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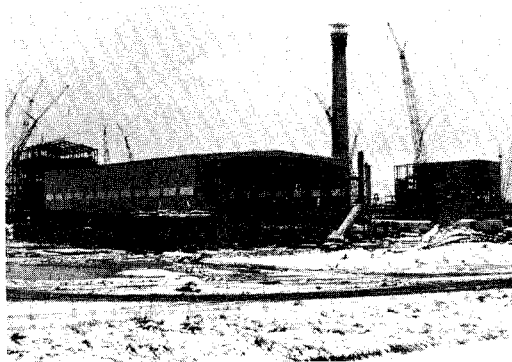
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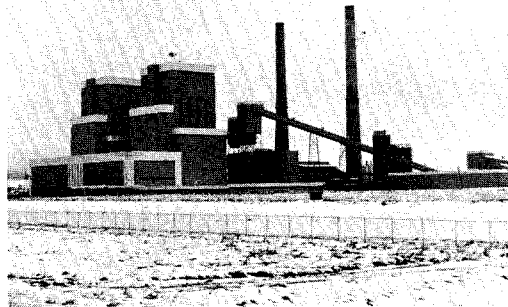
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Impacts of Energy Development on Mercer County, North Dakota

by
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FOREWORD

In the past decade, demands for new sources of energy supply have led to increased exploitation of the United States' coal and oil reserves. This in turn has led to rapid growth of many small western communities often unprepared to manage this expansion. Western North Dakota, with its large oil and lignite reserves, has also experienced these effects.

This study examines the efforts of Mercer County, North Dakota to deal with the impacts of several large-scale facilities constructed and under construction near Beulah, the county's largest city. The county has, thus far, adjusted well. The lessons of Mercer County may, therefore, be useful in planning for future growth in other communities.

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Highlights

The objectives of this report were to examine the economic and demographic effects of energy development in Mercer County; measure the fiscal and public service impacts of this development; estimate the secondary employment effects of the projects; and examine and evaluate the efforts of different planning agencies to measure and mitigate the socioeconomic impacts of energy development.

Mercer County has experienced substantial growth in the past decade, beginning with the construction of the Coyote Power Plant in 1977 (completed in 1981) and continuing with the Antelope Valley Power Station and the Great Plains Coal Gasification Plant. These projects have increased demands for housing, public services, retail facilities, and educational services.

Planning for impact management in the county has been undertaken at the local, state, and federal levels through a variety of institutions. These include the Inter-Industry Technical Assistance Team (ITAT), the Mercer County Task Force, the state run Energy Development Impact Office (EIO), and the federally funded Energy Development Board.

In spite of the county's rapid population growth, most impacts appear to have been manageable. Through a combination of EIO, industry, and local funding sources personnel and facilities have been provided to deal with increased demands on education and public services. Shortages of social service, medical personnel, and housing remain a problem.

The North Dakota System of Coal Severance and Conversion Tax revenues redistributed to coal producing counties seems to have been an effective device for funding impact mitigation in Mercer County. Industry, through its Technical Assistance Team (ITAT), has maintained detailed monitoring records of the area's energy work force, which has been useful in reformulating management plans and devising future strategies. The Federal Department of Energy's attempt to manage growth in the county through its Energy Development Board does not seem to have been very useful to Mercer County.

A final highlight of this report is its documentation of the effects of energy development on secondary, nonenergy local businesses. Through a survey of local employers and employees, valuable information is provided on immigration, wage levels, family size, and other key characteristics of this sector.

Need for the Study

In the past decade, energy prices on the world market have risen dramatically, especially for petroleum-based products. This in turn has led to increased demand for development of domestic energy sources, both traditional (e.g., coal, oil) and alternative (e.g., wind, solar, synfuel). The lignite coal reserves of North Dakota represent a significant source of energy. Coal production in North Dakota for 1981 was in excess of 17 million tons (a three-fold increase since 1970) and is expected to increase rapidly in the coming years (Leistritz and Maki, 1981). Rural areas of the state can, therefore, expect to be affected by construction and operation of energy facilities.

Expanding coal development will affect the economic, demographic, public service, fiscal, social, environmental, and other characteristics of rural areas. Some of these effects may be generally regarded as positive while others may be considered negative; in some cases, the same changes in community characteristics may be seen as favorable by some and adverse by others. Among the many effects of energy development, some of the most important socioeconomic factors to be affected are 1) employment, 2) income, 3) business activity, 4) population growth, 5) population distribution, 6) population characteristics, 7) requirements for public services, including police, fire, medical, social, and other services, 8) public sector revenues and expenditures, and 9) community residents' perceptions and attitudes. The effects on these socioeconomic dimensions concern both public and private decision makers in making investment decisions and are of critical importance in determining the overall costs and benefits of such projects to the areas where they are located.

To many local residents, the desirability of a new project is primarily a function of its positive effects on employment opportunities, business activity, income, and population in nearby communities. On the other hand, if resource development projects require significant expansion of local public services and facilities and require substantial increases in public sector expenditures, local governments may experience severe growth management problems, and the project may become the focus of local concern. As a result, socioeconomic impacts are sometimes a major reason for opposition to development projects. Furthermore, if service and related conditions deteriorate substantially, the result may sometimes be high rates of labor

turnover and costly project delays (TOSCO, 1980; Metz, 1980). The socioeconomic effects of energy resource development may significantly affect both residents of areas where such projects are sited and the progress of the projects. The need for careful analyses of such effects and for the development of measures to prevent or alleviate adverse effects is apparent.

The socioeconomic impacts of large-scale projects have received increased attention in recent years as the result of increasingly stringent regulatory requirements imposed by federal and state governments. The National Environmental Policy Act (NEPA) of 1970 requires preparation of Environmental Impact Statements (EIS) for all projects involving a major federal action, and such statements must include the analysis of socioeconomic impacts. As a result, thousands of environmental impact statements have been completed for a variety of projects. In addition, a number of states have enacted environmental and/or facility siting legislation imposing impact assessment requirements similar to those of NEPA. Several states, including North Dakota, have imposed assessment, monitoring and mitigation requirements beyond those of NEPA. Because the socioeconomic assessment process is relatively new, however, few attempts have been made to evaluate the accuracy of impact assessments and the usefulness of the information they provide in planning and decision making. Such evaluations are critically important if the utility of future assessments is to be improved. Retrospective case studies of energy development areas appear essential as one means of providing a basis for such evaluations.

While extensive analyses of socioeconomic impacts and impact assessment methods have been completed, the general state of knowledge concerning such effects is limited. Past analyses typically have been concerned only with the project construction phase and have seldom treated the long-term effects associated with project operation. As a result, these studies generally lacked an ability to address the effects of development sufficiently over various project phases. Analyses may best overcome this obstacle by addressing the full range of impacts which are likely to occur over time. Mercer County provides an example of an area which has a recently completed major project, two projects underway, and several in the planning stages.

Another limitation of the current state of knowledge is that little definitive information is available concerning regional variations in socioeconomic impacts. Examples drawn from other western energy development areas may not be applicable to North Dakota. Information from retrospective

case studies of projects developed in different regional contexts is needed, both to anticipate more accurately the effects of future projects that may be developed in a given area (e.g., west-central North Dakota) and to aid in more precisely establishing relationships between site area characteristics and impact events.

Finally, perhaps the most serious limitation of past analyses has been their failure to evaluate impact mitigation and growth management measures adopted by project developers and local and state governments. The principal justification for conducting detailed impact assessments is to enable decision makers to manage the impacts associated with development more effectively. Information concerning the effectiveness of the impact mitigation approaches employed in connection with past projects appears essential as a basis for developing more effective strategies for managing the impacts of future projects.

Purpose of the Study

Recently, Mercer County, North Dakota has been the site of several large-scale energy developments. These include the Great Plains Coal Gasification Plant (under construction), the Coyote Power Project (completed), and the coal-fired Antelope Valley Power Station (under construction). These projects employ a large percentage of the area's total work force and provide substantial revenues to the county through taxes and economic activity.

This report examines the economic, demographic, public service, and fiscal impacts of the construction of these facilities on Mercer County over the past five years. Specific objectives of the report are

- 1) to examine the economic and demographic effects of energy development in Mercer County;
- 2) to measure the fiscal and public service effects of this development;
- 3) to estimate the secondary employment effects of the projects;
- 4) to examine the efforts of different planning agencies to measure and mitigate socioeconomic impacts of the development; and
- 5) to identify impact mitigation and growth management approaches employed and evaluate the effectiveness of these measures.

This report is organized into six sections. The first section examines the state's role in energy development. This includes a review of the coal severance tax, the coal conversion privilege tax, and the Energy Facility

Siting Act. This section provides the setting for energy development in North Dakota. The second section provides an overview of Mercer County, including its historical growth patterns and the size and characteristics of energy facilities--completed, under construction, and proposed--which impact or may impact the area. The third section delineates the impacts of energy development on housing, schools, roads, social services, local businesses, law enforcement, and medical facilities, and measures taken to manage these effects.

