Shore Establishment, a thesis submitted to Princeton University, 1956.

miles.<sup>5</sup> This case study deals with a large airfield and related facilities and personnel, established near a state capital in a productive rural area.

The fourth case study is concerned with a training camp first used by the United States Navy. This camp, Sampson, was established in the context of an agricultural area on the shores of one of the Finger Lakes in central New York State but near a smaller city, Geneva, New York. In 1940 the census date nearest the date of installation, the population of Geneva and Seneca County was 412,000. The camp site consisted of some 12,000 acres, or 19 square miles.<sup>6</sup> This case study deals with a large military training camp established in a predominately rural area devoted to agricultural uses in the vicinity of a relatively small city.

The fifth and final case study deals with the Savannah River plant of the Atomic Energy Commission, established in South Carolina on the banks of the Savannah River, near Augusta, Georgia. The major impact area consisted of all of four, and parts of three, counties

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<sup>5</sup>Whelan, James E., The Impact of a Military Establishment on an Adjacent Community: A Study of the Dover, Delaware-Dover Air Force Base Complex, Princeton University, 1962.

<sup>6</sup>Church, Archer E., Sampson: A Study of the Growth and Impact of a Military Facility, Princeton University, 1962.

in South Carolina, as well as the Augusta metropolitan area in Georgia. The combined South Carolina and Georgia population of the impact area in 1950 was 165,237. The area of the installation consisted of 200,831 acres, or about 315 square miles, the largest of the sites among the five case studies.<sup>7</sup>

Lower Bucks County Pennsylvania, U. S. Steel Corporation - Fairless Works.

Geographically, Lower Bucks County lies between Philadelphia and Morrisville, Pennsylvania, across the Delaware River from Trenton, New Jersey. The unofficial "Lower" designation implies that the other parts of Bucks County were different from the lower part. This was true in 1950, since Bucks County was said to have three distinguishable sections. The northern section was primarily agricultural, except for a portion near Allentown-Bethlehem. Middle Bucks County, comprising about another third of the total county area, was the location of Doylestown (the County seat).

Lower Bucks, the southern third of Bucks County, was quite different from the remainder of the county. As a kind of transportation bridge between Trenton and

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<sup>7</sup>Chapin, Stuart F., et al., In the Shadow of a Defense Plant: A Study of Urbanization in Rural South Carolina, Institute for Research in Social Sciences, University of North Carolina, Chapel Hill, North Carolina, 1954.

Philadelphia, it was traversed by several highways connecting these two centers. U. S. Route 1 was the most heavily traveled route, and along it urbanization had been taking place well before 1950. Pennsylvania Route 13 also had attracted considerable development. The main passenger line of the Pennsylvania Railroad crossed the county as did the "Trenton Cut-Off" or freight branch. Many industries had already located along the railroad by 1950. All of these transportation facilities, however, had served to emphasize growth along these routes, with other areas remaining relatively rural. The Lower Bucks County area was devoted primarily to agricultural production such as raising spinach and other farm produce.

However, closer examination indicated qualifications of the Lower Bucks County area for another use. Here was a large area held by relatively few owners, one owner had some 2,700 of the 3,840 acres involved<sup>8</sup> and, therefore, reasonably simple to assemble; an area that was relatively flat, thus would need little modification; an area accessible to two major railway systems; and, best of all, its boundaries were adjacent to the Delaware River. In itself, this agricultural land meant little,

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<sup>8</sup>Philadelphia City Planning Commission, Industrial Land Use Plan, 1949.

except to the property owners, but taken in conjunction with what was happening elsewhere in the region, it was soon determined that the area was a prime industrial site.

What was soon to happen in the lower part of Bucks County is best understood if seen in the context of the national and international scene, the current tension had forced the United States into a production program that required more and more steel. The requisite expansion was in some cases accomplished by the enlargement of existing steel-producing facilities, in other cases, such as in Lower Bucks County Pennsylvania, by the building of entirely new units.

In addition, the steel industry was then undergoing major changes. The anticipated depletion of domestic ore supplies, for example, had stimulated the discovery and development of foreign reserves in Canada and Venezuela. Shipment of these ores by boat is necessary, and if a site for steel production could be chosen on a navigable waterway, direct delivery would be possible.<sup>9</sup>

Furthermore, changes in the basing point freight rate system dictated that any new production facilities

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<sup>9</sup> Institute for Urban Studies, University of Pennsylvania, Accelerated Urban Growth in a Metropolitan Fringe Area: A Study of Urbanization, Suburbanization and the Impact of the U.S. Steel Plant in Lower Bucks County, Pennsylvania, Volume II - Project Report, 1954, p. 16.

should be located as close as possible to the largest markets. In 1950 more than 40,000,000 persons lived within overnight trucking distance of this particular site.<sup>10</sup>

Other factors, such as limited opportunities to expand in existing locations elsewhere, also contributed to the decision that led to construction of U. S. Steel's Fairless Works. Like most other modern industry, steel showed the trend toward location at the periphery of urban areas where large sites were available to provide for horizontal operations, storage facilities, automobile parking, and future expansion.

U. S. Steel's December 27, 1950, announcement regarding the plant marked the beginning of industrial expansion of boom proportions. Actually, it was not only the coming of U. S. Steel that sparked the development, but a combination of the steel mill and other expansion of industrial and housing construction activity in the area. For example, the Kaiser Fleetwing plant in Bristol Borough shortly announced a forthcoming employment increase from the existing few hundred to several thousand. Together these changes propelled

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<sup>10</sup>U. S. Department of Commerce, Bureau of the Census, 1950 Census of Population, General Population Characteristics, 1950.

Lower Bucks County into a boom of tremendous proportions.<sup>11</sup>

The desirability of designating part of Lower Bucks County as a Critical Defense Housing Area (CDHA) per Section 101 of Public Law 139, 82nd Congress, became evident. Accordingly, a group of eighteen minor civil divisions were so identified on December 3, 1951.<sup>12</sup>

It soon became evident that not only were there to be substantial changes in the area, but that the rate of change was to be much greater than in the past, and the magnitude and ramifications of the changes were to reach the point where the area's total physical pattern and community life might be greatly transformed.

The CDHA communities were faced with problems that were entirely new to them. Not since 1800 when the iron and steel business began migrating to western Pennsylvania had such a change taken place. All at once, with the return of this industry, CDHA communities were thrust into dealing with problems often beyond their financial resources and previous experience. Even legislation requisite to dealing with the emerging problems was inadequate, not to mention county or municipal planning programs and professionally trained technicians

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<sup>11</sup>University of Pennsylvania, Op. Cit., p. 17.

<sup>12</sup>Defense Housing and Community Facilities and Services Act.



to prepare development plans.<sup>13</sup>

The major precipitating, but not exclusive, factor in the CDHA development was the building of the Fairless Works Steel Plant. What happened thereafter was like a chain reaction. The construction force requirements for such an undertaking were expected to involve upwards of 10,000 persons at a peak sustained for several months, with nonpeak months not far below this figure. These workers had to have ready access to the site, a situation that was particularly difficult in view of the fact that at least half of the site's perimeter was bounded by the Delaware River. Transportation facilities had to be improved, especially highways, since there was hardly any local public transportation serving the site. Even though construction proceeded around the clock, existing two-lane roadways were not adequate to funnel the inevitable traffic. The delivery of construction materials also presented a problems, inasmuch as no railroad touched the site; spurs had to be installed promptly.<sup>14</sup>

And where would the construction force live? Even though much of this labor force was destined to be drawn from nearby areas, still others--including specialists in steel mill erection--had to be imported and housed for a considerable period. The CDHA, by definition, was not

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<sup>13</sup>University of Pennsylvania, Op. Cit., p. 19.

<sup>14</sup>Ibid., p. 41.

a surplus housing area. Consequently, several thousand new housing structures were soon projected for the area, and some placed under construction immediately. The first housing project of any size, Fairless Hills, was given temporary financial backing by the U. S. Steel Corporation, which followed a policy of early withdrawal to avoid any semblance of "company town" operations. Changes in the structure and scope of local governmental operations were also required. New administrative and fiscal problems called for the skills of professional staff and technicians. Previously delayed zoning ordinances, building codes, subdivision regulations, and planning commissions had to be expedited. Funds had to be secured for providing water supply and sewage disposal systems, schools, and other facilities.<sup>15</sup>

Within a short time after the announcement of the building of the Fairless Works, large-scale housing developments for almost 100,000 persons were publicized. Most of the occupants were bound to be newcomers to the CDHA. Provisions for integrating these persons with the "old residents" were of urgent importance.<sup>16</sup>

Some of these problems required immediate handling. Reducing highway congestion, for example, had to be tackled at once. Subdivision control, if put into effect promptly,

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<sup>15</sup>Ibid., p. 44.

<sup>16</sup>Ibid., p. 45.

could preclude haphazard development of the area. Other problems were of less crucial significance but could not be delayed too long. School sites had to be reserved before they were absorbed in the new construction programs. Sewage, water, refuse--all had to be planned for in detail. All in all, great changes seemed inevitable for the CDHA.

Although the CDHA was in the shadow of both Philadelphia and Trenton, the Lower Bucks County area was relatively quiet and local in orientation, the only urban parts being sections of Bensalem, Lower Makefield, Morrisville, and Bristol. Local interests predominated among the population and the political and social life of the area was fairly conservative, being strongly Republican and marked by special interest in local issues, even county and State matters received relatively little attention. This partly accounted for the relatively conservative reaction of local and county officials to the changes about to take place.<sup>17</sup>

The Lower Bucks County area was not rural in terms of its main concerns, though there was considerable agricultural activity, including highly organized commercial farming operations such as those carried on by the Starkey family (whose properties later were purchased for the major part of the steel mill site) and by King Farms (claimed to be the country's largest commercial farm operating on leased

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<sup>17</sup>Ibid., p. 8.

land). Neither was Lower Bucks predominantly urban. For example, except for Bristol, even large communities such as Morrisville did not yet have sewage and a sewage treatment system; publicly operated water supply systems were available only in the largest places, otherwise small private systems or individual wells were used. There was a relatively low level of welfare services.<sup>18</sup>

World War II, with its industrial expansion in the Bristol Pennsylvania area, had brought indications of what might be in store for the lower Bucks County area if further growth took place. But certainly few expected the imminent boom and its associated problems that occurred.

Grumman Aircraft Plant - Long Island, New York: Component of the Naval Industrial Shore Establishment.

The Grumman Aircraft Engineering Corporation is a large manufacturer of naval aircraft parts and assembly located in Bethpage, Long Island, New York. A major portion of the existing Bethpage plant was constructed by the Navy during World War II and later purchased by the Grumman Corporation. That portion retained under government ownership was leased, and the company's production effort, with several exceptions, was dominated by Navy orders. Advances in jet aircraft design, coupled with the fact that the surrounding

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<sup>18</sup>United States Housing and Home Finance Agency, A Guide to Federal Aids for Housing and Community Facilities For Critical Defense Housing Areas. March 1952, p. 22.

community had built up solidly around the plant's boundaries, necessitated relocation of jet aircraft final assembly and test operations to a more isolated site at the eastern end of Long Island. In 1956 the new plant was Navy owned, leased to Grumman, and in production.

Early in 1951 Grumman representatives began seriously to plan the expansion of permanent facilities beyond the Bethpage, Long Island site. Production capacity was inadequate for projected Navy contract schedules. Runways were too short for testing experimental jet aircraft with safety. The surrounding residential community had established itself dangerously close to the runways, and noise from high-powered jet engines (the reduction of which was not in the offing) already had resulted in many complaints from the adjacent community. It was imperative that the final assembly and testing of jet aircraft be removed to an isolated and more spacious location.<sup>19</sup>

Consideration was first given to the possibility of relocating to a less strategically vulnerable point in the Midwest away from the Atlantic coastline. Such a move had been made by a competitor several years previously. Unfortunately, that company had little success in persuading its employees to move with the plant; several years were, therefore,

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<sup>19</sup>Cahill, H. P. and Klingenstein, R. J., A Case Study of the Environmental Growth and Development of the Grumman Aircraft Engineering Corporation as a Component of the Naval Industrial Shore Establishment, a thesis submitted to Princeton University, 1956, p. 19.

required to recruit and train replacements, during which time production suffered.<sup>20</sup>

Grumman officials were concerned about losing the technical capabilities developed within the staff over the preceding years. Their employees were permanent residents of the Island and enjoyed the advantages of living in close proximity to New York City. Undoubtedly, there would be strong resistance to relocation away from the area--even if such resistance meant sacrificing current employment arrangements. It was decided to confine the investigative site studies to the boundaries of Long Island. This had the further advantage of reducing the scope of the problem to a departmental expansion rather than a complete plant relocation. The nerve center could thus remain at Bethpage, Long Island, and operations could be controlled in much the same way as during World War II.<sup>21</sup>

Keeping in mind the basic objectives, the following site features were stressed: distance from existing and potential urban developments; noninterference with main highways or traffic arteries; minimum interference with agricultural interests; freedom from high towers or other aerial obstructions; remoteness from air traffic patterns of other airports; satisfactory terrain for construction

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<sup>20</sup>Ibid., p. 20.

<sup>21</sup>Ibid., p. 23.

purposes; availability of electrical power; accessibility by highway and railroad; sufficient acreage to accommodate plant facilities and two runways approximately 10,000 feet long; and easy access to and from Bethpage, Long Island.<sup>22</sup>

The site selected was approximately 50 miles east of Bethpage and six miles west of the business district of Riverhead. Most of the 4,500 acres was woodland. The remaining 30 percent consisted of potato farms miscellaneous dwellings and summer cottages. The area was bounded on the south by a group of small lakes from which flowed the Peconic River. On the north was Route 25, the principal arterial highway connecting Riverhead and New York City.<sup>23</sup>

Nearby were the hamlets of Calverton, Manorville, and Wading River, each with a population not exceeding 300 persons. Calverton and Manorville were both station stops on the Greenport Branch of the Long Island Railroad. Calverton was a minor shipping center for farm produce and fertilizer. Manorville was residential in character. Wading River, on the north shore, was a residential community that enjoyed some popularity with vacationists. Other summer cottage communities were scattered around the area. Except for the towns of Riverhead, Bellport, Patchogue, and Port Jefferson, the entire area was rural and sparsely settled.

Area transportation requirements were for the most

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<sup>22</sup>Ibid., p. 31.

<sup>23</sup>Ibid., p. 74.

part served by privately owned vehicles. The Long Island Railroad provided service to and from New York by two trains daily in each direction. Travel time was upwards of two hours, with the result that there was little or no rail commuting. A bus line made two round trips daily between Riverhead and Patchogue.<sup>24</sup>

The nearest commercial center of any importance and the area high school was in Riverhead. Churches of various denominations were also located there as well as in the three hamlets.<sup>25</sup>

The Calverton site had the basic features desired by the Grumman Corporation, and the feasibility of the location was verified by an independent preliminary engineering study made of the area.<sup>26</sup>

Satisfied that the Calverton site was the best available, an architectural-engineering concern was engaged to develop specifications and designs from which the additional facilities needed for Grumman's expansion could be constructed.<sup>27</sup>

At first Grumman planned to acquire all the land and sell to the Navy that required for the government-owned

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<sup>24</sup>Ibid., p. 81.

<sup>25</sup>Ibid., p. 82.

<sup>26</sup>Ibid., p. 85.

<sup>27</sup>Ibid., p. 86.



runways and buildings. Accordingly, 583 acres were purchased through the Montauk Building Corporation, a subsidiary of Grumman at an average cost of \$90 per acre.<sup>28</sup>

It was soon discovered that the remaining property had been subdivided many years previously and that several hundred owners were involved. Many who lived in states as far away as Florida and the Midwest had never seen their land and did not realize that the "Long Island Estate" they had acquired was actually only sandy, scrub pine wasteland. When it became evident that clear title to the complete area could not be purchased without Government condemnation, the company negotiated with the Navy to take over the complete project.<sup>29</sup>

Prior to Congressional consideration and approval, it was necessary that the Navy have the area surveyed and appraised to determine acquisition costs. The private appraisers engaged for this work conducted preliminary inspections between November 8 and 14, 1951 and submitted their reports on the 15th. The proposed facility project was approved by the Secretary of the Navy on December 21, 1951. The request for land acquisition was approved by the Armed Services Committee of Congress on January 15, 1951.<sup>30</sup>

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<sup>28</sup>Chapin, F. S., etal., In the Shadow of a Defense Plant, Institute for Research in Social Science, University of North Carolina, June 1954. p. 43.

<sup>29</sup>Ibid., p. 44.

<sup>30</sup>Congressional Record, 1951.

Western and central Long Island contributed the majority of construction workers to the contractor's force. Contrary to early expectations, very few workers were recruited from the Riverhead area. Average labor force during construction was 525 with the peak of 800 occurring during September 1953. Although the majority of workers commuted from their regular homes, many moved into the local area and were accommodated in surrounding tourist houses, a few motels, and numerous farm houses that took in boarders. Inasmuch as these workers were distributed over an area roughly 20 miles in radius, their presence in a community well adjusted to transient vacationists had little, if any, apparent impact.<sup>31</sup>

In the absence of adequate rail and bus transportation, private automobiles and car pools were used exclusively by construction workers in commuting to and from the work site. In anticipation of increased highway traffic upon commencement of plant operations, the Navy and Grumman met with representatives of the U. S. Bureau of Public Roads and the New York State Department of Public Works in September 1952 to determine access road requirements.<sup>32</sup>

It was estimated that the plant would be manned and operated by 2,000 employees working one shift in normal

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<sup>31</sup>Cahill, H. P., and Klingenstein, R. J., Op. Cit., p. 92.

<sup>32</sup>Ibid., p. 101.

peacetime production. A more urgent national situation could be expected to increase this number 50 percent. In event of a maximum national emergency, operations would expand to two shifts: 7,000 workers in the day and 5,000 at night. Parking facilities for 1,810 cars were included in the plans, and normal traffic out of the main gates was estimated to average 2,000 vehicles per day. Sixty percent, or 1,200 vehicles per day, were expected to go east toward Riverhead and 40 percent, or 800 vehicles per day, would go westward on Route 25. Although employment would increase 600 percent under maximum emergency conditions, the number of vehicles at the gates was predicted to be held to 4,000 by fuel rationing, group riding, and operation of public carriers.<sup>33</sup>

At the time of the access study, the only traffic information available for the area was for Route 25 and 25A (alternate east-west highway from Port Jefferson which joined Route 25 just east of the Peconic River Facility). Data from a 1951 survey were expanded from a one-time count in August 1952 for 12 daylight hours as follows:

		<u>Vehicles/Day</u>
Route 25	West of Route 25A	6,477
Route 25	East of Route 25A	7,485
Route 25A	Northwest of Route 25	1,502

The highway representatives considered that the

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<sup>33</sup>Chapin, F. S. et al, Op. Cit., p. 75.

state roads would be adequate and that most county and township roads would serve the increased traffic if maintenance were appropriately increased. A serious problem existed, however, on two secondary road sections which constituted the access route from the plant gate to Route 25. These had already started to break up after six months of construction traffic and were expected to be impassable within twelve months. Town and country officials advised that funds were not available for this road repair work.<sup>34</sup>

Local opinion was that the disadvantages imposed upon the community by the jet airfield exceeded the benefits bestowed. Officials were not anxious, therefore, to readjust annual budgets to the detriment of roads already programmed that carried two or three times the traffic of this access route. Inasmuch as the deficiencies were serious enough to affect plant operations adversely, Federal and State highway authorities financed and performed the necessary access route improvement work.<sup>35</sup>

The communities near the new airfield received cooperation and some financial assistance from various federal agencies, the Navy and the Grumman Corporation. Because of the efforts of these three entities, the various

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<sup>34</sup>Ibid., p. 82.

<sup>35</sup>Cahill, H. P., and Klingenstein, R. J., Op. Cit., p. 126.

socio-economic impacts on the surrounding communities were limited both in the construction phase and the permanent employment phase.

Dover, Delaware: The Dover-Dover Air Force Base Complex

At mid-century, Dover, Delaware was a city proud of its colonial heritage, interested mainly in preserving its quiet and reserved way of life, its historical buildings and tree-lined streets. In 1949 Dover was reported as being "a calm, unhurried city of homes;" a city "not interested in industrial payrolls." As the State capital and retail trade center of the surrounding agricultural counties, Dover had merely doubled its population during the first half of the twentieth century, a rate of growth which seemed to satisfy the majority of the local citizenry.<sup>36</sup>

Approximately 3.5 miles southeast of the city lay an old Army airfield. Although an active training center for pilots during World War II, it had closed in 1946. But on August 14, 1952, a groundbreaking ceremony was held and the reactivation of Dover Air Force Base as a major Military Air Transport Service installation was underway.<sup>37</sup>

During the following decade, 1952-1962, the City of Dover and its surrounding area experienced an invasion

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<sup>36</sup>Martin, H. H., Dover, Delaware, Saturday Evening Post, Vol. 222, No. 8, August 20, 1949.

<sup>37</sup>Journal Every Evening, August 14, 1952.

of military personnel and their families estimated at over 20,000 persons. Their needs for housing, schools, retail goods, recreation and social activities put extreme demands on the region. The Dover of 1962 was quite different from the Dover that in 1950 was for all practical purposes a city without suburbs. The Community had expanded until more people were living in the contiguous housing developments than in the City of Dover.<sup>38</sup>

The main problems which existed in Dover during the 1952-1962 decade could said to be concentrated in three areas: housing, educational facilities and planning. In all three instances the community reacted differently.

The housing situation in Dover was adequate before the reactivation of the Air Base in 1952. However, with a very small backlog of available housing, the demand soon swamped the market. Several housing developments, built to minimal specifications, were constructed in the early days of the Base. However, this housing did not fill the demand for what was really needed: relatively low-and-medium-cost rental housing.<sup>39</sup>

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<sup>38</sup>Whelan, James E., The Impact of a Military Establishment on an Adjacent Community: A study of the Dover, Delaware-Dover Air Force Base Complex, Princeton University, 1962, p. 9.

<sup>39</sup>Ibid., p. 69.

Because of the lack of planning, zoning, and construction regulations outside of the city, the developers did not have to be concerned with the standards already existing in Dover. While the city was willing to extend its revenue-producing utilities to these areas, and realized the need of controlling construction in these areas, it had no legal power to do so.<sup>40</sup>

One feature of the local housing development during the growth period is the lack of a sizeable apartment project. It does not appear that the city ever actively encouraged the development of this type of housing. In the same respect, apartment blocks could have been easily developed inside the city, thereby adding to the municipal tax base. Presumably sufficiently high rentals would more than compensate for additional school and other service costs.<sup>41</sup>

While the problems of the school systems in Dover were great, the school administrators seemed to respond in a most satisfactory manner. The Dover School District used this growth period as a means of expanding and modernizing its facilities. The method of State support of public schools in Delaware meant that Federal grants could be used for the latter purpose, and thus eliminated

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<sup>40</sup>Ibid., p. 26.

<sup>41</sup>Ibid., p. 71.

the need for a major increase in school taxes to cover the costs involved.<sup>42</sup>

The Caesar Rodney District in Dover, because of its limited resources, was not able to cope with the additional loading of its existing facilities with the children of families living in military quarters. In this respect it was necessary for the Air Force to intervene and provide a school for these children. While the creation of a Base school eased the State's burden for contributing to the support of this school, it also prevented the community from acquiring an additional school at relatively little cost.<sup>43</sup>

It is in the field of planning, however, that the greatest need remained. While from the start of Base operations, Military officials encouraged the need for planning, it may have been that they were speaking to the wrong groups. Most of the requests for planning seem to have been directed to the Dover civic groups. Dover could plan no further than its city limits. With the Air Base 3½ miles away, no degree of control in Dover could satisfy the needs of the Air Force.<sup>44</sup>

However, while the impacts of reactivating the Base

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<sup>42</sup>Ibid., p. 83.

<sup>43</sup>Ibid., p. 84

<sup>44</sup>Ibid., p. 91.



were initially greatest within the Dover city limits, it soon became apparent that a great many more problems were developing along the corridor between the Military Reservation and the Dover city limits. Once it became eminent what the impacts would be on Dover, the proper local government channels reacted, however, Delaware legislation at that time prevented local authority from exerting any legal controls outside its present city limits. Therefore, the area was characterized by haphazard development and contributed to advancing urban sprawl within the region.

Sampson - Seneca County, New York, U. S. Naval and Air Force Establishment.

Early in 1942, soon after the beginning of World War II, it became apparent to the Bureau of Navigation (later called the Bureau of Naval Personnel) of the U. S. Navy Department in Washington, D. C., that there was a need for additional training facilities for the expanding United States Navy. Among the many sites considered for this purpose was one (later named Sampson) on the eastern shore of Seneca Lake, in upstate New York.<sup>45</sup>

On May 17, 1942, President Franklin Delano Roosevelt announced the selection of Sampson as a Naval Training Station. Land acquisition and construction

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<sup>45</sup>Church, Archer E., Sampson: A Study of the Growth and Impact of a Military Facility, Princeton University, 1962, p. 3.

commenced soon after. The new station, covering 2,535 acres, was completed in a mere 270 days at a cost, including land acquisition, of approximately \$56,000,000. Commissioned on October 17, 1942, Sampson Training Station was the second largest in the nation (the only larger station being located at Great Lakes, Illinois) and continued in operation until July 1, 1946. During this period of time the name was changed from Sampson Naval Training Station to Sampson Naval Center.<sup>46</sup>

A total of 411,429 naval recruits were trained at Sampson during its three-and-one-half years of operations. During the period of greatest intensity in World War II, 1,000 men per day completed training and were transferred to new duties, while an equal number of new recruits reported each day for their first taste of Naval life. A U. S. Hospital and the U. S. Naval Personnel Separation Center also were located at Sampson. The hospital operated throughout the Naval operation of Sampson, while the Separation Center operated from August 24, 1945 to May 31, 1946, when it was disestablished.<sup>47</sup>

Sampson was located on the eastern shore of Seneca Lake, in Seneca County, New York State, about 17 miles from the nearest large city, Geneva. Geneva is located in

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<sup>46</sup>Ibid., p. 4.

<sup>47</sup>Ibid., p. 5.

the adjacent county of Ontario, 285 miles northwest of New York City, 386 miles west of Boston, 51 miles west of Syracuse, and 47 miles east of Rochester. This location meant that approximately one third of the population of the United States lived within 350 miles, or eight hours' driving time, of the site. In 1940, just prior to the construction of Sampson, the population of Seneca County was 25,732, while the population of Geneva had decreased from 16,063 in 1930 to 15,555 in 1940. Since the natural increase in population in Geneva due to the excess of births over deaths during this period was 786, the actual loss of population was 1,294, or a decrease of approximately 8.5 percent, indicating that the city was on the decline.<sup>48</sup>

However, construction of the Sampson Naval Training Center reversed this declining trend for the city of Geneva and the region as a whole. The Geneva Times described the number of workers and the rate of build-up in employment as follows:

On June 3rd, just a week after the staff arrived at Geneva, 150 men were on the job. Just a month later, this number had risen to 3,800 and two weeks later, July 21st, there were 6,000 on the payroll. August 12th showed a total of 11,000 after the contractors had found

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<sup>48</sup>Walkley, Floyd F., Master Plan Report of the City of Geneva, Ontario County, New York, August, 1958, p. 3.

it necessary to advertise widely for more workers, and September 1st showed a peak of 15,500.<sup>49</sup> Shortly after September 1942, a new peak was reached of 17,835 employees. Some 15,000 were the prime contractor's men, and the balance those of the subcontractor. A total of 46,000 workers were brought in during the life of the contract. The high turnover, nearly three to one, can be attributed to the large percentage of incompetents hired and dismissed, and to those who gave up the struggle imposed by housing and transportation difficulties.<sup>50</sup>

It was realized that the several other war projects in the vicinity would cause labor problems. As a result, paid advertising to attract labor was resorted to in New York, Pennsylvania, Ohio, and New Jersey. The only inducement offered was long hours with a high percentage of overtime. The origin of the labor force was as follows:<sup>51</sup>

	<u>Percent</u>
Surrounding towns and villages	20
New York City metropolitan area	35
New York State (other than above)	15
New Jersey	20
Pennsylvania	10
Connecticut	5
Other	5
	<u>100</u>

The quality of labor was low in many jobs, and seriously

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<sup>49</sup>Huge Amount of Material Used in Building the New Naval Station at Geneva, the Geneva Times, September 20, 1942.

<sup>50</sup>Ibid.

<sup>51</sup>Church, Op. Cit., p. 46.

affected the construction. Nearly 50 percent of the employees were under 20 or over 45 years old. The younger ones were unskilled and inexperienced, and required much training before they could be effective. In addition, the work week of seven ten-hour days for a total of 70 hours per week, combined with the long trip to and from work, caused a high rate of absenteeism.<sup>52</sup>

Housing and feeding this great number of workers, as well as transporting them daily to and from the job site, required a great deal of organization. The local residents cooperated fully. At a meeting of the Geneva Chamber of Commerce with representatives of all the nearby communities, plans were made to house the workers, to transport them to and from the construction site, and to prepare for the future arrival of the recruits. As the result of an active campaign conducted by the contractor, every spare bedroom in all the towns and settlements for miles around was put to use. In addition, some trailer camps were established, and even remote farmhouses attracted tenants.<sup>53</sup>

Transportation also posed a serious problem. Private automobiles and subsidized buses and trucks were brought into action. Although hampered by the scarcity of tires and gasoline throughout the construction period, the

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<sup>52</sup>Ibid., p. 52.

<sup>53</sup>Ibid., p. 64.

contractors operated a total of 67 buses to transport the workers. The number of cars which entered and departed the site daily exceeded 2,500. Many workers traveled as far as 50 miles for housing quarters.<sup>54</sup>

Despite the inconveniences, the wages paid to the construction workers helped to compensate for hardships connected with housing and transportation. The weekly payroll for the civilian laborers was over one million dollars. The cumulative payroll for all personnel exceeded \$24,000,000. Records of the Bureau of Yards and Docks show that the average percentage of bonus overtime pay included in the weekly payroll was approximately 21 percent. Much of this money went directly in the local economy.<sup>55</sup>

Apart from the huge payroll and the increased demand for housing, there appears to have been little effect on the region. The workers themselves were either very well behaved or too exhausted to get into too much trouble. In the 1942 Seneca County Proceedings, the District Attorney reported, "The year appears to have been a normal one despite the fact that we had a large increase in population due to the construction of the Naval base at Sampson, New York. However, very little crime arose in Seneca County as a result of this although a number of fatal accidents did occur

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<sup>54</sup>Ibid., p. 65.

<sup>55</sup>Ibid., p. 66.

because of the heavy traffic." In addition, the Chief of Police of Geneva stated, "We naturally made special preparations when we heard so large a group would be here for several months, but it is surprising how little difficulty we have had. It is certainly far less than one could expect and our police records show very slight change from a year ago."<sup>56</sup>

Savannah River Area: Atomic Energy Commission

In 1950 on a 300 square mile tract of land bordering the Savannah River in Georgia, the Atomic Energy Commission began constructing a plant which was to be used in the preparation of the hydrogen bomb. The site selected was 27 miles south of Augusta, Georgia, the largest city in the area with a population of approximately 70,000, and a little farther distant from Aiken, South Carolina, a resort town of some 7,000 population. Approximately 6,000 natives of the area were displaced by the government project, including the entire population of Ellenton, Georgia, the largest town on the site with approximately 700 persons. In 1951, approximately 10 months after the initial announcement by the AEC, seventeen thousand workers were on the payroll of the construction force, and, when the peak period was reached in the summer of 1952, there was approximately

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<sup>56</sup>Seneca County Clerk, The Proceedings of the Board of Supervisors 1942, Waterloo Observer, 1943, p. 275.

40,000 workers in the area. In 1951 it was estimated that an additional 25,000 persons were in the immediate area of the plant, and when the peak period was reached in 1952 it was estimated that the population gain exceeded 100,000. Neighboring towns throughout a large peripheral area felt the drastic increase of the population. Augusta, Georgia's population increased approximately 7,000 people in six months, whereas Aiken, Georgia's population increased from 7,000 to 9,000 for the same six months' period. Smaller towns experienced an even greater proportionate increase. For example, Jackson, South Carolina, was a small cross-roads establishment of approximately 200 persons in 1950. Incorporated in 1951 it had a population of over 1,000. New towns, such as New Ellenton, also grew up in the surrounding area.<sup>57</sup>

As characteristic of most rapid growth situations, there was a tremendous increase in land values, especially along the highways leading to and from the plant site. Farm land along highways jumped in value from \$50 an acre to \$150. Commercial sites increased even more, some soaring from \$250 an acre to \$1,500 per acre.<sup>58</sup>

In general, the area was slow to add to its

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<sup>57</sup>Chapin, Stuart F., et al., In the Shadow of a Defense Plant: A Study of Urbanization in Rural South Carolina, Institute for Research in Social Sciences, University of North Carolina, Chapel Hill, North Carolina, June 1954, p. 33.

<sup>58</sup>Ibid., p. 42.



permanent housing supply, realizing that the construction boom period was a temporary one. Planning was done for the long range permanent operating force of some five to six thousand workers. Permanent housing progressed slowly in Augusta, North Augusta and other neighboring communities. The large gap between permanent housing needs and construction worker needs was bridged by trailer or mobile home accommodations. Trailer camps ringed the Plant Site, and it was estimated that some 3,000 trailers in 10 trailer camps and in isolated tracts were providing housing accommodations during peak construction months. Even this did not ease the housing situation sufficiently, and, to encourage the provision of an additional 4,000 trailers or mobile homes, the DuPont Company accepted bids from private suppliers and gave a 90 percent guarantee of occupancy.<sup>59</sup>

It was not long before clashes developed between the new residents of the area and the old settlers. This was particularly the case in Aiken, Georgia, long an exclusive resort town. The wealthy citizens were disturbed about the changes which were taking place and the loss of their exclusiveness. But more than that, they were disturbed over the loss of riding trails and the peaceful agricultural setting. Many resented and resisted the invasion of their town by the construction force. Crowded stores, traffic

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<sup>59</sup>Ibid., p. 62.

congestion and the trailer camps indicated to the residents of Aiken that their community was never to be as it once was.<sup>60</sup>

Compared with the scope of impact problems involved in the Central Savannah River Area, the local resources were virtually nonexistent, with the possible exception of Augusta. This situation derived partly from the fact that the philosophy of minimum government prevailed in South Carolina rural areas that were involved. The limited capacity of the local area to face the impact problems was very much related, therefore, to whatever initiative local leaders could marshal to tackle the problems. Considerable resort was made to informal meetings, participation by voluntary informal groups, and the local government officials, insofar as they existed, and were prepared to deal with these problems. Although there was a tradition of little interference by government and certainly by the outside in local affairs, the rural folk involved inevitably realized that outside help would have to be secured. Much of the activity on their part soon revolved around efforts to secure Federal and State help with their problems.<sup>61</sup>

Regrettably, much of the activity was totally

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<sup>60</sup>American Society of Planning Officials, Planning Advisory Service, Information Report No. 31, Impact of Large Industries on Small Communities, Chicago, Illinois, October, 1951, p. 17.

<sup>61</sup>Ibid., p. 18.

uncoordinated, although there was one effort (in May 1951) in the formation of the Western Carolina Council to undertake on an eight-county basis, within a 50-mile radius of the plant, some organization for approach to the problem. However, it also devoted most of its attention to assessing the problem and trying to secure outside aid.<sup>62</sup>

Although Federal Aid Programs were limited in this time period, what little was available was significant, but there remained no coordinating agency or group responsible for bringing together and organizing the air sources. Furthermore, in many cases there was neither specific legislation nor physical authority to permit material aid to be provided in advance of the changes. The Office of Defense Mobilization established an Area Defense Mobilization Committee but this was relatively ineffective in assisting the local areas, tending to focus its operations on assisting the agencies. In July 1952, the Office of Defense Mobilization designated a local representative to coordinate Federal programs in the area, but this function was terminated within a short time.<sup>63</sup>

Federal aids such as rent controls, highway programs, and similar operations were available early in the impact experience. Nevertheless, aids for the critical

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<sup>62</sup>Ibid., p. 19.

<sup>63</sup>Chapin, Stuart F., Op. Cit., p. 93.

problems of housing, community facilities, and local planning assistance were not readily available. The Housing and Home Finance Agency administered the housing program involved in Public Law 139 Critical Defense Housing Area, and with the Federal Security Agency had responsibility for community facilities. However, the amount of aid available was relatively limited.<sup>64</sup>

Public Law 815, in which the United States Office of Education provided financial assistance in building temporary or permanent schools, and Public Law 874 of the 81st Congress, in which contributions were made available to help meet operating expenses in these areas, were available. The Hill-Burton Hospital Survey and Construction Act involved Federal aid for health services. Some other minor programs from the Federal level were also available.<sup>65</sup>

State government aids were limited to those that came into use through Federal aid programs. Very few special assistance efforts were undertaken by South Carolina in this impact area.

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<sup>64</sup>Ibid., p. 69.

<sup>65</sup>Ibid., p. 71.

### Similarities in Case Studies

Ordinarily, the location of a new large industrial installation involves a site selection decision on the part of the sponsoring agency, industry, or government forces a decision likely to be beyond the control or significant influence of the impacted area. Generally the new use is not anticipated by the impacted area or, at best, is preceded by only a limited advance warning. This was most certainly the case in the location of military installations during wartime when security factors were of prime concern.

Also common to all these case studies is the fact that the new large installations generally are located in areas having had little, if any, experience in dealing with phenomena of such scale and type.

The rate of impact is predominantly rapid, and sometimes precipitous. This makes it extremely difficult for the inexperienced impacted area or community to react with speed and effectiveness, due partly to its inability to comprehend the nature of the impending impact.

Most of the impacted areas, are also poorly staffed and financed to provide the necessary community facilities for the new installation. There is, however, a great variation among the capacities of the impacted areas as well as their speeds of reaction in effectively dealing with the new problems.

In virtually every case study the new installation's effect on the impacted area involved a change from a predominantly rural or semi-urban type of living and development to an urban type of living and development.

Extensive site requirements are characteristic of large installations. This reflects not only their immediate development needs but also the necessity to provide an expansion factor for possible future use, such as the storage of nuclear waste of nuclear power plants.

If the prospective purchaser of the new territory is identified, whether government or industry, in some cases there is likely to be a rapid and substantial inflation in land values, resulting in a higher site acquisition cost. This factor partly accounts for the impacted area's often receiving short advance notice of the impending event. The standard acquisition practice is to establish a dummy corporation or real estate agency to assemble the parcel for later transfer to the intended user.

Not all displaced persons and types of activity remain in the area, but the tendency is for long-time residents and well-established businesses to endeavor to relocate in the vicinity, a problem complicated by inflated land values. The inflationary trends along with the land acquisition often means that persons displaced by the purchase frequently are faced with the problem of relocating in a market where they must pay a higher price than they

received for their property.