The fourth section examines management measures or structures unique to the Mercer County case. These include the federally funded Energy Development Board (EDB), the North Dakota Energy Development Impact Office (EIO),¹ and the Prairie Hills housing facilities in Beulah.

The fifth section of the report looks at industry's role in impact management, through the Inter-Industry Technical Assistance Team (ITAT). This includes socioeconomic monitoring activities undertaken as a condition for permit approval.

The final section evaluates the effectiveness of measures taken, identifies areas where improvement may still be needed, and examines the strengths and overall applicability of some of the more successful management efforts to those of other large-scale developments.

State Response to Coal Development

By 1974, North Dakota policy makers had become aware of the magnitude of coal development projects proposed for the state, and many desired that the state adopt a positive, proactive stance in response to both the problems and the opportunities associated with development. Accordingly, four major pieces of legislation were enacted by the 1975 legislative session to provide a basis for constructively managing the development of large-scale energy facilities. These legislative measures concerned 1) coal severance tax, 2) coal conversion tax, 3) energy facility siting, and 4) environmental information for policy makers.

Coal Severance Tax

The state of North Dakota established a coal severance tax in 1975 at the rate of \$.50 per short ton, indexed to inflation (i.e., the rate was increased in proportion to the rate of inflation). Revenues from the tax were distributed in the following manner: 35 percent to a Coal Impact Fund

(from which grants would be made to local governments), 5 percent to the county where the coal was mined, 30 percent to a state trust fund, and 30 percent to the state general fund.

This allocation formula was extensively debated in subsequent state legislative sessions, with the formulas changing in 1977 and again in 1979. Severance taxes were raised in 1977 to \$.65 per short ton with an inflation adjustment of \$.01/ton for each one point rise in the Wholesale Price Index. Distribution formulas were altered to allow 15 percent to the state trust fund, 35 percent to the coal impact fund, 20 percent to the impacted county, and 30 percent to the state general fund. The 1979 Legislative Session changed the inflation index to \$.01/ton for every four point increase in the wholesale price index, and allowed distribution of severance tax revenues to counties adjoining coal producing counties as compensation for spillover development impacts.

Coal Conversion Facility Privilege Tax

The coal conversion facility privilege tax is applied to electrical generating plants and other coal conversion facilities (e.g., coal gasification and liquefaction plants). The tax is in lieu of all property taxes except for taxes on the land on which the facility is located. This tax is applicable to any electrical generating plant having at least one generating unit with a capacity of one hundred twenty thousand kilowatts (120MW) or more, and to any coal conversion plant using or designed to use over five hundred thousand tons of coal per year.

The tax rate for electrical generating plants is 0.25 mill on each kilowatt hour of electricity produced for sale. For coal gasification plants, the rate is 2.5 percent of the gross receipts of the facility or \$.10 per one thousand cubic feet of synthetic natural gas, whichever is greater. For other coal conversion facilities, the rate is 2.5 percent of gross receipts. The revenue from this tax is divided between state and local governments with 65 percent to the state general fund and 35 percent to the county where the facility is located. The county's share is further allocated, by statute, with 30 percent distributed to the municipalities, 30 percent divided among the school districts, and 40 percent to the county general fund.

The coal conversion privilege tax was initially enacted in 1975. This legislation had the same provisions as the present law except that the

allocation of revenues between county and state was based on a sliding scale whereby the state obtained a larger share of the revenue from larger facilities. The distribution of the county's share was somewhat different from that prevailing under current law. The present law, described above, has been in effect since 1977.

Energy Facility Siting Act

The Energy Facility Siting Act was also enacted by the 1975 Legislative Session and has continued in force with only minor amendments. This act provides the state Public Service Commission with siting authority over energy conversion and transmission facilities. Energy facilities covered by this act include electric generating plants (50MW or larger), plants for manufacture or refinement of 100 MCFD or more of synthetic gas, plants for manufacture or refinement of 50,000 barrels or more of liquid hydrocarbon products per day, and any uranium enrichment plant. Pipelines associated with such facilities (except for natural gas gathering systems) are covered by the act as are electrical transmission lines of 200 kilovolts (KV) or more. Transmission lines of 116 to 200 KV are covered if they do not follow section lines, property lines, or established rights-of-way (e.g., roads or railroads).

The Public Service Commission was empowered to establish siting criteria and procedures for permit application and review for facilities covered by the act. In determining whether to grant a certificate of site compatibility (for plants) or a construction permit (for transmission facilities), the commission conducts an extensive review and holds public hearings to determine that the construction and operation of the facilities will produce minimal environmental and socioeconomic impacts. Further, the commission has the authority to impose requirements designed to minimize or mitigate such impacts as a condition of granting a permit.

Several major energy facilities have been reviewed and permitted under the Siting Act. Among these are the Coyote and Antelope Valley electrical generating plants and the Great Plains Gasification Project.

Environmental Information for Policy Makers

In 1974, the North Dakota Legislative Council was concerned that the state should have a comprehensive environmental information and analysis system to enable legislative and executive branch decision makers to reach informed decisions concerning coal development issues. Accordingly, in

mid-1974, the North Dakota Legislative Council contracted with Battelle Columbus Laboratories to conceptualize such a system. Battelle prepared and presented to the Resources Development Committee of the Legislative Council a report suggesting a design and structure for a "regional environmental assessment program." Legislation was subsequently enacted by the 1975 Legislative Session, establishing the North Dakota Regional Environmental Assessment Program and providing an initial appropriation of \$2 million from the coal severance tax trust fund.

During the period 1975 to 1979, the North Dakota Regional Environmental Assessment Program (REAP) sponsored numerous baseline environmental studies in areas likely to be affected by extensive coal development. REAP also developed computerized data bases and software to make key information readily accessible to decision makers and to facilitate specific policy-oriented analyses. Particularly relevant to this discussion of the economic and social effects of development was the development of a computerized economic, demographic, and fiscal impact projection model that became known as the REAP Economic-Demographic Model-1 or RED-1. The RED-1 Model was made available for general use by decision makers in January 1977. During the next two years, the model was utilized extensively as a planning and policy tool by legislative committees, state agencies, and local governments. Applications of particular interest include the model's use by legislative committees in developing the formula for distributing coal severance tax revenues to local governments, its use by the Coal Impact Office in determining the needs of various communities for impact grants, and its use by local jurisdictions as a tool in planning new public facilities (Leistritz et al., 1982).

The Regional Environmental Assessment Program was terminated, by gubernatorial veto, in 1979. During its four years of operation, however, it appears to have at least partially fulfilled its mission of making information concerning the environmental and socioeconomic impacts of energy development more readily available to policy makers.

Historical Overview of Mercer County

Mercer County is no newcomer to construction impacts. The Garrison Dam project, started in 1946, generated significant employment and population effects during its construction on the Missouri River between Mercer and McLean counties. The project took nearly 10 years to complete, and provides

substantial flood control, irrigation potential, power generation, and recreational benefits.

More recently, the need for additional sources of electricity throughout the Midwest has led to increased exploitation of North Dakota's coal resources to supply power plants in the center of the state. Several of these plants--Coyote, Antelope Valley Station, the Stanton Plant, the Great Plains Coal Gasification Project, and the Leland Olds Station--are located in Mercer County. Others are in neighboring McLean and Oliver counties (see Table 1).

Mercer County has historically been sparsely populated, with a recent history of stable or declining population. Before the influx of energy projects, the principal industry was agriculture, which continues to occupy an important role in the county's economic base. Population in the area declined from 6,805 in 1960 to 6,175 in 1970. With the advent of Coyote, Antelope Valley Station, and the Great Plains Project in the late 1970s, population had grown to 9,404 by 1980, an increase of 52.3 percent in 10 years, compared to a statewide growth rate of 5.6 percent (617,761 to 652,220) over the same period.

Principal cities of the county are Beulah (pop. 2,911) and Hazen (pop. 2,378); smaller population centers are Zap (pop. 516) and Golden Valley (pop. 279). Two other cities, Stanton (the county seat--pop. 619) and Pick City (pop. 173), lie on the eastern border adjoining McLean County and have been less heavily impacted. All have experienced substantial growth in the past decade (see Table 2).

The three principal developments to affect Mercer County in the past five years are the Coyote Station, financed by a consortium of utilities; Antelope Valley Station, owned by Basin Electric Power Cooperative; and Great Plains Coal Gasification Project, owned by Great Plains Gasification Associates (GPGA) and administrated by American Natural Gas (ANG) Coal Gasification Company. Coyote, completed in 1981, is a 410 MW coal-fired power plant. Construction began in 1977, with a peak work force of 1,031 occurring in 1979. Antelope Valley Station Unit One (438 MW) was begun in 1978 and should be completed in 1983. Unit Two (438 MW) was started in 1980, with scheduled completion in 1985. Peak construction work force of 1,897 occurred in 1980. The most recent development is the Great Plains Project, started in 1980. Completion is estimated in 1985, with a peak work force of 3,371 anticipated in 1982 (Table 3) (ITAT, 1982).