The development of most large military or industrial installations ordinarily involves a relatively short-run construction phase that is substantially different in characteristics from the long-run operation.

In the construction stage there is likely to be a heavy influx of civilian construction labor. The characteristics of this construction force will vary somewhat, depending on whether the type of installation is a relatively simple matter of providing a large number of dormitories or a fairly complex manufacturing establishment. In the first case carpenters may predominate; in the second case, the labor force may be composed primarily of steel workers and installers of heavy or complex machinery. The type of installation also affects the length of time a construction force remains in the impacted area.

Almost invariably there is a lag in the provision of commercial facilities, private housing, public utilities and other services.

It is notable that the reaction of local government in providing new facilities is generally slower than that on the part of private operators, such as private housing developers and persons interested in establishing commercial, retail, and other kinds of business undertakings to serve the new installation.

Concurrently, and in the interim until adequate

new housing is produced, there tends to be a heavy exploitation of existing housing via increased rents, as well as rapid and shoddy construction of expensive rates.

Usually there are disruptions in the local society and economy because of the exceptional demands placed upon the existing system. The local institutional structure, the banking facilities, and the professional services--such as doctors, dentists, and social workers--are likely to be overburdened.

A final common feature of large installation development is that of temporary changes in occupancy and intensity of use. In the case of a military installation, for example, there may be wide fluctuation in the intensity of use of the installation. In the case of industry, similar market-related variations in a production rate and, therefore, the employment pattern, are likely to be observable.

#### Differences in Case Studies

The differences that have been observed among the five widely varying case studies are as helpful as the similarities in understanding the nature of the impact of large installations on nearby areas.

These case studies involve considerable diversity in type and character of installation: a large steel mill in lower Bucks County, Pennsylvania; a naval jet aircraft manufacturing plant and airfield on Long Island; Air Force



and Navy training facilities in Delaware and New York; and an Atomic Energy Commission installation on the Savannah River in South Carolina.

The installations vary in sponsorship as well as in character, but all are related in one way or another to the national defense effort. The steel mill is privately owned. The aircraft plant is Government owned, but built and operated by a private firm. The Air Force and Navy military training installations and the Atomic Energy Plant are Government owned.

The pre-existing public image of forthcoming installations varies greatly. The difference in point of view expressed by individuals contemplating a large training camp, compared with a large industry likely to have a long history in the area, is obvious. In the mixed cases, such as that dealing with Grumman, where it was unknown whether the defense-related industry would be readily convertible to peace-time pursuits, there is likely to be a mixed reaction. The public image is related not only to the kind of installation but to the corresponding differences in types of personnel attracted to operate and occupy the installation.

The pre-existing images of the new uses differ not only in terms of the sponsorship, the kind of installation, and the people attracted, but also the long-run economic benefits that may be associated with them. Some

involve a projected long-run usage, whereas others carry a constant threat of precipitous withdrawal in case of a change of plan, as sometimes has taken place in connection with large military wartime training camps.

Differences in the quantities and characteristics of the population involved in the five new uses are particularly impressive. Uses involving hundreds of thousands of individuals, and high turnover, as in the case of Sampson, are quite in contrast with the relatively few thousand permanently employed persons involved in the Bucks County steel mill case study.

Variations in the impacted areas population and communities are readily apparent. For example, there is a distinct contrast between the Bucks County semisuburban style of life and kind of population and the Savannah River's predominantly rural population and traditional patterns of living.

Other differences are reflected in the capacities of local and other government structures, personnel, and financial resources of the impacted areas, prior to their coping with new installations of this size. In general, these government agencies have had relatively little, if any, experience either with installations of these sizes or the speed with which they are developed and, consequently, the greatly reduced reaction time available.

One of the major differences among the case studies

was the sponsor's preliminary contacts with the area, especially in preparing the impacted area for the expected impact. This varied among all the five cases and is highly unpredictable.

Development decisions are less complicated in the case of an industrial rather than a military installation, partly due to fewer channels and smaller numbers of clearances necessary prior to putting decisions into effect. In addition there appears to be some evidence that industry in large installations may provide a different, if perhaps not even better, public relations function with the impacted area. Reduction in the bureaucratic and legal blocks to coordination and decision making associated with military installations is of major importance. Furthermore, in the case of industrial installations there tend to be fewer political aspects of the originating and developing of the new installation even though, whether military or industrial, decisions with reference to future use and expansion of the new installation are generally not subject to any influence of the impacted area itself. One of the differences appearing in connection with an industrial site acquisition, for example, is that it tends to take place on a market basis, instead of involving condemnation, as is customary in the case of a large government installation.

Another readily observable difference in an installation acquired on behalf of the military services is

that the military is in a different position from industry and the local community in terms of involving Federal program supports for community needs such as housing, schools and highways.

Differences between the designed size of the new installation and the actual or realized size are substantial among the various five cases studies.

The final difference, related to all of the above, is that of the impact circumstances: the initial as compared with the reactivation or expansion of the installation. Another difference in type of situation is involved in the possible withdrawal of the installation which will only be mentioned briefly in the scope of this study.

#### Other Features

Not all of the characteristics of the five case studies are readily classifiable as similarities and differences. There are other features which vary from case to case, some of which are not common to all five cases either in terms of similarities or differences.

For example, in the case of military installations the factor of security may play a large part and substantially affect the nature of the initial contact with the impacted area. This is clearly different from the case of an industrial installation.

Reference has been made to the differences between

military and industrial sponsors' practice in site acquisition. The threat of condemnation for public or military purposes is open to the military, whereas industry lacks access to this device. Some land purchases are negotiated and some are not. Occasionally site acquisition encounters "holdouts" for particular parts of a desired site; in other cases the holdout device is relatively unused or somewhat risky in view of the possibility of condemnation at a court-determined price.

An important feature of the acquisition of sites for large installations is related to the welfare of the displaced people and uses. In spite of the usual, but variable, inflation of land values, the displaced persons and uses--industries, commercial activities, institutions, and others--are not always improved in their position by virtue of being paid a larger price for their property than they might otherwise have received. This tends to be true for the majority of displaced persons, although some small proportion is likely to benefit extensively. Generally, especially if the displaced persons and uses do not have ready access to adequate capital and cannot act quickly before inflation appears or outside competition moves in, they are likely to be in a disadvantaged position as a result of site acquisition procedures and timing.

Other features which are neither similar nor

different for all cases relate to variations in speed of getting compensatory action in the form of structures and staffing for new facilities for the new use and the impacted area. Attention is particularly called to the difficulties in providing schools and other community facilities. One of the major differences in the speed of adapting to the new installation is with reference to housing.

Another variation among the five cases is the length of time which elapses between the starting of the installation of some of the new uses and effective government action to provide assistance.

A similar feature, but one with broad variations internally and among the cases, is the relative degree of success or failure of the impacted area to see the broader development context in which the new use has appeared. Accordingly, there is sometimes a tendency to adopt a make-do, or temporary, solution to a problem rather than to view the overall content and undertake a permanent solution.

In some cases (for example, Grumman and Bucks County) a development similar to a large installation might have happened under other auspices or at later dates than those that actually occurred. In other words, the probability of something of major size appearing within these particular areas was high; it might not necessarily

have been undertaken under the same auspices as actually was done.

This discussion of similarities, differences and other features of large installations noted many points in common among these cases and, hopefully, enough points in common to merit using them for comparative purposes and as the basis for generalizations about other large installations. Nevertheless, unless there is some understanding of the variations among the cases, no matter how comparable, there will not be adequate provisions for making adjustments as variations appear in future installations somewhat similar to those examined here.

A study of the experience of these communities may be both rewarding and misleading. Since each community is unique, both in terms of the particular industry, the permanent or temporary character of the industrial establishment, the size, structure and characteristics of the town to begin with, and the many thousands of details which go to make an individual town, it would be impossible to generalize the magnitudes of expansion and facility requirements. Any attempt to do so would be misleading. However, perhaps one can find similar patterns of expansion and similar maladjustments which arise in many of these communities, and which, it can be predicted with fair accuracy, will arise in other communities similarly expanded. Herein lies the value of studying the boom communities of

World War II and the more recent experience in small communities which are the sites of new industries or energy expansion programs. Theory coupled with the experience of these communities may lead one to certain general predictions concerning the problems of planning for similar communities and to a general program for planning activity.



## CHAPTER 3

### PROBLEMS OF ENERGY TOWN DEVELOPMENTS

Hundreds of new energy projects from coal mines to nuclear power plants to offshore oil and gas wells are proposed to meet national energy needs and goals. Long term positive contributions to the local economy of a community so affected by construction of an energy facility are easy to assess; improved energy supply, increased employment, in-migration of skilled labor and diversification and expansion of the economic base. The energy produced will be of great benefit to the economy of the region and the nation as a whole.

But at what price are these benefits purchased? There may be overcrowded schools, higher prices and taxes, traffic congestion and pressures put on housing supply and medical services. Loss of the relaxed pace of life and friendly life style may very well occur. These impacts will face citizens of many communities across America. How are they to predict and plan for such impacts?

### Energy Projects

The national policies and programs being developed to resolve our energy problems include the conservation of energy, research and development of new energy sources and the construction of many new energy projects. While many alternative energy futures have been considered, all recognize a need to accelerate production of domestic resources. Conservation is important, but cannot do the whole job.

The energy producing projects which are presently being proposed for the nation are; coal export mines, electric generating plants (coal fired), substitute gasification plants (from coal), oil shale processing facilities, nuclear power plants, support facilities for off-shore oil and gas, platform fabrication facilities, deepwater ports, liquid natural gas, conversion plants, oil refineries and solar and wind power. Many parts of the nation will be affected with the most prominent being:

1. Rocky mountains and Northern Greatplains -  
Coal and oil shale
2. Appalachia - Coal and nuclear plants
3. Coastal zones - Offshore oil and gas and  
nuclear power plants
4. Nationwide - Nuclear power plants

### The Impact Upon Communities

Construction and operation of an energy project can provide many benefits to the region in which it is located. The economic base may be expanded and diversified, providing new employment opportunities especially for young workers who might otherwise have to leave the region for work. The energy supply may be maintained or improved and the tax base of the region strengthened. Comparative case studies show that in Tullahoma, Tennessee (with the Arnold Engineering Development Center) and in Idaho Falls, Idaho (with the National Reactor Testing Station) the "Quality of life appears to have been enhanced". The reason for this was a moderate growth rate, followed by stable permanent population. The impact was gradual enough to allow public services to keep up with demands.<sup>66</sup>

All too often, however, while benefits are long range and regional the severity of the impacts are immediate and local. The severity of the impacts on communities depends on several factors: Original population size, rate of growth, level of unemployment, condition of local services and facilities and quality of planning. Impacts also vary by the type of energy project. Of all

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<sup>66</sup>The Denver Research Institute, The Social, Economic and Land Use Impacts of a Fort Union Coal Processing Complex, For the Energy Research and Development Administration, Interim Report, Jan. 1975, p. 21.

these indicators, the rate of growth appears to predict severity of impacts best.

What happens when an energy project comes into a small rural community? If it's a nuclear power plant, there could be a surge of construction workers up to 2,500 at its peak. Five to ten years will be required to build the power plant. The population will increase as workers families come in. The number of workers needed to run the energy project after it is built is generally less than the construction force. Providing housing and services is difficult with a temporary build up and decline.

During planning and construction phases of an energy project, employment and population increase rapidly from a generally static base. From the peak, employment will drop as the facility nears completion.

The dimensions of typical energy projects are presented in Table 1. The number and timing of employees vary by the type of energy facility. Substitute gasification plants and oil refineries have the most rapid buildup. Coal fired electric and nuclear generating plants require slightly fewer employees but employ them for longer periods of time. Coal export mines and platform fabrication facilities require few construction workers but generate larger numbers of operations employees.

TABLE 1

## TYPICAL ENERGY PROJECTS

<u>PROJECT</u>	<u>SIZE</u>	<u>CONSTRUCTION TIME</u>	<u>PEAK FORCE CONSTRUCTION</u>	<u>OPERATING FORCE</u>
Coal Export mine	9M tons/yr.	2-3 yr.	175-200	325-475
Electric Gen- erating Plant	700 MW	4-6 yr.	750-950	75-100
(including coal mine)	2,250 MW	6-8 yr.	2,000-3,000	350-400
Substitute Gasification Plant (in- cluding coal mining)	250 Mcf/Day	2½-3 yr.	3,000-3,500	1,050-1,250
Oil Shale Pro- cessing Facility (including coal mining)	50,000 bbl/Day	3-4 yr.	2,400	1,050-1,450
Nuclear Power Plant	1,600 MW	5-9 yr.	2,500	150

TABLE 1 - continued

Offshore Oil and Gas Support	Per Rig	3-4 yr.	175	90
Platform Fabrication Facility	2 Platforms/Yr.	5 yr.	400	1,000-1,500
Deepwater Port	2 Mooring Spaces	3-4 yr.	1,250	75-90
Liquid Natural Gas	1,000 Mcf/Day	2-3 yr.	300-400	50-100
Oil Refinery	250,000 bbl/Day	2½-3 yr.	3,500-4,5000	450-900

Source: Berkshire County (Mass.) Regional Planning Commission, Evaluation of Power Facilities: A Reviewer's Handbook, Office of Policy Development and Research, Department of Housing and Urban Development, Washington, D. C. April 1974, p. 197.

### Categories of Energy Town Problems

As previously mentioned, it is the intent of this research to focus on problems of energy new town complexes that are a result of population increases and their socio-economic impact.

Due to the great vastness and diversification of problems of energy new town developments, problems of a population and socio-economic nature can be categorized into the following three areas.

#### 1. DECLINING QUALITY OF LIFE:

The rapid growth that occurs as a result of construction of massive energy facilities often outruns the local service sector's ability to provide housing, health service, schooling, retailing and urban services.

#### 2. DECLINE OF INDUSTRIAL PRODUCTIVITY:

Often the construction of energy facilities effects the local service industry by causing labor turnover and shortages. Thus creating a decline in productivity and again affecting the local service industry.

#### 3. FAILURE OF THE LOCAL SERVICES SECTOR TO MEET THE NEEDS OF THE COMMUNITY FOR GOODS AND SERVICES:

Usually capital investment in the local services sector, both local government and commercial activity, is not adequately designed to facilitate rapid growth.

# 1. DECLINING QUALITY OF LIFE:

A definition of the quality of life should focus on the relation between the conditions of life and how those conditions are experienced. According to Angus Cambell and Philip Converse in their book, The Human Meaning of Social Change:

"The quality of life must be in the eye of the beholder and it is only through an examination of the experience of life as our people perceive it that we will understand the human meaning of the great social and institutional changes which characterize our time."<sup>67</sup>

With this thought in mind, the quality of life will be defined in the content of this study as, a function of the objective conditions and subjective attitudes involving a defined area of concern.<sup>68</sup>

Defined Area - Implicit in any definition of the quality of life is the notion of some area to which the (QOL) refers, in this study, energy new towns.

Objective Conditions - Objective conditions are defined as numerically measurable artifacts of a physical event (air pollution in parts per million of sulphur dioxide), sociological event (divorce rates, crime rates, suicide rates, number of ethnic minority persons,), or economic event (local consumer price index, municipal

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<sup>67</sup> Angus Cambell and Philip E. Converse, The Human Meaning of Social Change, (New York: Russell Sage Foundation, 1972) p. 2.

<sup>68</sup> Ibid., p. 3.



budget, costs of highway construction).<sup>69</sup>

Subjective Attitudes - Subjective attitude may be defined as dealing with valued states, goals, or desires. The idea of valued states, goals, and desires, is the focus of most popular conceptions of the QOL, a high QOL might be a pristine wilderness, a Buick or being rich. Not only is the list lengthy and variable from person to person, it is fleeting. That is, the new Buick owner soon needs a Cadillac and becomes dissatisfied with his Buick. Each new threshold achieved is a basis for setting up new standards for needs and satisfactions. Values and goals are prone to paradoxes without appearing inconsistent in the mind of the perceiver such as people wanting wilderness and isolation but also a store down the block to buy soda and bandaids.<sup>70</sup>

Subjective attitude should not be confused with social perceptions. Social perceptions may be defined as the impression one has of an event or physical condition in a context of meaning unique to the individual.<sup>71</sup> Myra Schiff's view of social perception is as follows:

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<sup>69</sup>Myra Schiff, "The Definition of Perceptions and Attitudes" in Perceptions and Attitudes in Resource Management, (Ottawa, Canada: Policy Research and Coordination Branch, Department of Energy, 1971), p. 7.

<sup>70</sup>Ibid., p. 10.

<sup>71</sup>Ibid., p. 11.

"Since an individual's perception is a function of past history and his state at the moment he is viewing the stimulus, two individuals with different past experiences may look at the same stimulus, receive the same image, have the same image transmitted to the brain and yet perceive that image differently."<sup>72</sup>

Experimental inquiry into the nature of perception indicates the considerable importance of general past history on the percept, such that straightforward reports of perceptions are not as informative of extant conditions as might be assumed.<sup>73</sup> According to Schiff, "It is erroneous to refer to a series of beliefs about environmental events not at the moment present, and not personally experienced by the respondent, as perception."<sup>74</sup>

An attitude may be distinguished from perception in that it is the interpreted understanding of the stimulus itself. It is not causally associated with a specific object or the processes of perception at any single moment but is an ongoing mental activity. Things have real effects if people believe them to be real and these beliefs may be products of many internal and external influences. Attitudes are products of life long experience with diverse psychological and sociological events.

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<sup>72</sup>Ibid., p. 15.

<sup>73</sup>Marshall H. Segall, Donald T. Campbell and Melville J. Herskovitz, The Influence of Culture on Visual Perception (Indianapolis: Bobbs-Merrill, 1966).

<sup>74</sup>Schiff, op.cit., p. 8.

Although events or objects do not directly cause certain attitudes, repeated experiences or events known to an individual result in mental images and systematic beliefs over time. An attitude is said to be present when there is a disposition to act in a certain way relative to the object of the attitude.<sup>75</sup>

Generally speaking a community, area or region directly affected by the construction of an energy facility is not a pleasant place to live. The extremely high growth rates characteristic of energy developments often push population beyond the point where existing institutions and methods of problem solving are inadequate. An examination of housing, health care, education and other community services provides insight and examples into the quality of life problems associated with energy town developments.

Housing. As is often the case, the market for permanent housing does not keep pace with the rapid increases in population. Construction of new homes often results in prices far too high for the temporary employee and certainly too high for the resident citizen. The end result is a maze of mobile home developments scattered throughout the fringe areas of the community which may possibly create additional social and environmental

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<sup>75</sup>Peter J. Henriot, "Political Questions About Social Indicators", The Western Political Quarterly, Vol. xxii, No. 2 (June, 1970).

problems.

The housing problems in many energy town developments are a combination of results of the following:

1. Labor and construction costs are extremely high and labor availability is uncertain. Often times the communities affected are in rural locations, which generally increases the cost of construction materials because of transportation cost, etc. involved with getting the materials to the area, and also makes it difficult to attract and maintain a labor force. The existing labor force, usually already limited, may become employed in the construction of the power facility which generally will pay higher wages. Therefore, the developer must pay higher wages to attract and retain a labor force. Higher labor costs are then passed on to the price of the house which in return means the permanent housing market is catering to a very select few. Often times, because of the rural location of most energy facilities, labor must be imported placing an additional strain on an already weak housing market.

2. The existing sanitary treatment facilities, if present at all, usually cannot adequately handle demand in increases for the housing market brought on by rapid increases in the population. The only reasonable solution is construction of larger treatment facilities, an additional cost.

All of these factors place a very heavy strain on construction of permanent housing within energy developments. But to a certain extent, even more important, is the strain placed on providing temporary housing, which in most cases, is the real need and answer to the housing problems within energy new towns. Often developers are discouraged from constructing temporary housing such as apartments, condominiums and duplexes for the above mentioned reasons as well as the realization that demand for such temporary housing will decline very rapidly once the construction phase of the project is completed.

Health Service. Often times the availability of providing adequate health service to a rural area may be somewhat limited, but in the case when the population has increased many times, the chance of receiving adequate health service is extremely limited. Crowding in physicians offices and delays in service seriously hamper the health care received in energy developments.

Hospitals, which were not originally designed to accommodate such populations, become over burdened with patients and rate charges for the hospital and physicians office-calls increase to the point where the total population cannot receive adequate health care. This particularly effects the long term elderly residents of an area. Studies have shown that as a result of rapid population increases of energy town developments, rates of alcholism,

broken homes, suicide and suicide attempts have increased, further affecting the health care received for that particular area.<sup>76</sup>

Educational Facilities and Services. In many cases school facilities become strained beyond capacity. In trying to adequately deal with the situation, many districts bond up to their legal limits trying to stay abreast of the growth problem. However, in most cases the districts just don't have the needed taxing capacity to properly maintain such programs and facilities. So in an effort to keep abreast of the rapid growth, many districts find themselves falling farther behind.

Educational services also begin to suffer, with increased emphasis on a building program and on hiring and retaining teachers, the financial budget is not able to maintain needed counseling, school social workers or other personnel to give needed personal attention to students. Also public transportation programs for school age children suffer because of the increased numbers and distance involved.

Recreation. With all community facilities lagging in energy growth developments, it is most certain that recreational facilities will be one of the more severely

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<sup>76</sup>NACO Case Studies on Energy Impacts: No. 1 - Kaiparowitx New Town Project, Kane County, Utah, National Association of Counties, prepared for the Federal Energy Administration, June, 1975.

affected by the increased population. Lack of any type of adequate funding along with, in most cases, an already deficient recreational program means that recreation suffers a further set back because of energy developments.

Other Problems. In many energy new town developments the cost of living has risen faster than the national rate. Housing costs, as discussed earlier, of all types lead the increase. More often than not, salaries particularly in local services employment, do not keep pace with the rapidly increasing cost of living. Retail and service facilities do not expand as rapidly as total employment creating congestion and parking problems in the commercial areas.

Senator Frank E. Moss from Utah, has this to say about the effect of energy developments on rural communities in his state:

"Rapid growth in rural areas that occurs as a result of adjacent energy developments, will cause hardship under the best of circumstances. It will disrupt the rural way of life. It will bring new social values and problems to formerly homogeneous communities. It will force the price of goods and services up, bring about land speculation and create a severe squeeze in the credit needed to meet the upward rush of the cost of living."<sup>77</sup>

As indicated by the previous discussion, the quality of life problems are varied and many. In most cases, they are more than just inconveniences, they are

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<sup>77</sup>Dean, Suzanne, "How to Kill a Land Use Bill", Planning, American Society of Planning Officials, January 1976, p. 23.

severe problems that threaten the livelihood and very existence of many communities.

One way in which the quality of life problems affect and create other problems in energy town developments is that they are directly damaging to the existing industrial activity.

## 2. DECLINE OF INDUSTRIAL PRODUCTIVITY

The industrial productivity is the backbone of any community, whether it be a small agriculturally oriented community or a somewhat larger and more industrial dependent community. In any case, productivity and profitability are the "life and blood" of a community. In many cases industrial productivity has been destroyed or caused to decline in energy town developments because of the increased population and the decline in the quality of life factors. This is clearly stated by the following quotation:

In 1973, Employee turnover rose sharply in all of the Trona (local Mining) operations. It ranged from 35 percent to 100+ percent in annual rates among the different employers. In December 1973, Stauffer (local construction Co.) was paying maintenance mechanics and electricians 5.25 dollars per hour; the same men could draw 9.12 dollars per hour and \$12.00 per day subsistence at the Jim Bridger power plant. Of one Trona company's quits in 1973, half were to take other work; most of the others were because of new, inexperienced employees could not adapt to mining or to boom conditions in Sweetwater County. In some companies, Canadian workers are being imported in the



more skilled crafts because the available labor pool is insufficient.<sup>78</sup>

Because of the increased cost of living and the dissatisfaction with the quality of life in Sweetwater County, Wyoming, local employment was forced to seeking higher paying jobs thus reducing the productivity and profitability of the local service economy. The end result merely added to the already existing quality of life difficulties.

### 3. THE VIABILITY OF MUNICIPAL GOVERNMENT IS UNCERTAIN:

The municipal, area or regional government of an energy town development is left in a very precarious situation in trying to adequately deal with the many problems of uncontrolled growth. Many times municipal governments, finding themselves confronted with rapid, uncontrolled growth bond themselves to their legal limits only to realize they just do not possess the financial capabilities to adequately handle the rapid growth.

This puts an undue tax burden on the local long-time resident while the transient, temporary worker is able to set up a mobile home on the fringe area of the community while many times never being adequately taxed

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<sup>78</sup> NACO Case Studies on Energy Impacts: No. 2 - Controlling Boomtown Development in Sweetwater and Uinta Counties, Wyoming, National Association of Counties, Prepared for the Federal Energy Administration, January, 1976, p. 3.

for the services provided by the community. In the end, it is possible for the local government and its citizens to suffer financially from the growth rather than sharing its economic fruits.

These three categories of problems, declining quality of life, decline of industrial productivity and failure of the local services sector to meet the needs of the community for goods and services have resulted from exceptional rates of growth which have literally outgrown the capacity of such institutions as the housing market, the local labor markets and the local government financing structure. In this case, when and if growth should continue, in all likelihood, the problems will multiply.

#### The Problem Triangle.

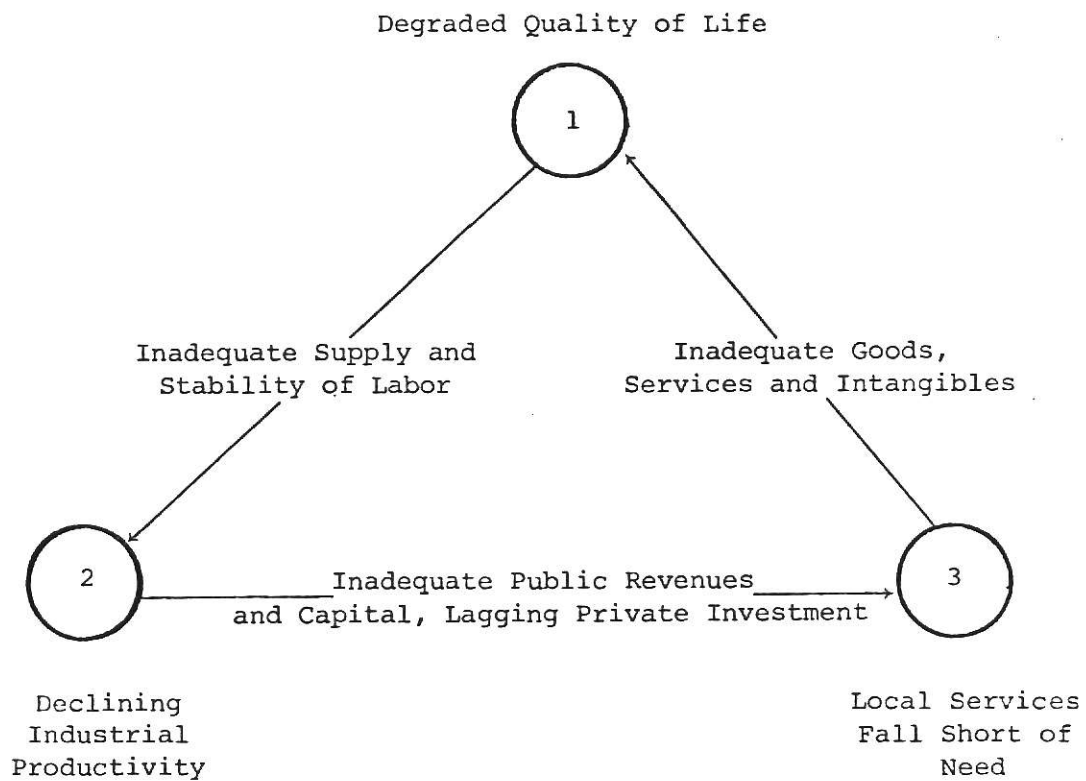
The three categories characteristic of energy town development problems, degraded quality of life, declining industrial productivity and inadequacy of the local service sector are extremely interdependent. Figure 2 shows their relationship to one another.

This self-sustaining cycle will continue unless there is a major change in either the growth that has generated the problems or the means of handling growth.

If growth is to be well managed in an energy town development the problem triangle must be broken.

However, several questions must be addressed

FIGURE 2  
THE PROBLEM TRIANGLE



before plans can be made for breaking the problem triangle such as,

1. What is the energy town development economic growth process and how does it work?
2. What happened to the process when rapid energy development took place? Why did the problem triangle develop?
3. Can energy town type growth be managed to improve the community and to make higher growth rates tolerable?
4. What tools are available for effective growth management?

Since we have now identified and categorized some of the major population and socio-economic problems of energy new town developments both in content and by diagram, we must identify means, methods or tools available for handling this rapid and uncontrolled growth. However, before we can discuss methods or means for properly dealing with the situation we must first understand the growth process which communities undergo that have experienced the influence of construction of a major energy facility on their surroundings.

#### The Growth Process.

When major new capital investments are made in any given area (construction of an energy facility),

according to simple economic theory, the markets for the other factors of production should respond. That is, the labor market would supply the needed employees. The land and materials markets would be able to meet demands made on them. The capital market would permit the financing of housing for the new employees and their families and of facilities to supply goods and services such as education, streets and highways and health care.

This increased demand for these factors might push the local cost of living up a little but usually the required factors would be available. The growth process would work satisfactorily, controlled and assisted by the markets for the factors of production.\*

However, the simplistic economic theory model in application to energy new town developments is totally inadequate, for many reasons so stated in the proceeding section.

The situation in a typical community before major new capital investment and idealized situation after construction of a major energy facility are shown in Figure 3 and 4 respectively.

#### The Factors of Production in the Local Service Sector.

Similarly local service capital (Is) has been invested, resulting in both public and private facilities

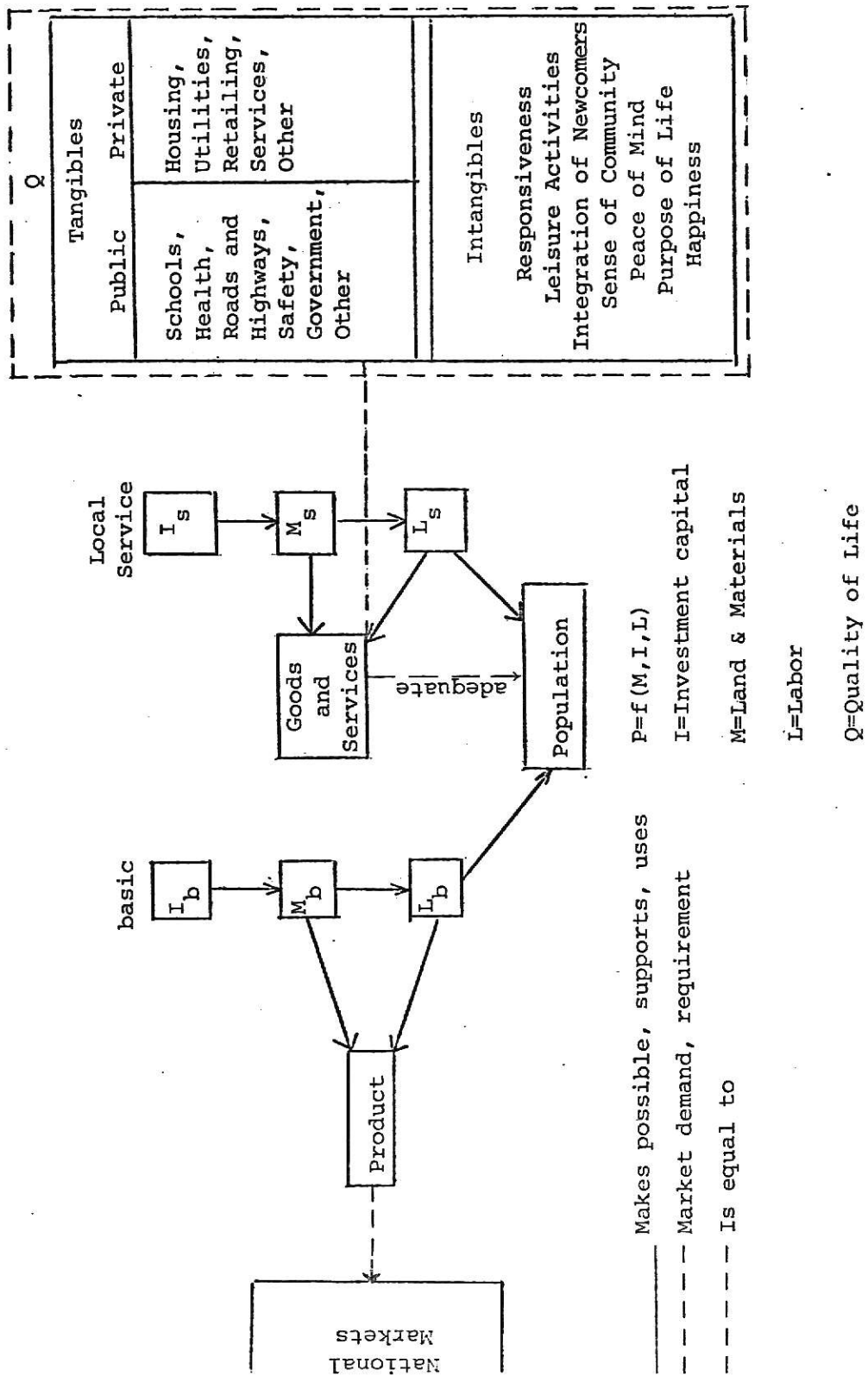
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\*See Appendix A for explanation of the factors of production.

FIGURE 3

COMMUNITY GROWTH MODEL: THE STABLE SITUATION

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(Ms) producing goods and services for the local population. This employs local service labor (Ls).

Local service activities include those provided by local government such as, education, streets and highways, public safety, welfare, mental health and sewer and water service. Many other local service activities are provided by private business such as, retailing, personal services, energy and telecommunications and construction. Health services are provided by private physicians and other practitioners and public hospitals. Other social support services are furnished less formally by churches, voluntary associations and clubs.

Labor and Population. In the stable community growth model, except for commuters, Labor (both Lb and Ls) is drawn from the local population. The contributing availability of Lb and Ls depends on a sufficiently large and stable local population. Thus, the local population and labor force are mutually dependent.

Basic to Local Service Relationships. In the stable or moderate growth situation the local services are generally those desired and affordable by the local population. Capital to furnish new local service facilities is usually available from various investors such as commercial institutions or private investors.

For each employee in basic industry, there are usually from one to two local service employees in a

typical, stable small community. This means the basic to local service multiplier is from 1 to 2. In a stable or slowly growing community, the local services sector can be expected to grow (both  $L_s$  and  $I_s$ ) in appropriate proportion to growth in basic  $L$  and  $I$ . A sudden change in this multiplier is apt to signal a change in the quality of goods and services available to the population and thus in the material aspects of the quality of life,  $Q$ .

The Quality of Life. The quality of life,  $Q$ , of the entire population depends on two things: (1) tangible aspects such as the adequacy of the goods and services available and affordable in the local service sector and (2) intangible aspects such as the morale and attitudes of the population in relation to such things as adequate leisure activities, responsive government and a supportive spirit of community.

#### The Effects of Major Increases in Basic Capital Investment

To start a growth situation, corporate or governmental decisions are made in favor of new or incremental major capital investments,  $\Delta I_b$ . These are used to construct and operate new basic plants  $\Delta M_b$ . This represents a large increment or addition to the stock of basic capital in the local community. It will also require additional employees,  $\Delta L_b$ , for both construction and operation. These increments  $\Delta$  are shown added to the existing



basic sector in Figure 4.

The additional employment will create increased population ( $\Delta$  population). The increase in construction employment may be very fast and much of the labor for it will probably come in from outside the existing community. Some people may be hired away from jobs already in the community, as was previously mentioned in the case of Sweetwater County Wyoming, interfering with the existing balance between basic and local service activities.

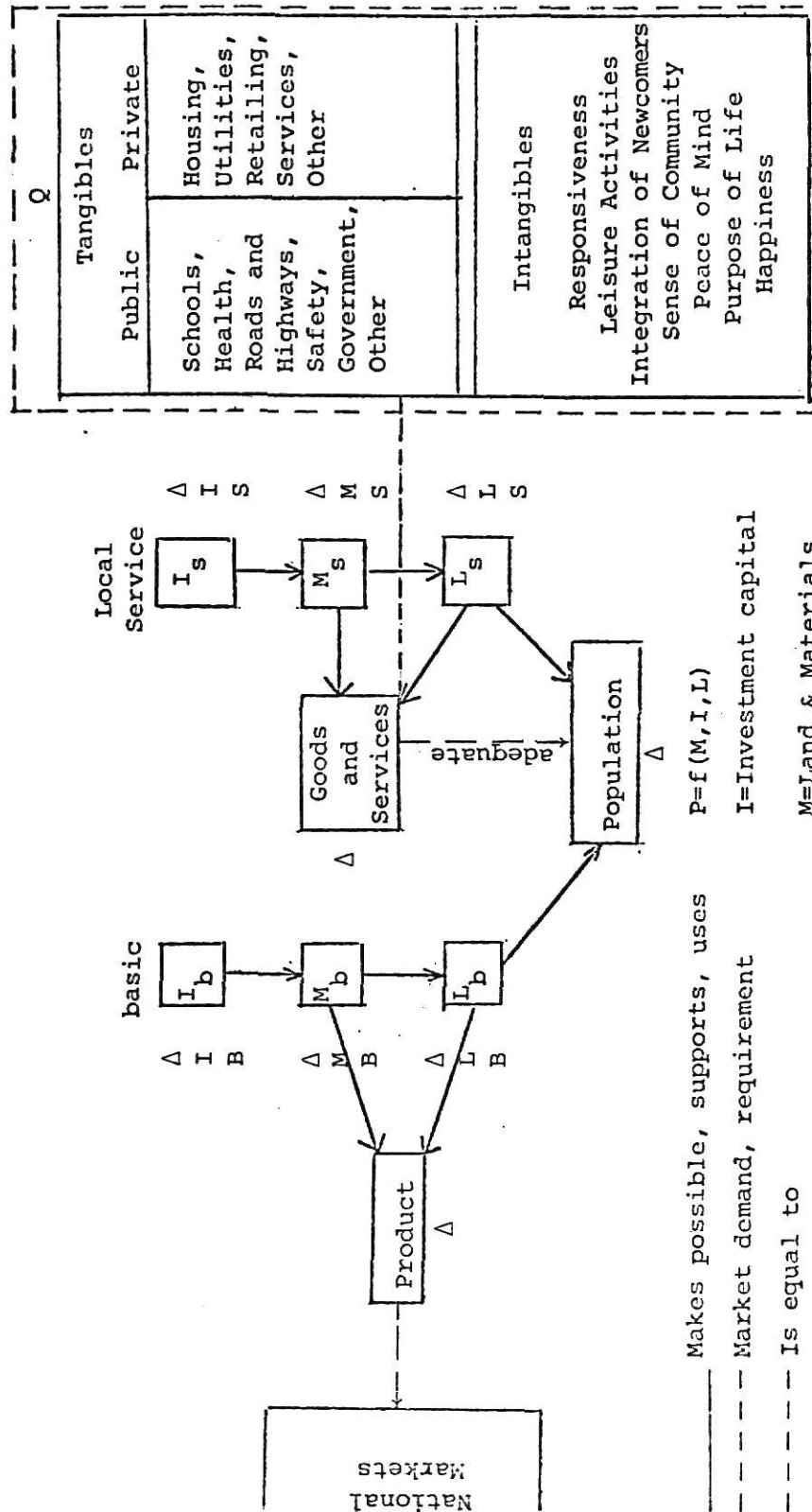
In any case, the new basic sector population must be accommodated and the local service sector must expand to do this. Additional local service capital investment,  $\Delta I_s$ , is induced. Local service employment,  $\Delta L_s$ , also must be expanded to maintain levels of service. These increments are shown added to the local service sector in Figure 4.