TABLE 1. COAL CONVERSION FACILITIES CONSTRUCTED IN NORTH DAKOTA, 1965-1981

| Facility | Owner | Development Period | | Capacity |
|---|--|-----------------------|----------------------------|----------|
| | | Start of Construction | Completion of Construction | |
| Leland Olds Station, Unit 1 | Basin Electric Power Coop. | 1963 | 1966 | 212MW |
| Stanton Plant | United Power Association | 1964 | 1966 | 172MW |
| Milton R. Young | Minnkota Power Coop. | 1967 | 1969 | 235MW |
| Leland Olds Station, Unit 2 | Basin Electric Power Coop. | 1971 | 1975 | 440MW |
| Square Butte | Square Butte Power Coop. | 1973 | 1977 | 440MW |
| Coal Creek, Unit 1 | United Power Association/ Cooperative Power Association | 1975 | 1979 | 550MW |
| Unit 2 | | 1976 | 1980 | 550MW |
| Coyote | Consortium ^a | 1977 | 1981 | 410MW |
| Antelope Valley Station, Unit 1 | Basin Electric Power Coop. | 1978 | 1983 | 438MW |
| Unit 2 | | 1980 | 1985 | 438MW |
| Great Plains Coal Gasification Project (Unit 1) | Great Plains Gasification Associates ^b | 1980 | 1984 | 125MMCFD |

^aMontana-Dakota Utilities Co.; Otter Tail Power Company; Minnkota Power Cooperative; Minnesota Power and Light Co.; and Northwestern Public Service Company.

^bFirms participating in this project include subsidiaries of American Natural Resources Co., People's Gas Company, Tenneco, Inc., Transco Energy Co., MidCon Corp., and Pacific Lighting Corp.

MW = megawatts

MMCFD = million cubic feet per day

TABLE 2. POPULATION TRENDS IN MERCER COUNTY, NORTH DAKOTA, 1960-1980

| Location | 1960 | 1970 | 1980 | Percent Change | |
|---------------|-------|-------|-------|----------------|-----------|
| | | | | 1960-1970 | 1970-1980 |
| Mercer County | 6,805 | 6,175 | 9,404 | - 9.3 | 52.3 |
| Beulah | 1,318 | 1,344 | 2,911 | 2.0 | 116.6 |
| Hazen | 1,222 | 1,240 | 2,378 | 1.5 | 91.8 |
| Zap | 339 | 271 | 516 | -20.1 | 90.4 |
| Golden Valley | 286 | 235 | 279 | -17.8 | 18.7 |
| Stanton | 409 | 517 | 619 | 26.4 | 19.7 |
| Pick City | 101 | 119 | 173 | 17.8 | 45.4 |

SOURCE: U.S. Department of Commerce, Bureau of the Census, 1980.

TABLE 3. MERCER COUNTY ENERGY FACILITY MANPOWER REQUIREMENTS

| Facility | Construction Dates | Peak Construction Employment (Year) | Operating Employment ^a | Owner |
|---|--------------------|-------------------------------------|-----------------------------------|----------------|
| Great Plains Project | 1980-84 | 3,371 (1982) | 754 (1984) ^b | GPGA |
| | 1986-89 | 2,431 (1988) | 900 (1990) ^b | |
| Coyote | 1977-81 | 1,031 (1979) | 85 | Consortium |
| Antelope Valley Station Units I and II | 1978-85 | 1,897 (1980) | 200 | Basin Electric |

^aThese figures do not include employment at mining operations.

^bThis figure reflects total operating employment at units one and two.

SOURCE: ITAT, 1982.

Several projects are also planned which will affect Mercer's near future. The Nokota Company is planning a coal-to-methanol plant in neighboring Dunn County, to begin construction in 1985. The second phase of the Great Plains Project is scheduled for start-up in 1986. Finally, Basin Electric may add another 500 MW unit to its Antelope Valley Station to meet anticipated increases in demand for electricity by 1990, with construction to begin in 1986. Lignite mines which supply or will supply fuel for those facilities, and employ a smaller fraction of the area work force, are listed in Table 4.

Methodology Employed in this Study

Information used in this report was acquired from a variety of sources, both primary and secondary. The principal means of data collection was through personal and telephone interviews with community and industry representatives. Although no formal survey technique was employed, a cross-section of viewpoints and responses was obtained from industry representatives, town planners, business leaders, a county commissioner, a member of the county social services board, the county agent, school superintendents, and the head of the Mercer County Energy Development Board. Additional facts were gathered from more standard sources of information such as census data, public education enrollment figures, and state tax data.

Results of two surveys were used in this study. The first was a survey of local businesses not directly involved with the energy projects, conducted by North Dakota State University. Business owners and managers in Beulah and Hazen (the county's principal cities) were interviewed individually. Following this, blank surveys were left for the businesses' employees, who later returned them for pick up or mailed them to North Dakota State University.

The second survey was an occupant survey of the Prairie Hills Mancamp. This survey was part of a larger effort by Burtco, Inc., managers of the facility, and conducted by Mountain West Research, Inc.

The Mercer County Energy Work Force

Through the monitoring efforts of the Inter-Industry Technical Assistance Team (or ITAT, discussed later), it is possible to draw a detailed description of the county's construction work force. This section

TABLE 4. CHARACTERISTICS OF LIGNITE MINES ASSOCIATED WITH COAL CONVERSION FACILITIES IN WEST-CENTRAL NORTH DAKOTA

| Mine | Owner | Construction Date | Principal Facility Supplied | Yearly Production (million tons) | Full Production Schedule (Year) |
|---------------------------|---|-------------------|--------------------------------------|----------------------------------|---------------------------------|
| <u>Operation</u> | | | | | |
| Indianhead | North American Coal Company (NACCO) | -- | Stanton Plant | 1.05 | 1967 |
| Glenharold | Basin Cooperative Services ^a | -- | Leland Olds Plant | 3.80 | 1976 |
| Center | Baukol-Noonan, Inc. | -- | Milton R. Young Plant | 4.20 | 1978 |
| Beulah | Knife River Coal Mining Company | -- | MDU Heskett Plant | 2.00 | 1922 |
| <u>Under Construction</u> | | | | | |
| Falkirk | The Falkirk Mining Company (subsidiary of NACCO) | 1976-1980 | Coal Creek Complex | 5.60 | 1985 |
| Coteau | The Coteau Properties Company (subsidiary of NACCO) | 1978-1986 | Antelope Valley Station | 5.20 | 1989 |
| Beulah | Knife River Coal Mining Company | 1979-1981 | Coyote Plant | 2.20 | 1982 |
| Coteau | The Coteau Properties Company (subsidiary of NACCO) | 1981-1985 | Great Plains Coal Gasification Plant | <u>4.70</u> | 1985 |
| Total Capacity | | | | 28.75 | |

^aGlenharold Mine was purchased by Basin Cooperative Services, a subsidiary of Basin Electric, in January 1982. The original owners, Consolidation Coal Company, will continue to manage the mining operations until 1987.

SOURCE: Adapted from Inter-Industry Technical Assistance Team, Mercer County Socio-Economic Impact Mitigation Assessment, Vol. IV, 1979.

will highlight the findings of ITAT's monthly monitoring and biannual socioeconomic impact mitigation reports.

Work Force Characteristics

Just over 9,000 individual construction workers have been employed at Coyote, Antelope Valley, Great Plains, or their associated facilities. The work force in October 1982 for Great Plains, Antelope Valley Station, and the Coteau mines numbered 4,478. Future estimates are illustrated in Table 5. Maintaining detailed records of the size and characteristics of this work force is essential in planning for impact management.

Construction of the Great Plains facility, which was scheduled to start about 1980, was delayed for several years. As a result, some inconsistencies have arisen between actual and predicted population. As Table 5 shows, North Dakota's Regional Environmental Assessment Program (REAP) estimates differed substantially from actual work force sizes. Original forecasts by Basin Electric also significantly overestimated actual numbers, with predictions of a 1980 peak of 3,600 workers. Beulah and Hazen's population estimates were approximately double actual 1980 figures (National Biocentric, Inc., 1977). Estimates for 1982 were for a reduced work force; however, employment at Great Plains continues to be greater than initially predicted.

Local² workers have accounted for a 7.1 to 11.2 percent share of this employment. Daily commuters represent the largest proportion of the work force, at 1,986 or 44.8 percent of the total. Of these daily commuters, over 80 percent come from Burleigh or adjoining counties, with nearly 800 driving the 74 miles from Bismarck.

Weekly commuters account for 11.7 percent of total work force. About half of these workers, who commute from a residence outside Mercer County, come from outside North Dakota.

From an impact standpoint, the most important group of workers are those who relocate within the project area. This group accounts for 36.4 percent of the total work force or 1,610 workers. Most (67.3 percent) of these workers moved to Beulah; average family size was 1.79. Most of the remaining workers settled in Hazen (19.2 percent) and Zap (5.2 percent), with the rest scattered among Golden Valley, Pick City, and Stanton.

TABLE 5. CONSTRUCTION WORK FORCE AT MERCER COUNTY ENERGY FACILITIES:
ACTUAL, REAP^a PREDICTIONS, AND ITAT^b PREDICTIONS (PEAK)

| Year | Actual | REAP ^c | ITAT |
|------|--------------------|-------------------|-------|
| 1978 | 1,207 | 1,251 | 3,214 |
| 1979 | 2,534 | 2,658 | 3,038 |
| 1980 | 2,994 | 3,638 | 2,287 |
| 1981 | 2,537 | 3,794 | 2,370 |
| 1982 | 4,478 ^d | 2,941 | 4,290 |
| 1983 | -- | 2,213 | 4,108 |
| 1984 | -- | 2,333 | 2,196 |
| 1985 | -- | 2,447 | 458 |
| 1986 | -- | 2,364 | 788 |
| 1987 | -- | 2,413 | 1,856 |
| 1988 | -- | 1,697 | 2,431 |
| 1989 | -- | 1,384 | 1,889 |
| 1990 | -- | 1,384 | 10 |

^aREAP = Regional Environmental Assessment Program.

^bITAT = Inter-Industry Technical Assistance Team.

^cREAP estimates represent direct energy development employment (construction plus operation).

^dAs of October 1982.

SOURCE: Energy Development Board, 1979 and ITAT, 1982 and 1979.

Most of the weekly commuters also tended to settle in Beulah, probably due to the proximity of the project sites and the availability of the Prairie Hills Mancamp. Much smaller percentages (less than 17 percent total) reside in the five other cities. ITAT predictions indicate that Beulah will bear the brunt of population increase (and decrease) in the next decade (Table 6).

In the period 1978-1982, distribution of workers by type and previous residence changed somewhat. The percentage of weekly commuters and relocating workers has decreased, while the number of daily commuters has increased from 35.5 percent to 51 percent of the total over the same period. Local labor force percentage remained fairly constant. The percentage of North Dakotans in the work force (those residing in state prior to project construction) increased from 57.8 percent to 66.6 percent. The number of workers relocating from the Bismarck/Mandan areas more than tripled over this period (126 to 457), accounting for 21 percent of the total work force as of June 1982 (ITAT, 1982).

One interesting development in work force behavior was the extremely high percentage of workers commuting on a daily basis. Many workers in the Bismarck area have organized bus, van, and car pools to minimize the inconvenience of the lengthy drive. One incentive for this commuting may have been the scarcity and high cost of housing in the impact area. In addition, through a state Highway Department grant (through the National Highway Transport Act), workers were able to obtain low interest loans for 75 percent of vehicle cost if 25 percent of the cost could be provided up front. Finally, companies provide commuters with subsistence pay to deal with inconveniences.

Socioeconomic Impacts of Energy Development

Public Service Effects

Schools

School enrollments in the county's five districts have increased substantially in the past eight years (Table 7). Overall increases in the 1974-1982 period are about 32 percent. This figure increases to 47.6 percent if the communities of Stanton and Golden Valley, which lie on the edge of the impact area and actually show declining enrollments, are excluded. Statewide, school enrollments dropped from 137,334 to 116,416, or 15.2 percent, over the period 1974 to 1981.

TABLE 6. ESTIMATED DISTRIBUTION OF MERCER COUNTY POPULATION BY CITY, 1980-1990

| Year | Beulah | Hazen | Zap | Golden Valley | Pick City | Stanton |
|------|--------|-------|-----|---------------|-----------|---------|
| 1980 | 3,132 | 2,365 | 511 | 287 | 182 | 623 |
| 1982 | 5,340 | 3,166 | 571 | 327 | 214 | 671 |
| 1983 | 5,750 | 3,392 | 599 | 327 | 217 | 659 |
| 1984 | 4,925 | 3,200 | 603 | 311 | 205 | 621 |
| 1985 | 3,949 | 3,247 | 549 | 284 | 192 | 627 |
| 1986 | 4,095 | 3,306 | 545 | 285 | 192 | 627 |
| 1990 | 3,713 | 3,203 | 520 | 235 | 163 | 610 |

SOURCE: ITAT, 1982.

TABLE 7. SCHOOL ENROLLMENTS IN FIVE SCHOOL DISTRICTS OF MERCER COUNTY, 1974-1982

| | 1974-75 | 1975-76 | 1976-77 | 1977-78 | 1978-79 | 1979-80 | 1980-81 | 1981-82 | Number Change, 1974-82 | Percentage Change, 1974-82 |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------------------------|-------------------------------|
| Beulah | 514 | 529 | 515 | 546 | 614 | 674 | 807 | 762 | 248 | 48.2 |
| Golden Valley | 124 | 118 | 126 | 117 | 121 | 106 | 96 | 92 | -32 | -25.8 |
| Hazen | 480 | 515 | 536 | 546 | 614 | 629 | 648 | 736 | 256 | 53.3 |
| Stanton | 247 | 244 | 253 | 225 | 238 | 229 | 229 | 225 | -22 | -8.9 |
| Zap | 105 | 93 | 94 | 90 | 105 | 128 | 123 | 124 | 19 | 18.1 |
| Total | 1,470 | 1,499 | 1,524 | 1,524 | 1,692 | 1,766 | 1,903 | 1,939 | 469 | 31.9 |

SOURCE: North Dakota Department of Public Instruction, 1974-1982.

Impacted school districts have responded by both expanding facilities and adding staff. Most of the funds for these expansions have been provided by the North Dakota Energy Impact Office (EIO) or the State Coal Severance Tax Trust Fund (SCSTTF). In the first six months of 1982 alone, over \$11.3 million were allocated to the towns of Beulah, Hazen, and Zap to provide new school facilities, landscaping, recreational facilities, and additional personnel. Over 65 percent of these funds came from EIO or SCSTTF. (Further discussion of the EIO and SCSTTF and specific grants are provided later in this report.)

The two principal school districts, Beulah and Hazen (77 percent of total enrollment) have adjusted to this rapid growth differently. Beulah has not had serious problems providing facilities and teaching staff for the new students. A 1975 bond issue provided funds for expansion to deal with the anticipated Coyote-related boom; consequently, there has been adequate space for new students. Although some course offerings have been deleted, the student-teacher ratio has remained fairly constant, and the professional staff has been increased by about 50 percent. Many of the anticipated impacts never materialized because there was no local housing in which immigrants could settle.

Facilities have improved substantially; some expansion would probably have been needed even without the energy projects. There are severe strains on recreational facilities, since the high school has the area's only gym. Rather than try to deal with community demands, the school has turned the gym's management over to the park board for evening use.

Beulah's teaching staff has experienced very little turnover--only one teacher left for employment at an energy facility. The major problem in attracting new teachers is the lack of adequate housing rather than compensation levels. In addition, many teachers have spouses who work at the plants.

Adjustment problems between new children and children of older residents have not been widespread. It was noted, however, that more special needs counseling and social service support is needed. This is a problem, since the Energy Development Impact Office emphasizes facility rather than staff funding.

Finally, abrupt decline in local work forces should not create problems of slack school capacity since the district's elementary school, which is an older building, could be abandoned in favor of the newer facilities. However, a major population increase would cause problems. Overall, school officials

feel that the EIO has performed very well in meeting the district's needs. Although there is some reminiscing by the professional staff, most respond well to the challenge and "would not want to go back" (Gilje, 1982).

Conversely, the Hazen experience has been somewhat less positive. Student-teacher ratios have increased somewhat, and curriculum offerings have been slightly reduced. Although the district has had no trouble recruiting teachers, increased pressure and stress on staff is noted as a problem.

In addition, problems are noted with newcomers in Hazen adjusting to the system. Many need remedial education, and discipline problems have increased. Older residents (parents) also have trouble adjusting to new disciplinary procedures.

Many of these problems stem from a lack of sufficient funds. Although the EIO has supplied ample funding for new facilities, more expansion is needed in teaching and social service staffs. Hazen is hard pressed to supply its own capital; although the city's mill rate is sixth in the state, it has one of the lowest total assessed valuations. The city also has a high relative debt--almost equal to its taxable valuation.

Additional problems are created by families which move from town to town at intervals of only a few weeks, so that children never really get "settled" into the school system. At different stages of the energy developments, several families have resided in tents in the public park behind the school. A final problem noted is road overcrowding. Since many of the construction workers are traveling the roads when school lets out, safety hazards are created for school buses and children crossing the streets during rush hour.