The Ideal Case-balanced Growth. Even in small communities large increments to population can be accommodated if the additional local service capital,  $\Delta I_s$ , is invested in a timely fashion. Not only must adequate  $\Delta I_s$ ,  $\Delta M_s$  and  $\Delta L_s$  be combined to produce additional local service goods and services. But all of the intangibles mentioned plus one more must be assured to maintain  $Q$ , the quality of life. The additional intangible is integration. The new population must be integrated into the established community as they arrive and as they desire.

FIGURE 4

COMMUNITY GROWTH MODELS: INCREMENTAL CHANGE, BALANCED GROWTH

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If the population attracted by the new jobs resulting from  $\Delta I_b$  and from  $\Delta I_s$  can be accommodated while maintaining the quality of life, adequate labor will be available. Additional product can be produced and exported as planned and this probably will lead to adequate returns on the additional basic investment,  $\Delta I_b$ .

Even in this ideal case, there may be a problem of getting adequate returns on the new local service investment,  $\Delta I_s$ , if it was built up to accommodate a one-time construction increment with an ensuing drop off. This raises the issue of who should pay for such an investment, the employers of the construction company work force, the public in the form of the permanently existing tax base or some combination of the two.

Unbalanced Growth. Major new basic investment,  $\Delta I_b$ , such as construction of an energy facility, which is not balanced by adequate and timely local service investment,  $\Delta I_s$ , results in unbalanced growth most characteristic in energy new town developments.

If the local service sector cannot adequately expand its facilities, employment and output of goods and services to meet increased demand, there is less for everyone. This in itself degrades the material quality of life,  $Q$ , even as prices and rents are being drive up. Furthermore, if the intangibles of quality of life also are less satisfactory, both the established and the new

population suffer. This situation, most representative of energy town developments, is depicted in Figure 5.

As quality of life declines citizens of the community are more apt to leave. The labor supply shrinks, relative to demand. If the labor supply cannot meet labor demand, productivity suffers in both basic and local service sectors.

This describes briefly what happens to cause the many and complex problems of energy new town developments. The markets for the factors of production do not function to make growth proceed smoothly. The problem triangle described earlier is created and not properly dealt with.

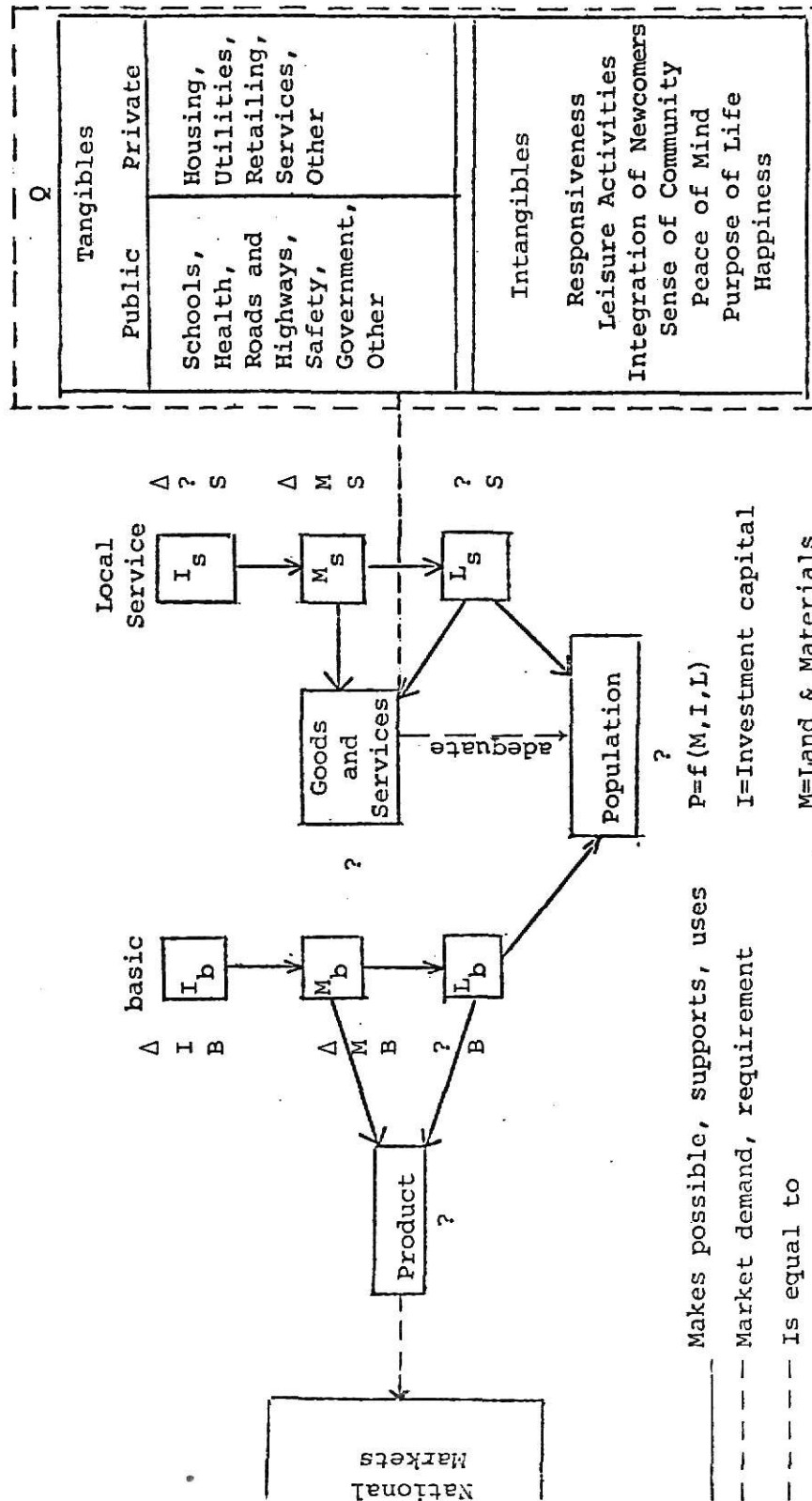
Generally speaking, in the case of energy new town developments, information is lacking for timely and adequate local service investment. Usually timely investments are not made and the local service goods and services, both public and private, fall behind. As private services lag behind demand, more is asked of the public sector, both local and state government, but its resources are restricted by rigorous limitations on bonding capacity and on flexibility in taxation. Furthermore, if the growth associated with energy town developments is perceived as temporary, which it generally is, with a decline to follow, voters are hesitant to vote favorably on much needed bond issues.

The new population is not adequately provided with

FIGURE 5

COMMUNITY GROWTH MODEL: UNBALANCED GROWTH

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either the tangibles or the intangibles of quality of life Q. The additional population is not adequately housed and integrated into the established communities, so the labor market does not function well. Employee, turnover increases and recruitment of new employees becomes more difficult. Productivity suffers in both the basic and local service sector.

Generally speaking, one could conclude from the energy new town development experience that the quality of life, Q, is as important as the three factors of production M, L, and I. In a remote community which must attract and retain labor from elsewhere, quality of life may be a factor of production.

Since quality of life depends to a certain extent on the availability of local service labor, which in turn depends on the availability of other factors of production plus the intangibles, Ls must be considered and planned for along with Lb. It is a necessary to satisfactorily house and serve the local service related population as that population supported by basic industry. The entire community must be developed not just the industrial segment.

Figure 6 shows the proper balance that must be maintained between the basic and local service sectors if growth is to be properly controlled.

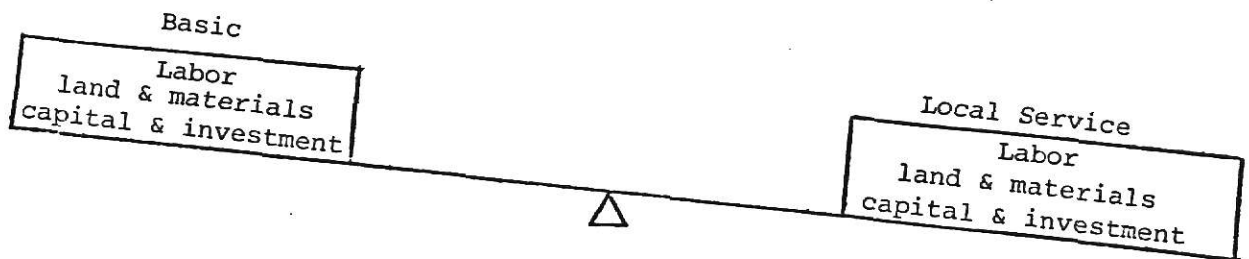
As seen in Figure 6 undesirable growth is when

FIGURE 6

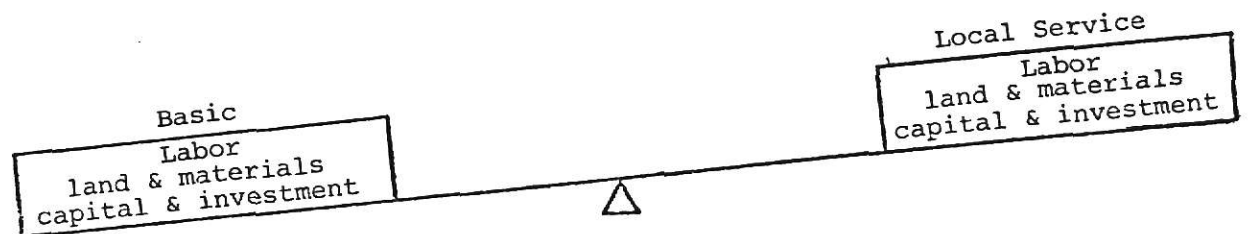
BALANCE BETWEEN BASIC AND LOCAL SERVICE SECTORS



Stable or Moderate Growth



Ideal Situation



Undesireable Growth  
Characteristic of Energy Town Developments

Lb, Mb and Ib outweighs Ls, Ms and Is. This explains the growth situation associated with energy new town developments. When the undesirable growth situation occurs the only reasonable alternative is a deliberate effort at growth management by all members of the community so affected.

### Constraints on Action

If we know what the problems are, what keeps us from solving them? Generally speaking we know a lot more about the problems than the solutions. There are many constraints that limit the ability of the local community and state to respond. In general, they involve the inability to accurately predict, lack of government management tools and experience and lack of money. It is difficult to plan a useful response when the details of the future are unclear.

Most communities which will bear the impacts of energy projects are small and remote, often without experienced and professional help. In the six states of the Denver Federal Region, one half of the 131 communities to be impacted have less than 1,500 population and are more than 100 miles from a metropolitan area.<sup>79</sup>

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<sup>79</sup>Committee on Socio-economic Impacts of Resource Developments, Socio-economic Impacts and Federal Assistance in Energy Development Impacted Communities in Region VIII, Mountain Plains Federal Regional Council Region VIII, 1975, p. 6.



The fiscal constraints place limitations by restricting tax rates, debts, grants and allocations available to local and state governments.

Now that we have identified some of the basic elements of communities affected by energy developments, the next chapter will recommend solutions, both physical and financial, available to energy towns for dealing with massive and uncontrolled population growth and its resulting socio-economic impacts.

## CHAPTER 4

### METHODS OF CONTROLLING POPULATION AND SOCIO-ECONOMIC PROBLEMS ASSOCIATED WITH ENERGY TOWN DEVELOPMENTS

Improving the ability to manage growth is the most valuable tool available in confronting energy town problems. It is known that the numbers and timing of energy projects will change during planning and construction, so it is important to be able to respond to that change. The response requires direction, planning and managing by the leaders of the community so affected to get the proper financial assistance and to use it wisely.

Throughout the country more and more attention is being given to growth. How much growth can a small town or county handle? How can citizens of the community pay for the growth?

Managing growth is difficult for energy impacted communities for a number of reasons:

1. Responsibilities are often divided among many levels of government. There is great confusion about roles. Who's in charge? And who's involved? Among those involved are cities, counties, school districts, councils

of governments, areawide and substate districts, state agencies, federal agencies and energy companies. With all of these there may be separate and competing bureaus and offices with conflicting goals and objectives. The problems are further compounded when the project is in one jurisdiction and the impacts are felt in another or when two units within an area compete rather than co-operate.

2. The communities to be impacted by energy projects are typically small and remote. A survey completed in 1975, by the Denver Federal Regional Council of the six states in Region VIII, Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming, found that of the 131 communities expected to be impacted by energy developments:<sup>80</sup>

50 (38%) Have less than 500 population

66 (51%) Have from 500 to 5,000 population

116 (89%) Have less than 5,000 population

15 (11%) Have over 5,000 population

Of the 131 communities, 59 (45%) have less than 1,5000 persons and are more than 100 miles from a metropolitan area. Usually impacted communities have no professional staffs. Of 131 communities:<sup>81</sup>

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<sup>80</sup>Ibid., P. 21.

<sup>81</sup>Ibid., p. 22.

- 12 (9%) Have professional planners
- 8 (6%) Have full-time city engineers
- 4 (3%) Have city managers
- 4 (3%) Have other administrators

3. There are few formal systems for joint community industry planning and management. Often there is a fear of a company town if cooperation is too close. Industry does not want to get involved in local affairs. Some construction firms feel that their only concern is building the project, not realizing that the quality of life in the community could affect their turnover, labor costs and profits.

4. Few states have policies or plans for energy development impacts. Responsibility is often divided among many agencies with little coordination of effort. States vary in their ability and desire to provide either money or technical staff aid to communities.

As stated the difficulties in managing growth for communities affected by energy developments are many and complex. Therefore, it is the approach of this author to maximize growth management, for small rural communities adversely affected by nearby energy developments, through an economic approach. This could conceivably be accomplished by the following steps.

## GROWTH MANAGEMENT FUNCTIONS

The limit of the community growth process is uncertain, but in the unmanaged growth situation as described in Chapter 3, an annual population growth rate of 10 percent strains local service capabilities. A rate of 15 to 20 percent, such as often occurs in energy town developments, causes breakdowns in local and regional institutions such as the housing and labor markets. The quality of life declines and this affects industrial operations which depend on a stable and satisfied work force.<sup>82</sup>

Good growth management could help avoid seemingly intolerable rates of growth. It might also raise the ceiling of what growth rates are tolerable, if the costs and intangible needs arising from growth are met.

Given the existence of this uncertainty about the limits of growth, the essential functions of growth management, within the concept of energy town developments, appear to be:

- 1.) Balancing basic and induced capital investment.
- 2.) Affecting resource use and conservation.
- 3.) Developing an adequate labor force.

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<sup>82</sup>"Social Consequences of Boom Growth in Wyoming," E. V. Kohrs, a paper given at the Rocky Mountain American Association of the Advancement of Science, Laramie, Wyoming, 1974.

4.) Accommodating and retaining population.

The applicability of these functions is diagrammed in Figure 7.

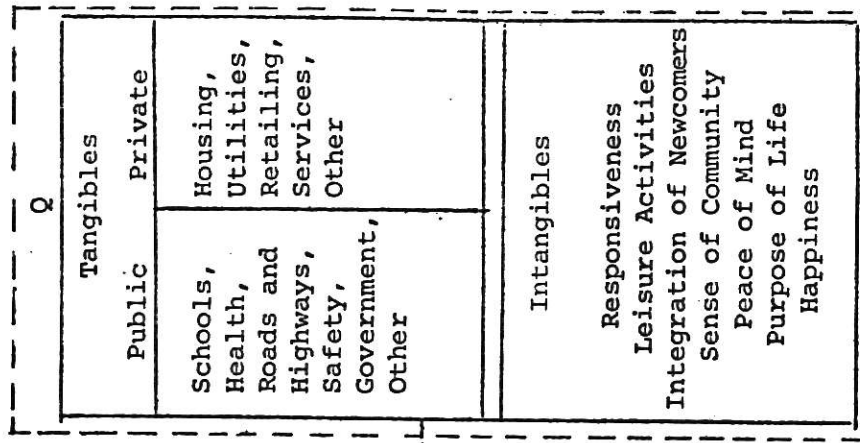
FUNCTION 1: BALANCING BASIC AND INDUCED CAPITAL INVESTMENT

Induced capital investment,  $\Delta I_s$ , in local service facilities including housing, sewer and water and schools must be adequate both in dollar amount and timing to accommodate increased population resulting from the incremental investment in basic capital,  $\Delta I_b$ . One way to balance the two types of investment is to augment the availability of induced, local service investment capital. Another is to limit the magnitude and/or rate of basic capital investment. Either way balancing requires open communications between investment decision makers in the basic sector and those in the local service sector.

Time lags between identifying the induced capital need,  $\Delta I_s$ , and having money in the bank are serious problems in financing schools, sewer and water and housing. Corporate investors must give maximum advance notice to the local service sector. They may even find it necessary to defer or cancel investment if it appears that proportionate balancing local service investment is not available.

The ratios between basic investment and induced investment will probably vary substantially. As an

4. Accomodating and retaining population



1. Balancing investment

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example, the effect of a coal gasification plant on a community will be more labor intensive than a coal-fired steam electric plant on that same community.

(Refer to Table 1) Therefore, it will require more induced investment. Some of the ways of affecting both basic and induced capital investment so they may be reasonable balanced and of affecting the communication needed for balancing are listed below.



Means of Affecting the Rate of  
Basic Capital Investment

<u>Objectives</u>	<u>Incentives</u>
a. Plant site planning laws,	a. Industrial development bonds,
b. Plant site control laws,	b. Loan guarantees,
c. Industry-specific taxes,	c. Industry-specific accelerating depreciation,
d. Policies or taxes encouraging out of region processing of resources,	d. Industry-specific income tax credits,
e. Impact statements,	e. Government construction of plants or facilities,
f. Permit or impact fees,	
g. Zoning,	

Means of Affecting the Rate of Induced  
Capital Investment

<u>Objectives</u>	<u>Incentives</u>
a. Low bonding limits,	a. Public facility grants,
b. Low assessments ratios,	b. Public facility loans,
c. High land prices,	c. Exemptions or increased bonding limits,
d. Lack of state or federal financial aid,	d. "Pay-as-you-grow" tap fees and permit fees,
	e. State development authority, Company assured housing,
	f. Joint regional government powers, Local flexibility in taxations including income taxes,
	g. Industry loans to local service entities,
	h. Industrial development bonds for local service activities including retailing,
	i. State revenue sharing, Impact fees,
	j. Low interest housing purchase loans,

Means of Affecting Communication

Among Sectors

<u>Objectives</u>	<u>Incentives</u>
a. Traditional industry views that most information is proprietary,	a. Joint industry-government problem solving,
b. Closed or nonparticipation, Local government budget,	b. Industry and citizen participation in local government preparation,
c. Inadequate local government planning,	c. Joint industry-government local planning staff,
d. Uncertainty about federal resource policies,	d. Voluntary industry disclosure of tentative investment and site planning,
e. Inadequate coordination and cooperation among units of government,	e. Legislation requiring environmental impact and community impact statements,
	f. Industrial site control legislation requiring information,
	g. Industrial site control legislation requiring justification,
	h. Aggressive press coverage of local economic and political activities,

FUNCTION 2: AFFECTING RESOURCE USE AND CONSERVATION

Land has been regulated to some extent by state government for 50 years while water use has been regulated even longer. Both have an effect of the specific location of various economic activities. State regulation to maintain air quality and water quality has more recently been mandated by federal legislation. States are increasingly legislating controls in mining and land reclamation practices. Recent federal strip mining legislation passed both houses of Congress before being brought to a halt by a presidential veto. Traditional state fixed mineral production quotas are currently out of favor.

Some of the tools that can be used to affect resource use are listed below.

Means of Affecting Resource Use

<u>Objectives</u>	<u>Incentives</u>
a. Exclusively zoning,	a. Permissive zoning,
b. Preservation of agriculture or other existing uses by zoning or taxes,	b. Easing the transfer of water rights,
c. Emission and effluent regulations,	c. Industrial development standard of air quality,
d. Siting controls,	d. Differential tax rates favoring production of certain minerals or qualities of minerals,
	e. Control of annexations, Municipal incorporations and formation of special districts,

### FUNCTION 3: DEVELOPING LABOR FORCE

Balancing of labor supply and labor demand is as important as balancing basic and induced capital investment. Both functions are difficult during periods of rapid growth. The labor supply in an energy town development generally depends on the community's ability to attract labor markets. Secondly, labor supply depends on the ability of local industry and government to increase the labor participation rate to attract, train and retain a greater proportion of those persons already living in the area. On the demand side, balance may be achieved by minimizing labor requirements. More off-site construction work may be done outside the region, both in basic plant construction such as electrical and piping subsystems and in local service constructions such as manufactured modules for housing and building.

Some of the tools to be used for developing a labor force are listed below.

Increase the Supply and Utilization of Labor

Objectives

- a. Limit local service investment so that the community is relatively unattractive,
- b. Comparatively lower wage scales for local government employees than for the construction industry,

Incentives

- a. Develop and maintain attraction capability such as good wages and career opportunities and a quality of life sufficient to increase population and the labor force,
- b. Establish training programs, Encourage local affirmative action activity,
- c. Maintain day care centers,
- d. Offer relocation allowances,
- e. Award Longevity job seniority bonuses,
- f. Offer competitive job security or income security,

FUNCTION 4: ACCOMODATIONING AND RETAINING POPULATION

Growth and economic activity generally requires more labor. If the supposed growth is to be somewhat lasting and profitable a substantial part of the labor force must be willing to settle in the community. In most cases this also requires accommodation of additional employee's families. Successful accommodation of new families requires adequate local services and amenities comparable to those the same family could find in other communities with comparable employment opportunities. Many of these services and amenities depend on adequate induced local service capital investment. Examples of such tools follow.



Accommodating and Retaining Population

Objectives

- a. Failure to encourage and failure to manage growth during beginning phases of energy development.

Incentives

- a. Adequate wages and career opportunities,
- b. Housing at affordable prices such as lease purchase agreements with employers financing, Health services,
- c. Adequate education, recreation and leisure time activities,
- d. Safety and security, Land continuingly available for housing to avoid monopolistic prices, Easy access to participation in community affairs.

## METHODS AVAILABLE TO ENERGY COMMUNITIES FOR PAYING FOR THE IMPACTS

In the long run, most regions will derive financial benefit from the presence of energy projects. The projects are significant property taxpayers usually generating enough revenues to cover the costs of the impacts they cause. But there are important mismatches in time and space. While benefits are long range and regional, impacts are often immediate and local.

The impacts arise immediately as soon as the construction starts, if not before. The tax revenues from the energy project arrive only after a facility has been assessed and placed on the tax rolls. Spatial inequalities are equally important. The population impacts may be in the communities while the tax revenues may go to the county. Impacts and projects, costs and revenues, may be in different counties or even different states.

### Fiscal Impacts

More recently, many studies have analyzed the potential fiscal impacts of energy projects on communities. The Wyoming select committee on industrial development impacts, analyzed time required to balance costs and revenues and concluded that school districts would balance in one year after completion of the project, counties

in three years but the cities would take 25 years to balance.<sup>83</sup>

A similar study in North Dakota provided a series of comparable estimates for one coal gasification project. It concluded that state revenues would exceed costs from the beginning and total a \$57 million benefit over 30 years. It concluded however, that local government (city, county, school) costs would exceed revenues by \$2 million during the construction period. Local revenues would exceed costs during operations, but by so little that it would take 18 years to balance out from the construction deficit. At the local level, the net benefit over 33 years of construction and operation would be \$9 million, less than one sixth the amount of state benefits for a comparable period.<sup>84</sup>

Another study, the tax lead time study, conducted in Colorado concluded that the three counties in the oil shale region of that state would eventually show a positive financial return. It would be seven years before revenues exceeded costs and over 15 years before the operating surpluses offset the initial deficits. Figure 8

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<sup>83</sup>Interim Report and Recommendations, Legislative Select Committee on Industrial Development Impact, Wyoming State Legislature, December 1974.

<sup>84</sup>Economic and Social Impacts of Coal Development in the 1970's For Mercer County, North Dakota, the Old West Regional Commission, October 1974.

shows a graphic representation of these conclusions.<sup>85</sup>

If the money is available at the wrong time, there must be a way to get it to the right place, the place with the impact. Why is it so hard to accomplish that result? In most states the answer is traceable, at least in part, to historic issues in the state and local government relationships. Many states impose limits on local tax rates, or on the revenues available to local governments, limiting their ability to respond to rapid changes, in service demands. Furthermore, much of the new housing, in the form of mobile homes, does not go on the tax rolls, but is taxed as personal property or vehicles.

Unique taxation formulas often complicate the problem. Some states, for example, impose debt limitations based on a percentage of the assessed valuation. Assessment practices may delay the entry of the new energy project on to the tax rolls.

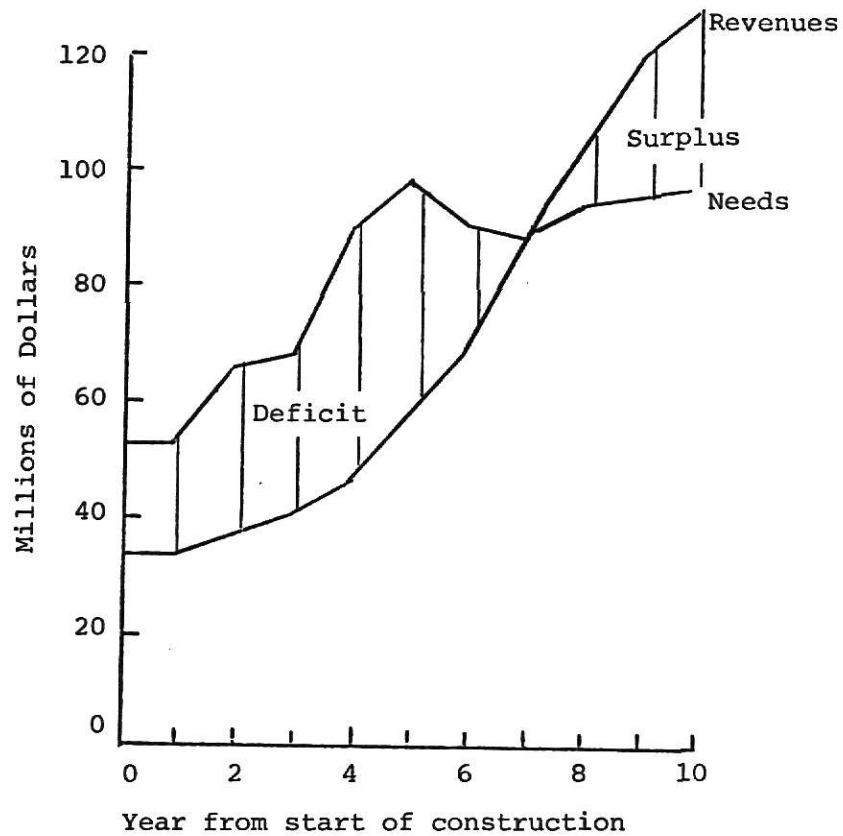
Long term bonds for capital projects may be difficult to sell. Present residents may not approve them. Buyers may be wary because of untested credit ratings of small communities.

In addition, there are limits on the money available in all state and federal programs and there is little

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<sup>85</sup>Andy Briscoe, Tax Lead Time Study, Governors Committee on Oil Shale Environmental Problems, State of Colorado, March, 1976.

FIGURE 8  
TOTAL LOCAL REVENUES  
AND EXPENDITURES  
TRI-COUNTY OIL SHALE REGION



Source: Andy Briscoe, Tax Lead Time Study,  
Governors Committee on Oil Shale  
Environmental Problems, State of  
Colorado, March, 1976.

emphasis on communities impacted by energy development. To compound the problem of state and federal assistance most grants and allocation formulas consider only the present population, not the boom and post boom populations.

The problem is particularly acute in those communities where deferred construction and maintenance must be financed simultaneously with new growth. Furthermore, the financing has to begin before the final commitment and approval for the project. If the project were to be cancelled or delayed, it would be possible for the community to be stuck with facilities and no project, no growth and little ability to pay back the bonds.

#### Guidelines For Financing

In setting financial objectives and a financing plan, the following points could possibly serve as useful guidelines for energy impacted communities.

1. Communities should exert a full local effort to the best of their ability to provide for new residents.
2. The financing plan should be tied to all other aspects of an adopted plan for growth. Annual budgets and long range capital improvement programs should be regarded as the fuel that energizes the plan.
3. States can be helpful by passing enabling legislation that permits effective local effort in reducing inequities among communities. By advancing critical front

end money in grants or loans for planning and facilities and by providing guarantee powers for local community debts.

4. A sound development plan for managing growth and an understanding of the workings of the financial machinery at all levels will increase the likelihood of energy impacted communities getting state and federal money.

5. Companies will obviously contribute in the form of taxes but they may have to do more. Additional taxes may be necessary. There may possibly need to be corporate guarantee of debt, prepayment of taxes and purchase of bonds or notes.

6. In the future, companies should address themselves to problems which are not the responsibility of the locally impacted government. Such as, recruitment of doctors.

The greatest financial need of communities with energy impacts is for sufficient, flexible, quick front end money for initial planning, organizing to manage growth, engineering and land acquisition and local shares to match state and federal grants.

#### Revenue Sources and Fiscal Devices

A number of revenue sources are available to states and local communities adversely affected by energy

impacts. Generally speaking, state legislation defines the sources available to local governments and places limits on their use by cities and counties. Revenue alternatives available to energy impacted communities, as outlined in the TAX LEAD TIME STUDY in Colorado, are listed below:<sup>86</sup>

1. General sales tax
2. Selective sales tax
3. Use tax
4. Ad valorem property tax
5. General occupation tax
6. Specific occupation tax
7. User fees
8. Severance tax
9. Income Tax
10. Real estate transfer
11. Site value tax
12. Land value increment tax

As previously mentioned, one of the many fiscal problems of energy developments is getting the revenue to the right place at the right time. Methods for accomplishing this are listed below. Some of these are essentially a way to translate future income into money needed in the present for construction purposes.<sup>87</sup>

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<sup>86</sup>Ibid., p. 64.

<sup>87</sup>Ibid., p. 65.



1. General obligation bonds
2. Revenue bonds
3. Special assessment bonds
4. Industrial development bonds
5. Refunding bonds
6. Leasing/installment purchase
7. Non-profit corporation

Organizational vehicles for determining a broad area to which a tax can be applied are listed below. These are often ways of smoothing out inequities that would result if cities and counties were used as the taxing and distribution unit.<sup>88</sup>

1. Special District
2. Local improvement district
3. General improvement district
4. Regional service authority
5. Intergovernmental agreements
6. Regional revenue distribution
7. Industry assistance

The suggestions for industry assistance to local government include.<sup>89</sup>

1. Financing facilities directly, possibly leasing or loaning to impacted communities.
2. Purchase of bonds or short term notes.

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<sup>88</sup>Ibid., p. 66.

<sup>89</sup>Ibid., p. 68.

3. Securing a bond issue.
4. Prepayment of taxes.

#### Guidelines for Growth Management

As a conclusion, these guidelines for managing growth in energy town development communities are presented.

1. The impacted communities should determine their general goals and objectives. What kind of a community do they want to be once the rapid growth has leveled off? Citizen participation is an absolute necessity in this process.
2. Specific objectives and targets need to be set. Vague statements such as "providing adequate housing" are unacceptable in this instance. Specific targets such as, construction of 500 units by 1977, with at least one-third of those rentals at no more than 20% of the average industry wages, are needed. Objectives must be specific enough that progress can be effectively monitored.
3. A rapid growth or energy impact plan should be developed. The plan should include what impacts are expected and set up a program and schedule for responding to those impacts. All on-going activities within the community should be tied to that plan.
4. The impacted communities must take the responsibility upon themselves to make major decisions and see

that they are carried out. Other agencies and levels of government can help, but they can't force their help on a community.

5. Areawide districts, where applicable, can be a major source of growth planning assistance. If the impacts are to be felt throughout several counties, it makes sense to combine efforts and have one staff doing the collection of information and analysis, the overall planning and analysis and securing state and federal funds and assigning of responsibility.

6. States can provide staffs for technical aid to communities and areawide districts. There is some advantage to staffing such agencies with people who have been through the growth experience and thus able to provide practical advice and assistance. Moreover, states could provide grants and loans to energy towns to help them in the initial planning for growth management. Some of this can come through state administrated HUD 701, EPA 208 and Coastal Zone Management planning funds. All of which, are discussed in more detail in Chapter 5.

7. Agencies of the federal government may provide technical assistance and money for communities and states for growth management staffs and plans. (See Chapter 5)

8. The energy companies must be involved throughout the planning process with the impacted communities. They have the greatest influence on the timing and extent

of the impacts and they will have a responsibility for paying for part of the cost.

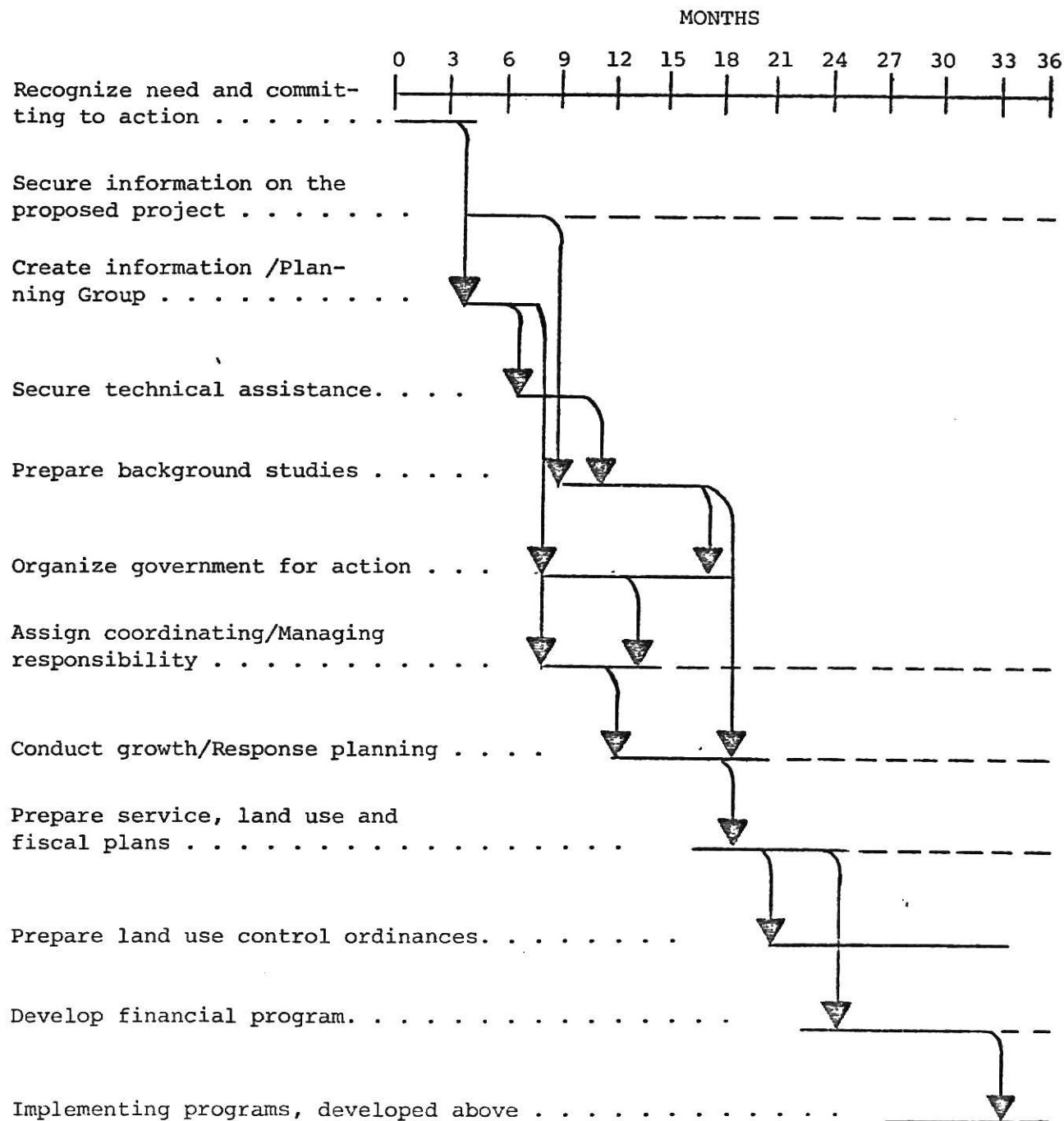
### Time Line

As previously mentioned, the time involved in energy projects, from its initial conception to final construction phases, are of critical importance to communities which may experience adverse impacts because of the construction.

Figure 9 shows a rough timetable that energy towns should commit themselves to in order to prepare and adjust to the impending adverse impacts which can be a result of construction of massive energy facilities.

The timeline identifies the eleven major actions that constitute an effective community response to energy project impacts. The time priorities shown are illustrative only and will vary from community to community depending on such things as, the original population of the community and the expected type of energy development. In essence, though, the actions are all necessary regardless of the type of energy project. The timeline indicates that perhaps 36 months or 3 years will be needed from the time of recognizing the need to implementing necessary programs. Since there may not be that much time available from the first knowledge of the project to the start of impacts, energy towns must recognize the

FIGURE 9  
TIMELINE FOR ACTION  
RESPONSE TO ENERGY PROJECTS



need early, plan effectively and work to compress the time schedule.

Chapter 4 has identified basic growth control techniques available and suggested ideas for energy impacted communities to follow in assessing their growth problems and resulting socio-impacts and possible methods for adequately alining themselves to properly address their complex problems.

The following chapter, Chapter 5, will discuss various sources of financial assistance programs that could possibly be available to energy town developments.

## CHAPTER 5

### PROGRAMS AVAILABLE TO FINANCIALLY ASSIST ENERGY TOWN DEVELOPMENTS

This chapter will discuss the federal and sometimes state financial programs that are presently available to assist energy impacted communities in combating their many and oftentimes complex problems.