The EIO is again seen as having performed well in meeting the district's needs (given its statutory limitations). In general, school officials feel that the energy facilities' impact on the community is positive, with principal detriments being changes in air quality and quality of life (Smette, 1982).

Traffic Impacts

The roads leading north from Beulah and Hazen toward the Antelope Valley Station and the Great Plains Project have received unprecedented use over the past half decade. Problems have been cited by area residents in road impassibility (due to deterioration), traffic congestion, and safety considerations.

The county had committed all of its road construction and maintenance funds for 1982 by October. In spite of this, more roads have been improved and more equipment purchased in the past several years than in any previous period. The county is working under a "10 year plan" of improvement, partially funded through the federal government; the county is currently ahead of schedule on this plan. The Energy Impact Office and State Coal Severance Tax Trust Fund have also been helpful in filling funding gaps.

The industry's position is that further upgrading and expansion would not be prudent now, since most of these negative impacts will be relieved when the construction work force declines in the next few years. ITAT also has a committee working on spot problems on impacted roads (Boe and Selby, 1982).

Most negative comments about the road situation seem to emanate from those who experience some adverse impacts from the project, e.g., farmers whose dirt roads, which once were traveled by a few cars a day, are now inundated with traffic twice daily. School district personnel are also concerned over pedestrian and school bus safety standards. The county government appears to believe that the impacts are not overly severe and those negative impacts that occur are the price paid for the positive aspects of growth (Schulz, 1982).

Social Services

One of the principal problem areas identified by education and social service professionals interviewed is a shortage of social service staff. This problem has led to reduction or deletion of some services; counseling of problem school children and their families and marriage counseling are two areas mentioned.

Although the staff of Mercer County Social Services has increased about 23 percent over the past five years, staff additions have not kept up with population increases (over 50 percent). In addition, measures of social service activity--aid to families with dependent children (AFDC), food stamp programs, and child abuse and neglect reports--indicate that these problems have grown at a faster rate than population.

Two factors are believed to contribute to this situation. First, industry attracts workers to the county who, after drawing a short term of employment, remain in the area in hopes of being re-employed. This leads to a large population with no substantial means of support, for which

no particular organization claims responsibility. Second, the EIO is limited by statute to focusing its efforts on providing capital facilities rather than personnel for area agencies. This situation is further aggravated by recent declines in federal funding. As seen in Table 8, over the past five years, the county's share in funding the Social Services Board has increased both in absolute and relative figures.

Research by county social service personnel has established a strong relationship between unemployment (especially construction unemployment) and child abuse reports, food stamp usage, and AFDC payments (see Figure 1). The problem has been partially mitigated by the addition of a family violence specialist to the staff, funded by industry and the EIO. Another problem is the economic impact of development on the elderly, many of whom rely on fixed incomes to survive. Housing is a critical problem; although some relief is afforded through low-income, federally subsidized (Section 8) housing in Beulah, many are forced to leave the area to find affordable rents.

The staff of the Social Services Board feels that they have been able to attract high quality personnel. The Board also lauds the efforts the county commissioners have made to uphold levels of social service provision. Other positive features of the new development are the expanded cultural background of the community and the anticipation of future tax benefits when all of the power plants are on line (as well as the corresponding reduction in work force levels) (Shull, 1982).

Law Enforcement

The seven-year period between 1975 and 1982 has seen substantial increases in sheriff's department activity. Arrests in this period increased from 385 in 1977 to 687 in 1981, a 78.4 percent rise. Traffic accidents, after a 1975 low of 115, have fluctuated between 190 in 1978 and 155 in 1980. Number of prisoners jailed has also increased significantly from 191 in 1976 to 520 in 1981 (172.3 percent) (Table 9). Although these figures show dramatic increases over preconstruction levels, it must be remembered that population increase of 50 percent over the study period probably explains much of the increase.

TABLE 8. MERCER COUNTY SOCIAL SERVICES PROGRAM CHARACTERISTICS, 1974-1983

| <u>Fiscal Year</u> | <u>Total(\$)</u> | <u>County Share</u> | <u>County Share as Percent of Total</u> |
|--------------------|------------------|---------------------|---|
| 1979 | 965,285 | 126,378 | 13.1 |
| 1980 | 1,163,248 | 164,755 | 14.2 |
| 1981 | 1,406,338 | 208,490 | 14.8 |
| 1982 | 1,463,338 | 236,371 | 16.2 |
| 1983 | 1,481,933 | 267,644 | 18.1 |

Social Services Staff

| <u>Fiscal Year</u> | <u>Clerical</u> | <u>Eligibility Technicians</u> | <u>Social Workers</u> | <u>Administrative</u> | <u>Total</u> |
|--------------------|-----------------|--------------------------------|-----------------------|-----------------------|--------------|
| 1977 | 2.5 | 1 | 3.5 | .4 | 7.4 |
| 1978 | 2.6 | 1 | 2.0 | .4 | 6.0 |
| 1979 | 2.6 | 2 | 2.5 | .4 | 7.5 |
| 1980 | 2.6 | 3 | 2.5 | .4 | 8.5 |
| 1981 | 2.6 | 3 | 3.5 | .4 | 9.5 |
| 1982 | 2.2 | 3 | 3.5 | .4 | 9.1 |

Mercer CSSB Caseload by Program, 1974-1980

| | <u>July 1974</u> | <u>July 1980</u> | <u>Percent Increase</u> |
|--------------------|------------------|------------------|-------------------------|
| Medical Assistance | 93 | 173 | 86 |
| AFDC | 23 | 45 | 96 |
| Food Stamps | 50 | 99 | 98 |

| | <u>1979</u> | <u>1980</u> | <u>1981</u> | <u>1982</u> |
|-----------------------------|-------------|-------------|-------------|-------------|
| AFDC | | | | |
| No. of Individuals | 86 | 102 | 115 | 123 |
| No. of Families | 29 | 38 | 45 | 48 |
| Average Monthly Payment | \$227.22 | 248.86 | 264.90 | 285.93 |
| Total Payments | \$ 79,529 | 112,236 | 142,517 | 176,991 |
| Food Stamp Program | | | | |
| No. of Households Receiving | 59 | 78 | 117 | 129 |
| Persons Receiving | 161 | 225 | 356 | 393 |
| Value of Stamps Issued | 69,963 | 85,204 | 139,840 | 180,849 |
| Medical Assistance | | | | |
| No. of Individuals | 153 | 166 | 184 | 202 |
| Average Monthly Payment | \$283.74 | 293.26 | 348.21 | 371.16 |
| Total Annual | \$521,996 | 584,751 | 769,545 | 900,073 |

^aNA = not available

SOURCE: Mercer County Social Services Board, 1982.

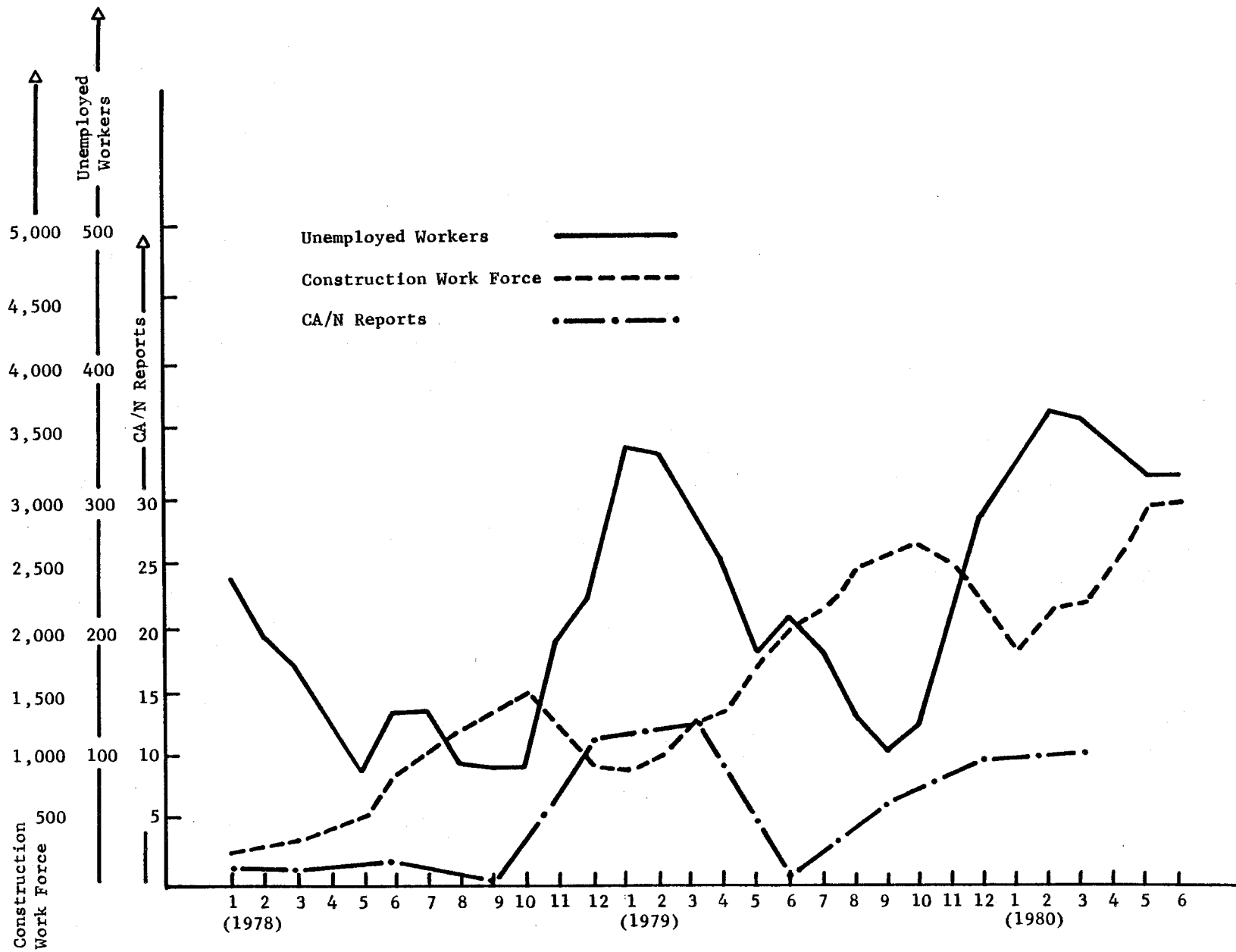


Figure 1. Comparison of Work Force Trends and Child Abuse Reports

SOURCE: Mercer County Social Services Board, 1981.

TABLE 9. MERCER COUNTY SHERIFF'S DEPARTMENT ACTIVITIES, 1975 TO 1981

| Civil Services | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---------------------|------|------|------|------|------|------|------|
| Arrests | 301 | 333 | 385 | 559 | 810 | 873 | 687 |
| Traffic Accidents | 115 | 173 | 160 | 190 | 161 | 155 | 157 |
| Number of Prisoners | 145 | 191 | 143 | 142 | 317 | 499 | 520 |
| Offense Reports | 126 | 187 | 315 | 152 | 166 | 227 | 217 |

SOURCE: Mercer County Sheriff's Department, 1982.

The nature of the sheriff's office has also changed. Staff has increased from five in 1977 to 15 in 1982. The new county jail presently being constructed will also require two new employees. The sheriff believes that the changes in population and social structure have been manageable and that the present staff is sufficient to deal with the county's law enforcement needs (Kessler, 1982).

The Beulah Police Department has also increased its activities in the past several years. Arrests by the department increased from 35 to 251 in 1980, and have declined to 204 in 1982. Of these 204 arrests, 96 were for driving under the influence of alcohol (66) and for driving while under suspension. Traffic accidents increased from 46 in 1981 to 112 in 1982, with no severe injuries. A summary of department activities from 1978 to 1982 is provided in Table 10.

Housing Impacts

As with many other rapid growth areas, Mercer County has experienced housing shortages. Industry's efforts have partially alleviated these problems; Basin Electric, for example, purchased 36 mobile homes to rent to its employees. GPGA has bought an apartment building and is working on a new subdivision of permanent housing for Great Plains' operational employees. Several private developers have also constructed mobile home courts.

Since demand for housing is strong, rents tend to be high. Basin Electric alleviates some of this problem through programs of mortgage assistance, interest differential payments, and housing buy-back guarantees. However, some county residents noted that this may have created some problems for area residents not involved with the projects, since these company subsidies may tend to keep rents high.

TABLE 10. BEULAH POLICE DEPARTMENT ACTIVITY, 1978-1982

| | 1978 | 1979 | 1980 | 1981 | 1982 |
|-------------------------|------|------|------|------|-------|
| Criminal Arrests | 35 | 111 | 251 | 201 | 204 |
| Thefts | 57 | 73 | 50 | 63 | 118 |
| Vandalism | 12 | 8 | 27 | 33 | 34 |
| Citations | 184 | 432 | 485 | 386 | 388 |
| Warnings | 168 | 713 | 430 | 466 | 1,033 |
| Parking Tickets | 145 | 384 | 394 | 210 | 582 |
| Accidents | 47 | 76 | 26 | 46 | 112 |
| Hit and Run | 0 | 5 | 3 | 2 | 15 |
| Dogs at Large | 3 | 41 | 37 | 54 | 95 |
| Domestic Disturbances | 12 | 41 | 32 | 26 | 20 |
| Loud Parties | 0 | 16 | 17 | 15 | 7 |
| *Disorderly Conduct | 6 | 9 | 15 | 19 | 43 |
| *Bar Calls | 5 | 4 | 5 | 5 | 17 |
| Prowlers | 0 | 2 | 3 | 5 | 3 |
| Suicides | 1 | 0 | 0 | 0 | 1 |
| Suicide Attempts | 1 | 0 | 1 | 2 | 3 |
| Obscene Phone Calls | 1 | 2 | 8 | 9 | 11 |
| Child Abuse | 1 | 1 | 0 | 1 | 4 |
| Shots Fired | 0 | 5 | 2 | 2 | 2 |
| Gross Sexual Imposition | 2 | 0 | 0 | 0 | 1 |
| Burglar Alarms | 2 | 0 | 1 | 3 | 5 |
| Open Doors | 19 | 66 | 18 | 21 | 30 |
| Intoxicated Persons | 3 | 11 | 22 | 11 | 35 |
| Motorist Assists | 33 | 258 | 90 | 129 | 316 |
| Vacation House Watch | -- | -- | -- | -- | 11 |
| Total Calls | 109 | 208 | 210 | 230 | 712 |

*These two categories were not counted separately in prior reports. They were counted now to make more fair representation of bar calls and other nonrelated fights.

SOURCE: Beulah Police Department, 1983.

Perhaps the single most important mitigation measure in the housing market has been the construction of the Prairie Hills Mancamp in Beulah. Originally initiated by the consortium of utilities constructing the Coyote Station and Basin Electric, ownership was transferred to GPGA in 1982. The facility, managed by Burtco, Inc., is designed to accommodate over 1,000 in the dormitories and 215 RV hookups. Although the facility initially cost about \$3.5 million, benefits include

- 1) Reduction in housing demand, since many workers who would otherwise seek housing in the community are provided for;
- 2) Reduction of dependent immigration, since many workers commute weekly to the facility; and
- 3) Attraction and retention of a high quality work force.

(Boe and Selby, 1982; Rogers, 1982; Shull, 1982) (Prairie Hills is discussed in detail later in the report).

A survey of secondary business workers also explored the housing types preferred by local residents. Of a sample of 238, 195 (81.9 percent) preferred to live in single family houses, about 7.6 percent each preferred mobile homes or apartments, and 2.9 percent preferred condominiums or town houses; 137 of the 149 respondents actually living in single family homes indicated that this was their preferred housing type. This figure of 91.9 percent is consistent with a recent survey of single family home dwellers in Colstrip, Montana, where 85.4 percent of the respondents indicated satisfaction with their residences. Higher percentages of those living in apartments and mobile homes in Colstrip were satisfied with their residences (56.3 percent and 48.3 percent, respectively) than their counterparts in Mercer County (Branch, 1980). It should be emphasized that the Mercer County survey was restricted to nonproject employment, while the Colstrip data were a more representative sample of the total population. Of the 221 interviewees in Beulah-Hazen who responded to the home ownership question, 171 or 77.4 percent owned their own homes.

Medical Service Impacts

Prior to 1977, Hazen Memorial Hospital was the principal source of health care in Mercer County. Killdeer, Turtle Lake, and Garrison also have clinics or hospitals; however, all are more than 50 miles from Beulah and Hazen. Many residents also obtain major health care in Bismarck.

Mercer County presently has three doctors in residence, only one of whom practiced in the county prior to 1977. All are experiencing heavy caseloads, and Mercer-Oliver Health Services (Oliver County borders Mercer on the southeast) is attempting to recruit another doctor. Beulah and Hazen are also collaborating in a search for new physicians.

Facilities, in addition to the 39-bed Hazen Hospital, include private clinics in both Beulah and Hazen, and a public clinic in Beulah. The Beulah Medical Arts Clinic, built with federal funds, is staffed by only a dentist at present; a new physician is being sought to occupy the clinic.

Bed occupancy rates at Hazen Memorial Hospital did not change substantially between 1977 and 1981, ranging between 46.9 percent (1977) and 56.4 percent (1980). Emergency room and outpatient³ visits increased substantially over this period (Table 11). Outpatient visits increased from 4,201 to 7,004 (66.7 percent) while emergency room visits more than doubled (1,679 to 3,764). The majority of inpatients came from Mercer and Dunn counties.