Presently, on the national level, there have been a number of significant national energy activities taking place, largely as a result of our nation's energy crisis.

Listed below is a brief outline of the federal or the national government's response to the energy crisis of this nation. Although the original intention of this legislation was not to provide aid to energy impacted communities, the programs represented the enabling legislature necessary for providing such programs in the future. In many cases, the following legislation precipitated other national energy legislation from which direct financial aid to energy towns arose.

Some of the more significant national energy activities that have taken place in recent years include:

1. Emergency Petroleum Act of 1973.
2. Permanent Daylight Savings Time.
3. Maximum Highway Speed Set at 55 MPH.
4. Federal Energy Administration Established.
5. Mandatory Propane Gas Allocation Program.
6. Mandatory Middle Distillate Fuel Allocation Program.

For a detailed description of the above legislation refer to Appendix B.

As previously mentioned, the preceding legislation was the initial response of Washington to the National Energy Crisis and although the problems of energy impacted communities were just beginning to transpire, this legislation was the grandfather of such programs as: The Coastal Zone Management Act, the EPA "208" Planning for Wastewater Systems and the EDA Support to Economic Development Districts.

Therefore, it is important to recognize the preceding national legislation in order to better understand the existing programs that have developed the past two years for direct financial assistance to energy impacted communities. The following section discusses some of those financial assistance programs.



### Sources of Assistance

Assistance to energy impacted communities can take shape in many different forms. In addition to straight financial assistance, other types of aid are available. Following are four major classifications of aid available to energy impacted communities:

1. Technical assistance.
2. Funds for planning and management.
3. Funds for capital projects.
4. Funds for operating.

The above classifications of aid are those given by federal programs only. The following programs have actually been used by impacted communities and states in various instances.

#### 1. Technical Assistance

The following federal agencies do not offer direct financial grants but offer aid to energy impacted communities in another form, assistance and information. It is extremely important that sound and professional information be available to energy towns in order that they may know what impacts to expect and what the appropriate responses might be. The following agencies offer this form of assistance.

- a. Department of Housing and Urban Development.
- b. Federal Energy Administration.
- c. Coastal Zone Management.
- d. Health Maintenance Organizations.
- e. Intergovernmental Personnel Act.

For a detailed description of the above forms of assistance refer to Appendix C.

In addition to the above mentioned agencies, other federal agencies which may perform some type of technical assistance to energy impacted communities include:

- f. Federal Regional Councils.
- g. Regional Commission.
- h. Rural Development Service.
- i. Department of the Interior.
- j. State Departments of Local Affairs.
- k. National Association of Counties.

## 2. Federal Financial Assistance for Planning and Management

These are programs that provide funds to states, areawide districts, cities and counties to study potential impacts, draw up growth policies and plans, prepare land use and housing plans, plan for the provision of specific services and figure out how to pay for them. It should be noted that no monies are provided under these programs to either build or operate public facilities. However,

receiving financial assistance for planning and management is extremely important to the overall development concepts of energy impacted communities.

Listed below are some of the federal financial assistance programs for planning and management available to energy impacted communities.

- a. HUD 701 Comprehensive Planning Program.
- b. FEA Reimbursement Program.
- c. Coastal Zone Management.
- d. EPA "208" Planning for Wastewater Systems.
- e. Regional Commissions.
- f. Economic Development Administration.

For a detailed description of the above programs refer to Appendix D.

### 3. Funds for Capital Projects

Currently there are no new special programs for communities impacted by energy projects. However, this may change before the year is out. Present legislation before Congress calls for direct financial aid to energy impacted communities. There is much opposition to the bill and its chances for passing are only rated even.

In any case, presently impacted communities will have to compete with other state and local governments within existing programs at different levels of government for financial funding.

Existing programs which have been available to impacted communities include the following:

- a. HUD Community Development Block Grants.
- b. EDA Grants and Loans for Public Works and Development Facilities.
- c. EDA Title IX - Special Adjustment.
- d. EPA Wastewater Treatment Construction Grants.
- e. Farmers Home Administration.
- f. Bureau of Outdoor Recreation.
- g. Mobile Home Financing.

For a detailed description of the above programs refer to Appendix E.

#### 4. Federal Funds for Operating Purposes

There are many on-going programs for operating purposes. Most of these are provided by the Department of Health, Education and Welfare to the states. The following programs are two of the more important aid programs available for operating purposes to energy impacted communities.

- a. National Health Service Corps.
- b. Law Enforcement Assistance Discretionary Grants.

For a detailed description of the above programs refer to Appendix F.

### Summary

The preceding chapter has discussed the past history of financial assistance to energy impacted communities and present programs available through which financial aid of various sources to energy impacted communities can be obtained.

However, as previously mentioned, presently no program exists solely to provide aid to impacted communities. It will be up to the various impacted communities so affected to be aware of and determine which present programs can or could be of help in addressing their specific problems.

The competition for financial aid in some programs is very high and will undoubtedly cause problems for impacted communities.

The passage of recent Coastal Zone Management legislation before Congress, providing direct aid to energy impacted communities, is very important. In some cases, such aid may be the only funding available for energy communities to combat their many and complex socioeconomic problems.

## CHAPTER 6

### GROWTH AND CHANGE

#### Conclusion

In the attempt to become less energy dependent our nation has been rushing headlong into the development of our coal resources, our offshore oil and gas reserves, and our nuclear power generating capability. The fact that most of the development necessary to achieve less dependency will occur in rural areas increases the need to consider and prepare for the impacts of energy resource development.

The explosive growth that comes with the exploitation of energy resources will strain the physical monetary and human resources of the community so affected even in the best of circumstances. If the growth is unplanned and uncontrolled, the effect can be disastrous. Recent "energy towns" have experienced pollution of their potable water, drastic increase in the rates of divorce, emotional breakdown and alcoholism, law enforcement budgets that are double those of communities of equal size due to a doubling of arrests, and emergency room admissions that number approximately four times the base caseload. Although the growth will inevitably bring a major change in the life of the

community, some of the impacts can be lessened by proper planning and preparation.

The purpose of this Master's Report has been to familiarize the general public and possibly public officials in areas having potential energy development, with efforts that have been made by energy impacted communities who have experienced energy development impacts of a community, as discussed in previous chapters, and as many variations on them as there are impacted communities. Since the specifics of plans must vary greatly according to state and local laws (tax limitations, placement of authority, and constitutional constraints), the study stressed the process and methods of preparing for and meeting impacts rather than any specific numerical projections which often accompany a specific case study.

However, the entire "energy town" process has a much broader impact or ramification for this nation than just itself.

### Growth and Change

The whole energy town process, as discussed in this study, can serve as an example of a much larger growth and change process such as; closing of military reservations or closing of large manufacturing installations.

Whatever the specific subject, the rapid growth associated with any large scale development and the resulting decline of all activity types, has a certain socio-economic effect on the surrounding area.

The problem remains, as mentioned at the beginning of the study: How do communities handle the entire growth and change process?

The study pointed out specific procedures, specific methods and specific financial assistance programs available to assist energy impacted communities.

Although many of these examples would not be applicable to other growth and change processes that might affect an area, they all have one thing in common. That is, how much building, construction or change must a community go through to accomodate this growth and not suffer economic bankruptcy when the resulting decline takes place?

This can easily be answered by approaching the problem as indicated in figure 10. It is the opinion of this author that no community can adequately or feasibly handle the growth and resulting change problem without some decline in the existing quality of life. Although the decline will most definitely vary by subject type and how well the affected community can or is able to react. The most equitable way is to plan for the median requirements not the maximum, thus helping to reduce the decline effect and its many resulting impacts. If the situation is approached in this manner the community is not beyond helping itself. Given time, the community can recover from the rapid growth and actually gain from it with new property added to the tax roles and often times, new and better community facilities



and services.

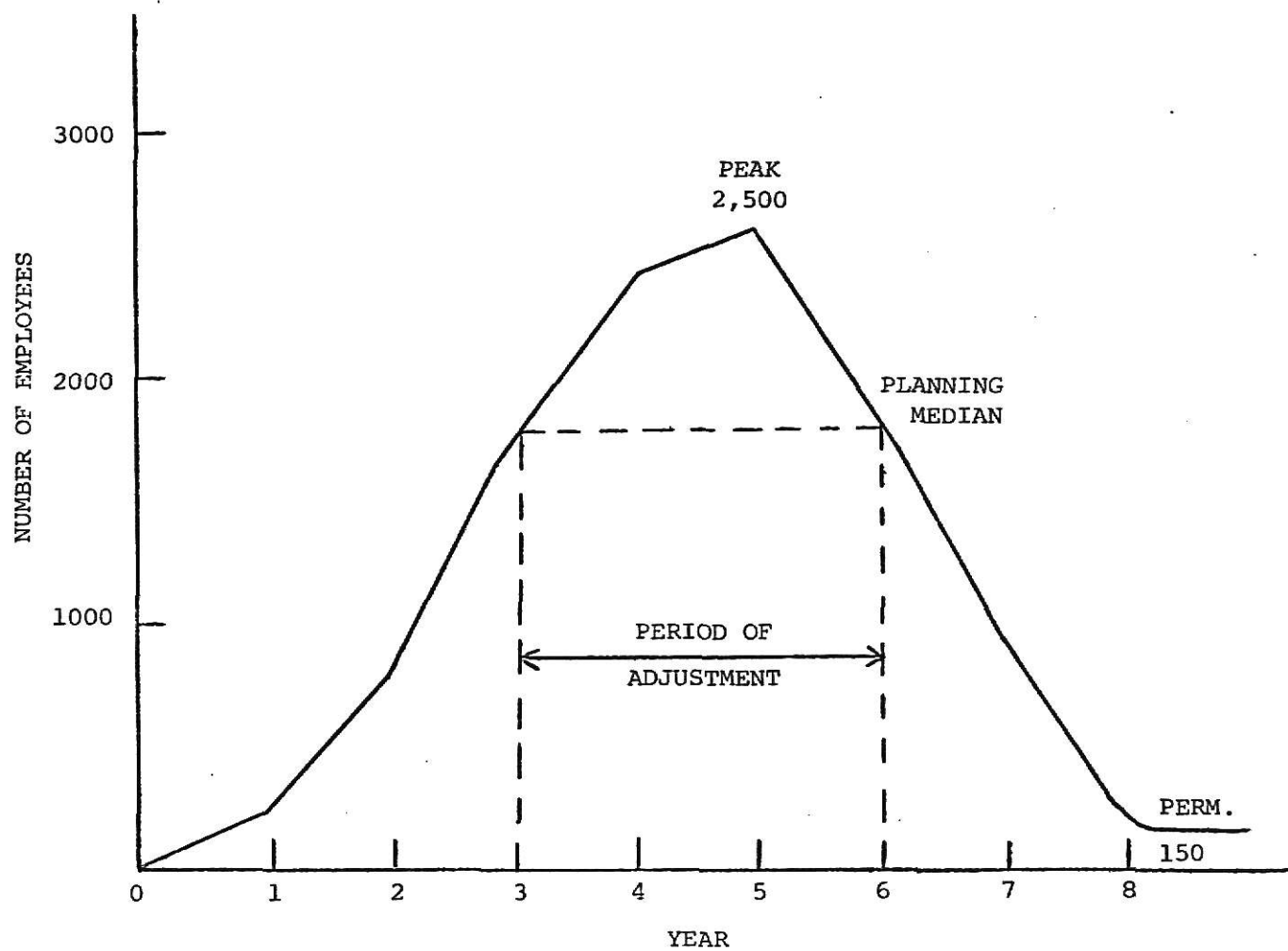
However, this will not be the case if the community has planned for the peak or maximum growth that can be expected. In such cases, the community is bonded to its legal limits and no sooner are all the facilities completed and the decline or leveling off that accompanies rapid growth takes place. The community is left "over-supplied" with only themselves to pay for it.

The growth can be good and the community can grow if proper planning for median facilities is utilized and the resulting quality of life can even possibly be enhanced.

This can be accomplished, by planning in incremental stages to meet the increases in demand that come about as a result of growth. For a complete discussion of incremental planning stages for local service facilities and basic facilities refer to chapter 3.

As an example, figure 10 shows the effect of construction employment of nuclear power plan for a typical community. As indicated in the figure, the typical construction period for a nuclear power plant is eight years with a possible work force of approximately 2,600 people. With the community planning to accomodate 2,060 of the total construction force and the accompanying associated services, the severity of the impacts can be mitigated. A period of approximately 3 years would result in maximum use of the existing and planned facilities and cause a "period of

FIGURE 10  
CONSTRUCTION EMPLOYMENT OF  
A TYPICAL NUCLEAR POWER PLANT



adjustment". However, the increase would be gradual and the recovery much easier for the affected community.

The end result would be a community strengthened by the growth process, both financially and structurally, with a minimum decline in the quality of life and a minimum time period of adjustments.

### Recommendations

So far, this Master's Report has described the energy town problems and their origins and has suggested a concept of different functions of growth management. These, at best, are merely generalizations unless some specification can be made as to who should do what. The problem is complicated by the fact that many of the things that need to be done are substantially different from what the parties-at-interest to energy resource development are used to doing.

Presently, energy resource development at its current accelerated pace entails a very complex system which is not yet fully understood. No one has described, much less designed the sub-system needed to keep rapid growth societal problems from disrupting both the human environment and the development of programs.

However, such a system is currently being developed. It appears that the states, along with their constituent governmental subdivisions, have a central role since they

provide for the health safety and welfare of their citizens as well as taxing and regulating industry within their borders. There are examples of western states taking appropriate actions. Wyoming has sought to calculate some future public costs of coal development and to set up taxing and borrowing mechanisms to help pay for these. Both Wyoming and Montana have passed energy facility siting legislation and Montana is also experimenting with revising local government, the various uses of impact statements and rigorous land classification schemes.

One wonders, though, if the states will not find it necessary to undertake more rigorous analysis and program design if they are to carry out their governmental responsibilities. This would help them to obtain the respect and support needed from the federal government and at the same time make clear to the other parties at interest the ground rules for energy resource development within their borders. Any such program design effort must involve all of the state's government and policy-making apparatus.

As a first step toward achieving synthesis between legislative and executive branch efforts, a state leader might propose a goal that is self-evidently desirable. Next, analysis could clarify the threats and obstacles to achievement of that goal as well as the opportunities that lie along the same path. General state policy responses for countering the threats and exploiting the opportunities

may then be proposed.

Some of those policy responses may conflict with or reinforce each other or other state and federal policies, only after the conflicts and reinforcements are identified will it be possible to propose specific operational objectives. These should both design the need for programs to carry out the policies and furnish the means for measuring the success of the programs.

The objectives and the means or programs may require legislation or even changes in state constitutions. Federal support may be needed. In any case, success will probably depend on state executive, legislative and public consensus.

If a state does in fact take a central role in innovating to handle societal impacts, there obviously must be changes in associated activities by the other parties at interest to development.

The federal government should develop a specific federal energy policy. This should include as precise a set of schedules on development and conversion of energy resources as is possible. The federal government should also proclaim a policy of equal risk sharing. For example, if it is willing to share financial risks with the corporations undertaking resource development, it should also share financial risks with the communities hosting the developments. This applies not only to such specific government equal sharing programs as the synthetic fuels commerciali-

zation program, but also to federal equal sharing programs such as the leasing of coal and other fuel deposits now held by the government.

Another federal policy declaration should make it clear that the beneficiaries of growth and development of energy resources shall pay the public and social costs of that development, thus protecting the bystanders who merely live in the vicinity from increased costs. A federal agency should be designed as having primary responsibility for coordinating federal programs to accomplish this. It should be a primary contact for the states dealing with the socio-economic problems of energy resource development.

The guidelines for preparing environmental impact statements should be more comprehensive to make them more useful for growth management purposes. This would include detailing, by community, the public costs of energy resource development and identifying the availability of revenues or capital to meet these costs. Stipulations in the leases of federally held energy resource properties should require leases to meet the state requirements for both information and funds needed for effective growth management.

Money for institutional innovation and planning by counties and towns should be made available by the Department of Housing and Urban Development, the Economic Development Administration and the regional commissions.

These agencies are now oriented toward support of multi-county regions that may be inappropriate in many rural energy areas.

Energy research and development programming should reflect concern with conservation as well as with rapid transition from the period of using synthetic fuels to using ultimate energy systems such as solar energy, fusion and the like. Research should also emphasize for coal, oil shale and synthetic fuel conversion activities.

Thus the federal government has an essential role in financing the public costs of development until the states can establish systems to manage growth and internalize public costs in private costs in private transactions. The federal government is initiating change at a faster rate than the state systems can be designed and their adjoining institutions created. This implies responsibility for handling the early costs precipitated by federal actions both on a basis of equity and on a basis of avoiding the delays and costs inevitable in developing energy new towns.

The overriding fact remains, that energy towns need help in managing their growth. The major assistance, often involving institutional change, should come from the states. Until each state can modify its laws, taxes and sometimes its constitution, substantial federal government help is and will be needed. Current ways of doing things

also need to be modified by the enrgy industry, local governments and the mass media.



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## APPENDIX A

### DEFINITION OF FACTORS OF PRODUCTION

In this instance, the factors of production are land, labor and capital. A market exists for each factor. Land (M) includes land and materials, Labor (L) includes all those who gather, combine or convert M. Capital (I) is the investment capital required to obtain M and L from their respective markets and to assemble them into Product (P), which is then sold to maintain the process. Thus, production is a function of the amounts and proportions of factors, or  $P=f(M,L,I,)$ .

## APPENDIX B

### NATIONAL ENERGY ACTIVITIES

Emergency Petroleum Act of 1973. This act was signed by the President on November 27, 1973 and required the allocation of crude oil, residual fuel oil, and refined petroleum products manufactured in or imported into the United States with certain exceptions for special products or limited use products such as petroleum coke and asphalt. The law requires allocation to users of petroleum products throughout the distribution chain on an equitable basis wherever practicable. It is intended that all regions and economic sections receive equitable shares of available fuels and that this be achieved primarily at the wholesale level.<sup>90</sup>

Permanent Daylight Savings Time. Year round daylight savings time was established on January 6, 1974 as a means of conserving energy. It has been estimated that this measure will save the equivalent of 150,000 barrels

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<sup>90</sup> "Summary by Federal Energy Office of Mandatory Petroleum Allocation Regulations," Energy Users Report, 23B-4, January 17, 1974.

of oil daily. Daylight savings time throughout the year, according to past President Richard Nixon: "Will mean only minimum of inconvenience and will involve equal participation by all."<sup>91</sup>

Maximum Highway Speed Set at 55 MPH. Legislation was signed into law on January 2, 1974, establishing a uniform maximum highway speed limit of 55 miles per hour. States failing to lower speed limits to 55 MPH could lose federal highway trust funds. It is estimated the law would aid in reducing gasoline and diesel fuel consumption and could save nearly 200,000 barrels of fuel daily. In addition the law provides for expenditures of up to 1 million for programs to encourage carpools.<sup>92</sup>

Federal Energy Administration Established. Former President Richard Nixon signed legislation on May 7, 1974 creating the federal energy administration. FEA is responsible for carrying out fuel allocation and petroleum pricing regulations, energy data collection and analysis, energy planning and energy conservation. The appropriation for fiscal 1975 and 1976 is 2 million. The functions

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<sup>91</sup>"Conservation: President Signs Bill to Establish Permanent Daylight Savings Time," Energy Users Report, 19A-41, December 20, 1973.

<sup>92</sup>"Conservation: President Signs Law-Setting Maximum Highway Speed at 55 MPH," Energy Users Report, 21A-22, January 2, 1974.



being transferred to FEA include those formerly in the Interior Department's Office of Petroleum Allocation, Office of Energy Data and Analysis, Office of Oil and Gas, Office of Energy Conservation and the Cost of Living Council's Energy Division.