Workmen's compensation claims from the energy projects accounted for a large number of outpatient visits. Estimates for 1980 indicate that over 1,100 impact-related claims could be expected.

Substantial expansion is planned for the hospital. Among the additions planned are expanded emergency room facilities, a new laboratory, expanded ambulance handling facilities, and an enlarged waiting room. Other plans call for a physical therapy department to be added (Reichenberg, 1982).

Fiscal Impacts

One of the most frequent problems associated with rapid development of a large project is that impacts are felt almost immediately by the community, necessitating expansion of public services and facilities, yet tax revenues to offset these expenses may not be received until project completion, years later (Halstead et al., 1982). This timing problem is also being experienced in Mercer County.

During the period of the late 1970s, when Coyote Station was under construction, a state ruling allowed taxation of the facility at its (then) present value. Taxes were paid to the school district and county--under protest--which were subsequently used for public projects. It was later ruled that Coyote was not liable for these taxes; the county has since been faced with repaying Coyote Consortium the taxes previously collected.

TABLE 11. SERVICES PROVIDED BY HAZEN MEMORIAL HOSPITAL, 1977-1981

| Year | Bed Occupancy | Emergency Room Visits | Outpatient Visits ^a | Number of Deliveries | Number of O.R. Procedures ^b |
|--------------|---------------|-----------------------|--------------------------------|----------------------|--|
| 7/77 to 6/78 | 46.9 | 1,679 | 4,201 | 52 | 274 |
| 7/78 to 6/79 | 47.5 | 2,301 | 5,516 | 54 | 328 |
| 7/79 to 6/80 | 56.4 | 4,267 | 7,777 | 59 | 312 |
| 7/80 to 6/81 | 48.4 | 3,764 | 7,004 | 103 | 331 |

^aIncludes anything done on outpatient visits--lab, x-ray, nuclear medicine, etc., including emergency room visits.

^bOperating room.

SOURCE: Reichenberg, 1982.

Another problem in rapid growth areas stems from a large percentage of the new population living in mobile homes, either for cost or convenience reasons. Mobile homes are not taxed at as high a level as permanent housing, even though they require sewer, water, and police and fire protection. Hazen is considering passing an ordinance to allow taxation of the town's new mobile home park as permanent housing (Frovarp, 1982).

Municipal and county officials agree that most of the gap between revenues and expenses is taken up by the Coal and Energy Development Impact Office grants and loans from the State Coal Severance Tax Trust Fund. Although there have been some problems funding personnel, most difficulties are borne with the anticipation of a smaller construction worker population and a substantial increase in tax revenue when all of the facilities are operational (Table 12). Many of the difficulties and inconveniences being experienced are seen as growth pains which must be endured as payment for the economic benefits enjoyed.

Hazen has suffered from a financial standpoint. Although the town has one of the highest mill rates in the state, it has one of the lowest assessed valuations. The town has experienced difficulties in providing the small percentage of matching funds required for many EIO projects. Many of these problems stem from Hazen property historically being assessed below fair market value, subsequently reducing revenues. New valuations requested by the state Board of Tax Equalization should more accurately reflect these fair market values (Donovan, 1982). Both Beulah and Hazen have very high relative debts.

As illustrated in Tables 13 and 14, significant revenues accrue from the CIO, EIO, and SCSTTF. Reliance on energy impact funds varies from district to district. Hazen utilizes the highest percentage of impact funding (62.5 percent of total expenditures), while energy impact funds in Beulah account for 52.4 percent of mitigation expenditures.

Assessed valuation, county-wide, has increased substantially in the past six years. The largest increase occurred in the 1977-1980 period when total assessed valuation more than doubled (Table 15).

Demographic Impacts

As noted earlier, the population of Mercer County and its six cities experienced significant increases over the 1970-1980 period (Table 2). In addition, changes in the age and composition of the population have taken

TABLE 12. PROJECTED TAX REVENUES OF MERCER COUNTY ENERGY DEVELOPMENT, 1982-1987

| | | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|--|---------------------|-------------|-------------|-------------|--------------|--------------|--------------|
| <u>Coal Production (Tons) and Severance Tax Revenues</u> | | | | | | | |
| <u>Plant</u> | <u>Mine</u> | | | | | | |
| Great Plains | Coteau Properties | | | 2,159 | 4,716 | 4,716 | 4,716 |
| AVS | Coteau Properties | | 1,000 | 1,800 | 2,600 | 3,800 | 4,200 |
| Coyote | | | | | | | |
| Beulah | Knife River Coal | 800 | 1,000 | 900 | 600 | 600 | 300 |
| UPA | North American Coal | 1,059 | 1,059 | 1,059 | 1,059 | 1,059 | 1,059 |
| Leland Olds | Consolidation Coal | 1,331 | 2,913 | 418 | 0 | 0 | 0 |
| Total Tons | | 3,190 | 5,972 | 6,336 | 8,975 | 10,175 | 10,275 |
| Predicted WPI ^a (+7% annually) | | 315.9 | 338.0 | 361.6 | 386.9 | 414.0 | 443.0 |
| Predicted Severance Tax Per Ton | | 1.05 | 1.11 | 1.17 | 1.23 | 1.30 | 1.37 |
| Total Severance Tax Revenue | | \$3,349,500 | \$6,628,920 | \$7,413,120 | \$11,039,250 | \$13,227,500 | \$14,076,750 |
| 20% County Share | | 669,900 | 1,325,874 | 1,482,624 | 2,207,850 | 2,645,500 | 2,815,350 |
| 30% Cities Share | | 200,970 | 397,735 | 444,787 | 662,355 | 793,650 | 844,605 |
| 30% School Share | | 200,970 | 397,735 | 444,787 | 662,335 | 793,650 | 844,605 |
| 40% County Share | | 267,960 | 530,314 | 593,050 | 883,140 | 1,058,200 | 1,126,140 |
| <u>Coal Conversion and Conversion Tax Revenues</u> | | | | | | | |
| <u>Facility</u> | | | | | | | |
| Great Plains (MCF) | | | | | 35,131,250 | 38,781,250 | 41,975,000 |
| Coyote Station | | 2,370,000 | 2,444,000 | 2,463,000 | 2,483,000 | 2,483,000 | 2,572,000 |
| UPA Stanton | | 1,000,000 | 1,100,000 | 1,125,000 | 1,150,000 | 1,175,000 | 1,200,000 |
| Antelope Valley Station #1 | | | 238,159 | 2,109,434 | 2,200,000 | 2,200,000 | 2,200,000 |
| Antelope Valley Station #2 | | | | | 383,275 | 2,200,000 | 2,200,000 |
| Leland Olds Station #1 | | 1,366,795 | 1,376,127 | 1,432,708 | 1,370,000 | 1,370,000 | 1,370,000 |
| Leland Olds Station #2 | | 2,404,144 | 2,457,783 | 2,467,642 | 2,405,000 | 2,405,000 | 2,405,000 |
| Total - MWH ^b | | 7,140,939 | 7,616,069 | 9,597,784 | 9,991,275 | 11,833,000 | 11,947,000 |
| Total - MCF ^c | | | | | 35,131,250 | 38,781,250 | 41,975,000 |
| Predicted Tax-Gas Production ¹ | | | | | \$ 8,800,378 | \$10,538,805 | \$12,466,575 |
| Predicted Tax-Electric Generation | | \$1,785,235 | \$1,904,017 | \$2,399,446 | \$ 2,497,819 | \$ 2,958,250 | \$ 2,986,750 |
| Total Predicted Tax | | \$1,785,235 | \$1,904,017 | \$2,339,446 | \$11,298,197 | \$13,497,055 | \$15,453,325 |
| 35% County Share | | 624,832 | 666,406 | 839,806 | 3,954,369 | 4,723,969 | 5,403,664 |
| 30% Cities Share | | 187,450 | 199,922 | 251,942 | 1,186,311 | 1,417,191 | 1,622,599 |
| 30% School Share | | 187,450 | 199,922 | 251,942 | 1,186,311 | 1,417,191 | 1,622,599 |
| 40% County Share | | 249,932 | 266,562 | 335,922 | 1,581,747 | 1,889,587 | 2,163,466 |
| Predicted Tax-Gas Production Figured at 10 Cents MCF | | | | | \$ 3,513,125 | \$ 3,878,125 | \$ 4,197,500 |

¹Coal Gasification rates figured at 2.5 percent of gross revenue.

^aWPI = Wholesale Price Index

^bMWH = Megawatt Hours

^cMCF = Million Cubic Feet

SOURCE: ITAT, 1981.