The head of FEA, John C. Sawhill, commented on the policies FEA will follow:

We will be initiating programs to reduce energy demands over a broad range of activities, including consumer demand and also in the business sector, and will be moving forward with programs to bring on new energy supplies. Our supply program will probably only become evident in the next two to three years and that is why we must focus so hard on conservation in the immediate short-term and we will continue to do that.<sup>93</sup>

Mandatory Propane Gas Allocation Program. A mandatory propane gas allocation program was placed into effect on October 2, 1973 by the Energy Policy Office. The director stated that the scarcity of home heating oil should be most pronounced in the northeast and the upper midwest, while shortages of propane gas are likely to occur in rural and food-producing areas. He said that, for a number of reasons, the independent distributors in those areas are obtaining fewer supplies and thus are unable to maintain previous deliveries.

A priority propane use list was established. Priority users include: residential use, agriculture

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<sup>93</sup>"Reorganization: Nixon Signs Bill Creating New Federal Energy Agency," Energy Users Report, 39AA-5, May 9, 1974.

production, food processing, mass transit vehicles, buildings for housing medical and nursing patients where no feasible alternate fuel is available, industrial vehicles or equipment used in enclosed facilities, essential government services, oil and gas well drilling and field production operations, fuel for pipelines and other transportation for delivering propane to markets, commercial requirements with total annual consumption not exceeding 15,000 gallons per year per location and peak shaving by natural gas utilities.

The propane allocation plan specified that no priority will be granted to natural gas utilities so long as they continue serving interruptible industrial customers or customers who can fuel other than natural gas.<sup>94</sup>

Mandatory Middle Distillate Fuel Allocation Program.

A mandatory middle distillate fuel allocation program applicable to the wholesale level became effective November 1, 1973. The plan announced jointly by the White House Energy Policy and the Department of the Interior is based on historic distribution criteria. The program covers derivatives of petroleum such as kerosene, jet fuel, home heating oil, range oil, stove oil, diesel fuel and gas oil, which have a 50 percent boiling point in the American Society for

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<sup>94</sup>"Allocations: Mandatory Propane Program Announced: Heating Oil Regulations Expected Within Two Weeks," Energy Users Report, 8AA-1, October 4, 1974.

Testing and Materials' D 86 standard distillation test falling between 350 and 700 degrees Fahrenheit.

Under the program, wholesale purchasers of middle distillate fuels will be allocated up to 100 percent of the quantities purchased in calendar year 1972 or, if these quantities are not available, a proportional share of the supplier's allocable supplies. Wholesale purchasers not in business during the entire base period or who have had substantial increases in fuel requirements may petition the Department of the Interior to be assigned a supplier or to receive increased allocations.

State governments may recommend redirection of future deliveries of middle distillates within their states from one or a number of wholesale purchasers to other wholesale purchasers to alleviate exceptional hardships of end users. The redirection will be authorized by an Interior Department representative within the state that makes the recommendation.<sup>95</sup>

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<sup>95</sup>"Allocation: White House Issues Mandatory Middle Distillate Fuel Programs," Energy Users Report, 10AA-1, October 18, 1973.

## APPENDIX C

### TECHNICAL ASSISTANCE

HUD. The Department of Housing and Urban Development is largely an administrative agency. It can be of help to energy impacted communities in identifying the right office or person, within the massive federal system, for providing specific technical or financial aid. The community planning and development staff in the effected HUD regional office can also direct the energy impacted community to the appropriate office within HUD to discuss various programs.

An example of specific programs, administrated by HUD, which offer direct assistance in different forms to energy impacted communities are:

Comprehensive Planning Assistance (701)

Various Housing Programs

Community Development Block Grants

New Communities Assistance

Federal Energy Administration. The Office of Energy Resource Development, within FEA, has had vast

experience in collecting extensive studies on the impacts associated with the building of new energy projects. Information can be collected from FEA on energy needs, plant siting and approval processes and on the experience of other communities.

Coastal Zone Management. The Office of Coastal Zone Management in the Department of Commerce is concerned with the impacts of energy projects in coastal zones. The zones will be locations of onshore support facilities for offshore oil and gas exploration and production.

This program of assistance to energy communities is limited in that the energy community must be within the specified coastal zones. The Coastal Management Act provides funds for planning and analyzing impacts, as well as, direct grants and loan guarantees for related services.

Health Maintenance Organizations. The Department of Health, Education and Welfare has established an office to promote the establishment of Health Maintenance organizations. Eligible applicants include public and private non-profit organizations that plan to develop and operate an HMO. Profit making groups can be aided if they are in a medically underserved area. HEW can give project grants, research contracts, direct loans and guaranteed loans.

Development of HMO would be invaluable to energy impacted communities in coping with the uncontrolled

growth and the resulting strain on medical facilities.

Intergovernmental Personnel Act. The Civil Service Commission is in charge of the IPA programs, which include the temporary assignment of personnel exchanged between federal agencies, states and local governments. It may be possible for a state or impacted community to obtain the services of a qualified federal employee in planning and managing rapid growth. The Department of Housing and Urban Development may be one source of people. Assignments are generally for two-year periods. Salary arrangements are worked out between the state or local government and the federal agency, with potentials ranging from a full federal to a full state support.

## APPENDIX D

### FEDERAL FINANCIAL ASSISTANCE FOR PLANNING AND MANAGEMENT

HUD 701 Comprehensive Planning Program. HUD provides funds to states, area-wide planning organizations and local government to support comprehensive planning and for specific plans for growth land use and housing. The purposes are general enough that this money can easily be used for studying and responding to a broad range of project impacts. 701 funds are allocated under the following five categories:

1. Statewide planning.
2. Large cities (over 50,000 population) and urban counties.
3. Metro area-wide planning organizations.
4. Non-metropolitan area-wide districts.
5. Local assistance to counties and towns under 50,000 population.

The funds under categories 4 and 5, of most importance to rural impacted communities, are allocated by HUD to the states, which then make the decision on how the funding is distributed. Each state has a designated agency

making that allocation based on published criteria. Factors considered include past performance, capability, coordination and implementation.

The amount of money available to a community or area-wide district is not sufficient under this process to do all the needed planning. The 701 funds, therefore, should be used to package or support a coordinated planning effort using other funds available from state counterpart agencies.

FEA Reimbursement Program. The Federal Energy Administration has had a program of cooperative agreements with states to carry out a variety of energy planning studies and programs. These funds can be used for fuel allocation programs, statewide energy plans and studies of the impacts of energy policies and resource development. Money can be reallocated by states to their local governments for the same purposes.

Coastal Zone Management. The Coastal Zone Management Act of 1972 authorized the Commerce Department to give grants to 34 eligible coastal states to plan for a coastal zone management program. The grants are given annually, with a three-year limit. Each plan must take energy projects and their potential socioeconomic impact into account. A special appropriation of 3 million each year for 1975 and 1976 goes to states to study the impacts



of potential outer continental shelf development.

EPA "208" Planning for Wastewater Systems.

Section 208 of the Federal Water Pollution Control Act Amendments of 1972 created a major planning program for area-wide waste water treatment management planning. By the end of 1975, the Environmental Protection Agency had designated 149 regional agencies and areas, largely in metropolitan areas, as 208 planning agencies.

The funding is committed at the beginning for the entire two-year process. States and local communities can work with the 208 agency to assure that their plans consider the many impacts of energy developments.

Examples of regions with energy-impacted communities that have received EPA 208 planning grants are:<sup>96</sup>

The Colorado West Council of Governments for the area impacted by oil shale development .....	\$363,000
The Five-County Association of Governments in Southwest Utah .....	\$375,000
Butte, County, South Dakota .....	\$375,000
The Power River Area of Wyoming .....	\$4.5,000

Regional Commission. The eight Regional Commissions each have the authority to grant funds to their states,

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<sup>96</sup>"Socioeconomic Impacts and Federal Assistance in Energy Development Impacted Communities, Region VIII," Federal Energy Administration, Lakewood, Colorado, April, 1976, p. 23.

area-wide districts or local governments for planning purposes. This can include money for technical assistance, research studies, planning and demonstration projects.

The technical assistance and planning grants provided by the various Regional Commissions are discretionary and not by formula. Eligible applicants include member states, area-wide districts, local governments and non-profit organizations. Listed below are the eight Regional Commissions within the United States:

Appalachian

Coastal Plains

Four Corners

New England

Old West

Ozarks

Pacific Northwest

Upper Great Lakes

Economic Development Administration. EDA has a program of technical assistance to provide information and demonstrate possible responses. Their funding includes a wide variety of topics and projects including: feasibility studies, seminars, demonstration projects or training. Generally speaking, the grants are very flexible and as a result are in heavy demand.

## APPENDIX E

### FUNDS FOR CAPITAL PROJECTS

HUD Community Development Block Grants. Several existing categorical programs for community development were consolidated into a single-block grant program as authorized by legislation in 1974. The primary objective of the program is the development of viable urban communities by providing decent housing, a suitable living environment and expanding economic opportunities, principally for persons of low and moderate incomes. This is achieved through elimination of slums, blight and detrimental living conditions, conservation and expansion of housing and housing opportunities, increased public services, improved use of land, increased neighborhood diversity and preservation of property with special values.

The program also seeks a national growth policy by establishing a system which (1) provides annual assistance with maximum certainty and minimum delay, (2) encourages community development activities consistent with local and area-wide planning, (3) further achievement of the national housing goal, and (4) provides for

coordinated and mutually supportive housing and community development activities.

Rural cities and counties must apply directly to the Department of Housing and Urban Development area office. Applicants must prepare a three-year CD program, identifying needs, proposing a program and specifying objectives.

In the first year of operation, the City of Vernal, Utah (population 5,000) received \$105,000 for water and sewer facilities and land acquisition. Buffalo, Wyoming (population 4,500) received \$127,000 to provide water and sewer facilities, streets and housing rehabilitation.<sup>97</sup>

EDA Grants and Loans for Public Works and Development Facilities. This program is designed to assist in the construction of public facilities, such as water and sewer systems, transportation facilities and site improvements for industrial parks. Eligible applicants include states, local governments, Indian tribes and non-profit organizations. The basic grant is 50 percent, with more possible for Indian tribes, severely depressed areas and redevelopment areas located in economic development districts. Long-term loans are also available.

The range of projects in 1974 was from \$125,000 to \$2.5 million, with an overall average of \$380,000.

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<sup>97</sup>Ibid., p. 26.

At Shawnee Town, Illinois, a \$2.6 million grant will be used to help develop a public facility to handle low-sulphur coal. The port and storage facility will be used to encourage new mining activity.<sup>98</sup>

EDA Title IX-Special Adjustment. Title IX is designed to meet the needs of communities faced with an actual or threatened economic dislocation or other adjustment problem. Eligible recipients include individual states and cities, counties, economic development districts and Indian tribes singly or in combination. Grants may be made for public facilities, business development, planning, research, technical assistance, public services, rent supplements, mortgage payment assistance, relocation of individuals, training, unemployment compensation and any other appropriate assistance.

Within the past year funds have been given to a number of energy impacted communities. Some of these are:<sup>99</sup>

Beulah, North Dakota, \$425,000 for water system.

Craig, Colorado, \$250,000 for water system and \$175,000 for storm drains.

Price, Utah, \$50,000 for a study of their water system needs.

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<sup>98</sup>Ibid., p. 26.

<sup>99</sup>Ibid., p. 27.

EPA Wastewater Treatment Construction Grants.

The major source of funds for the Construction of Wastewater Treatment Plants and Systems is the Environmental Protection Agency. Such systems may serve municipal and industrial wastes covering individual communities on the planning done under the EPA 208 program. Funds are allocated by states.

The federal grant is for 75 percent of the eligible projects' costs. Grants in 1974 ranged from \$2,000 to \$236 million, with the overall average \$1.6 million.

Some states assist grantees in providing the 25 percent non-federal share. Green River, Wyoming is using an EPA grant for construction of a new treatment plant. Dickenson, North Dakota received a grant of \$675,000 while \$427,000 went to Huntington, Utah.<sup>100</sup>

Farmers Home Administration. For rural areas, the Farmers Home Administration can be a source of aid under the following two programs:

- 1) Water and waste disposal systems for rural communities.
- 2) Community facilities' loans for fire, transportation, traffic control, community, social, cultural, health and recreation.

Eligible applicants include cities, counties, area-wide districts, non-profit organizations and Indian tribes.

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<sup>100</sup> Ibid., p. 31.

The systems or facilities must serve open country or communities of less than 10,000 population. Funding in recent years included impacted communities in: Dune Center, North Dakota--\$81,000 loan and \$60,000 grant for a water system; Steamboat Springs, Colorado--\$900,000 loan for sewage system; and Douglas, Wyoming--\$34,000 loan for child care facility.<sup>101</sup>

Farmers Home Administration Business Loans. While directed to private organizations, this loan program of the F.H.A. is also available to public bodies. Loans are given for business, industry and residential purposes.

Examples of rent loans in impacted communities include: \$540,000 for a mobile home in Gillette, Wyoming; \$145,000 for a medical and dental clinic in Rifle, Colorado; \$420,000 for a 24-unit housing project in Forsyth, Montana; and \$665,000 for an elderly rental housing project in Spearfish, South Dakota.<sup>102</sup>

Bureau of Outdoor Recreation. The Land and Water Conservation Fund provides matching grants to state and local units of government for acquisition and development of public outdoor recreation areas and facilities. Each state receives an annual apportionment based on the

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<sup>101</sup>Ibid., p. 32.

<sup>102</sup>Ibid., p. 35.

formula provided in the Land and Water Conservation Fund Act of 1965. Funds are granted to the states on a project by project basis. Funds may be transferred to political subdivisions of the state for approved projects.

Not more than 50 percent of total eligible costs may come from federal funds. Approximately \$220 million is available for obligation for fiscal year 1976. Grants range up to \$5.4 million with an overall average of \$68,000.<sup>103</sup>

Mobile Home Financing. A variety of programs are available from the Department of Housing and Urban Development and Farmers Home Administration for new and existing housing. These programs which are applicable and useful to impacted communities are determined by HUD area offices.

Two programs which may be of value in the construction and rapid growth stages of energy developments relate to the financing of mobile homes and their parks. Those program are:

A. Mobile Home Loans--made by approved lending institutions and insured by HUD. Units must be at least 10' x 40' and meet HUD standards. Loans up to \$10,000 for single-unit and \$15,000 for double-wides, with a maximum term of 12 to 15 years.

B. Mobile Home Parks--the Farmers Home Adminis-

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<sup>103</sup>Ibid., p. 35.



tration will insure loans from approved lenders for Mobile Home Park Development. Mortgage may cover 90 percent of park value up to a limit of \$3,250 per space. The maximum term is 40 years. The park must be large enough to be profitable with no maximum limit. It must contain public utilities and neighborhood amenities.<sup>104</sup>

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<sup>104</sup>"Minimum Design Standards for Mobile Home Courts," Department of Housing and Urban Development, Washington, D.C., April, 1974, p. 14.

## APPENDIX F

### FEDERAL FUNDS FOR OPERATING PURPOSES

National Health Service Corps. The NHSC was set up to improve the delivery of health care and services in areas critically short of health personnel. The Secretary of Health, Education and Welfare may assign personnel to designated communities, with emphasis on primary medical or dental care. The number and type of people assigned will depend on the nature of shortages.

Eligible applicants are states, local health agencies and non-profit health organizations. The local matching requirements are set up for each individual case.

Law Enforcement Assistance Discretionary Grants. In addition to the formula grants which LEAA gives to the states, there are discretionary funds available. The emphasis has been given to reducing crime in major cities and developing state criminal justice standards. Some funding may be available for the unusual problems of energy-impacted communities.

Eligible applicants are states and local

governments or combinations of agencies. Funds may be spent for salaries, operating expenses and some capital costs. A 10 percent match is required for operating and 50 percent for capital grants.

ENERGY NEW TOWNS:  
A LOOK AT POPULATION AND SOCIOECONOMIC PROBLEMS AND SOLUTIONS

By  
Hugh A. McCoy  
B.S. Kansas State University, 1973

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AN ABSTRACT OF A MASTER'S REPORT

Submitted in Partial Fullfillment of the

Requirments for the Degree

MASTER OF REGIONAL AND COMMUNITY PLANNING

Department of Regional and Community Planning

KANSAS STATE UNIVERSITY

Manhattan, Kansas

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As a direct result of the energy crisis of recent years, our nation has witnessed tremendous increases in the demand for power or energy.

Power company officials presently are receiving tremendous amounts of pressure from governmental and manufacturing sources as well as the private citizenry to provide methods of satisfying the projected energy demands for this nation.

This ever increasing demand for more efficient and improved energy sources has given rise to what is commonly referred to as "ENERGY TOWNS".

The problem lies herein. How do we construct, often many times massive power plant facilities, to provide this service for the future without causing irreparable population and socioeconomic damage to a particular area? Obviously, many trade-offs must persist and a suitable solution to satisfying both energy demands while maintaining a suitable living environment must be reached.

The purpose of this Master's Report will be to identify some of the trade-offs that must prevail if our nation is to become energy independent within the next decade while identifying problems and various methods

of handling population and socioeconomic considerations of the monster that is a direct result of the energy crisis, ENERGY NEW TOWN. More specifically, the research will identify various population and socioeconomic problems characteristic of energy town developments and discuss and analyze methods and financial assistance programs available for dealing with the problems of energy town complexes. The following sections will briefly discuss the thrusts of this Master's Report.

### Population Density

While it is desirable to locate a plant near its load centers, these often are population centers and population density poses problems with site acceptability. Neighboring population generally will not look favorably toward nearby siting of a power plant or any other heavy industrial facility. The height of boilers, stacks and cooling towers, plus the difficulty of concealing the railroad switchyard will almost always cause this equipment, and rightfully so, to become visible targets for public criticism.

Population density spells especially difficult problems for nuclear power plants. The Atomic Energy Commission's present siting policies do not favor either urban or urban proximity. In addition, each nuclear plant site must have an exclusion zone of almost a mile radius from the plant in every direction on land.

Problems which might arise if a dense population should build up after or during plant construction are discussed more specifically in the following section.

### Socioeconomic Impact

If a plant is built in a relatively isolated area

with sparse population, in all likelihood it will have an important influence on the area's economic pattern, level of government services, social structures, activities and quality of life. Conversely, if a plant is built relatively close to a highly populated center of economic activity, its potential socioeconomic impact will be less significant.

During construction and operation the plant will draw into the local area a body of highly paid workers. While most of this work force and its payroll will depart when the plant starts up, the facility is a sizable addition to the local tax base. The revenue from it, however, will be offset partially by increased demand for services such as water, traffic control, police, fire and health protection and sewage disposal.

There is another possible dimension. This is the commercial activity which a plant may stimulate, such as additional banks, retail stores and service organizations. To the extent that these develop, there will be additional tax revenue, population and government activity.

The relative desirability of a new plant's socioeconomic effect will depend considerably upon the existing socioeconomic personality of the area.

These two problems represent only a small portion



of criteria that planners should be able to address when confronted with the construction of a power plant. How should sudden population increases be handled, with the realization that declines are imminent upon completion of construction? How will population increases alter various community services such as housing, police and fire protection, the tax base and many other problems? What will it mean to the local citizen? Who really gains and loses from such a massive and limited influx of capital into an area?

These are only a few of the questions that will be answered by the following research into the ever increasing problem of ENERGY NEW TOWN COMPLEXES.