TABLE 13. CITY AND COUNTY EXPENDITURES BY CATEGORY AND SOURCE FOR SOCIOECONOMIC IMPACT MANAGEMENT IN MERCER COUNTY, 1976-1982 (THOUSANDS OF DOLLARS)

| District | Category | CIO ^a | EIO ^a | SCSTTF | Other ^b |
|----------------------------|-----------------------------|------------------|------------------|---------|--------------------|
| Beulah | School District | 1,581 | 1,000 | 1,100 | 1,836 |
| | Fire Protection | 163 | 9 | 0 | 36 |
| | Law Enforcement | 40.3 | 25.5 | 0 | 6.1 |
| | Administration and Planning | 0 | 24 | 0 | 0 |
| | Industrial Park | 150 | 0 | 0 | 1,285 |
| | Health Clinic | 0 | 0 | 0 | 380.7 |
| | Nursing Home | 0 | 0 | 0 | 1,500 |
| | Potable Water | 498.8 | 550 | 0 | 250 |
| | Wastewater Treatment | 812 | 42.2 | 0 | 0 |
| | Solid Waste Disposal | 0 | 0 | 24 | 0 |
| | Parks and Recreation | 87.1 | 52 | 0 | 417.7 |
| Roads | 465.8 | 165 | 0 | 453.6 | |
| | Total Beulah | 3,798.0 | 1,867.7 | 1,124 | 6,165.1 |
| Hazan | School District | 1,448 | 1,000 | 1,550 | 1,678.5 |
| | Fire Protection | 114 | 0 | 254 | 8.9 |
| | Law Enforcement | 0 | 28.5 | 0 | 16.9 |
| | Administration and Planning | 78 | 272.9 | 0 | 0 |
| | Hazen Hospital | 600 | 0 | 0 | 650 |
| | Potable Water | 546.7 | 55 | 0 | 290 |
| | Wastewater Treatment | 146 | 0 | 0 | 30.9 |
| | Solid Waste Disposal | 20 | 0 | 0 | 20 |
| | Parks and Recreation | 157.6 | 62.5 | 0 | 130 |
| | | Total Hazan | 3,275.7 | 1,558.9 | 1,804 |
| Zap | School District | 326 | 110.6 | 0 | 300 |
| | Fire Protection | 21.2 | 7 | 0 | 0 |
| | Law Enforcement | 42.2 | 11.5 | 0 | 5.3 |
| | Administration and Planning | 62.9 | 23 | 0 | 0 |
| | Potable Water | 31.9 | 0 | 0 | 99.8 |
| | Parks and Recreation | 35.1 | 10 | 0 | 35.1 |
| | Roads | 162.1 | 0 | 0 | 283 |
| | Total Zap | 681.4 | 162.1 | 0 | 723.2 |
| Mercer County | Law Enforcement | 1,038.1 | 705.5 | 0 | 255 |
| | Administration and Planning | 109.8 | 62.8 | 0 | 715 |
| | Housing | | | | |
| | Industrial | 0 | 0 | 0 | 3,500 |
| | Elderly | 0 | 0 | 0 | 540 |
| | Human Services | 18 | 0 | 0 | 10.7 |
| | Parks and Recreation | 3.8 | 0 | 0 | 0 |
| | Roads | 1,390 | 416 | 0 | 4,093.7 |
| | Air Transportation | 18.5 | 20 | 1.7 | 160.7 |
| | Total County | 2,578.2 | 1,204.3 | 1.7 | 9,275.1 |
| Mercer and Oliver Counties | Public Health Services | 133.2 | 0 | 0 | 0 |
| State of North Dakota | Roads | 0 | 0 | 0 | 3,734.9 |

^a Prior to 1981, the Energy Development Impact Office (EIO) was called the Coal Impact Office (CIO).

^b This includes Federal and State Assistance Programs, direct industry assistance, general fund expenditures, bond issues, and private sources; in other words, all of the sources of funds generally available to a nonimpacted community.

SOURCE: ITAT, 1982.

TABLE 14. MERCER COUNTY GRANTS FOR IMPACT MANAGEMENT RECEIVED FROM ALL SOURCES, 1975-1982

| | Beulah | Hazen | Zap | Golden Valley | Pick City | Stanton | Mercer County | Total | Percent of All Grants |
|--------------------------|-------------|-----------|-----------|---------------|-----------|-----------|---------------|------------|-----------------------|
| Law Enforcement | 67,325 | 48,500 | 22,500 | 4,000 | 0 | 14,285 | 1,716,705 | 1,873,315 | 6.8 |
| Education | 2,592,272 | 2,290,937 | 425,150 | 32,200 | 0 | 425,500 | 0 | 6,866,059 | 25.1 |
| Health | 49,500 | 725,000 | 0 | 0 | 0 | 0 | 267,990 | 1,042,490 | 3.8 |
| Transportation | 306,000 | 273,500 | 211,372 | 151,500 | 68,000 | 47,000 | 5,870,163 | 6,927,535 | 25.3 |
| Recreation | 449,600 | 555,124 | 80,220 | 34,744 | 0 | 111,170 | 0 | 1,230,850 | 4.5 |
| Human Services | 66,000 | 0 | 0 | 0 | 0 | 1,200 | 0 | 67,200 | .2 |
| Fire Protection | 166,500 | 133,950 | 28,200 | 22,600 | 15,000 | 47,700 | 0 | 413,950 | 1.5 |
| Housing | 250,500 | 0 | 0 | 0 | 0 | 0 | 18,658 | 269,158 | 1.0 |
| Planning and Development | 755,000 | 205,900 | 7,100 | 0 | 0 | 66,875 | 248,699 | 1,283,574 | 4.7 |
| Sewer and Water | 4,083,550 | 782,280 | 599,018 | 87,500 | 69,666 | 652,500 | 0 | 6,274,614 | 22.9 |
| Administration | 104,000 | 22,000 | 63,500 | 67,000 | 0 | 158,000 | 102,870 | 517,370 | 1.9 |
| Other | 160,000 | 57,400 | 42,400 | 19,000 | 0 | 37,757 | 309,528 | 626,085 | 2.3 |
| Total | \$9,050,247 | 6,194,691 | 1,479,460 | 418,544 | 152,666 | 1,561,987 | 8,534,613 | 27,392,208 | 100.0 |
| Percent | 33.0 | 22.6 | 5.4 | 1.5 | .6 | 5.7 | 31.2 | 100.0 | |

SOURCE: ITAT, 1982.

TABLE 15. ASSESSED VALUATIONS IN MERCER COUNTY, 1975-1980 (THOUSANDS OF DOLLARS)

| | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---------------|---------|---------|---------|---------|---------|---------|
| Mercer County | 12,900 | 13,300 | 15,800 | 16,800 | 25,600 | 34,200 |
| Beulah | 1,877.4 | 2,208.6 | 2,720.2 | 3,000.4 | 3,957.8 | 4,457.4 |
| Hazen | 1,217.0 | 1,309.7 | 1,521.7 | 1,668.2 | 2,005.2 | 2,440.6 |
| Stanton | 347.8 | 359.6 | 440.4 | 489.2 | 509.8 | 542.4 |
| Zap | 138.4 | 148.6 | 167.2 | 186.2 | 225.2 | 240.6 |
| Golden Valley | 141.8 | 148.6 | 166.0 | 170.4 | 179.2 | 194.2 |
| Pick City | 63.0 | 82.8 | 94.2 | 100.2 | 100.6 | 121.8 |

SOURCE: North Dakota Tax Department, unpublished printouts.

place. In 1970, the county's population was over 51 percent female; this percentage declined to 47.8 percent in 1980. The percentage of the population between the ages of 25 and 44 increased from 20.9 to 28.3 percent (Table 16). The disproportionate growth of this segment of the population is probably due to the influx of construction workers, since at least one study (Wieland et al., 1977) has shown that the average age of North Dakota construction workers is about 37 years. Males in this age group accounted for 24.3 percent of the decade's population increase, while males and females combined accounted for 42.5 percent of the growth.

The racial mix of the county changed little between 1970 and 1980. Blacks accounted for about .1 percent of the 1980 population, as compared to .03 percent in 1970. The percentage of Native American population also increased slightly, from 1.2 percent to 2.2 percent of total.

Economic Impacts

The business sector of Mercer County has expanded considerably over the 1972 to 1981 period. The number of establishments in the county has grown from 119 in 1972 to 164 in 1980, while number of employees at these establishments has increased from 707 to 1,553. Annual payroll has also increased from 3,304,000 to 20,089,000 (\$11,245,521 in 1972 dollars) over the same period. The construction sector grew fastest over the decade, accounting for 18.3 percent of total business establishments compared to 7.6 percent in 1972. This reflects the increased demand for construction services spurred by the energy projects (Table 17).

Business volumes, as reflected by taxes collected and taxable sales and purchases, also increased (Table 18). Comparisons between 1972 and 1977 are difficult to make, since in that five-year period both the tax rate and taxable base changed. Sales tax decreased from 4 percent to 3 percent, while food, food products, and coal were exempted from sales tax. A comparison between 1977 and 1981 shows increases of 43.3 percent in taxable sales and purchases and 32.1 percent in taxes collected.

Further research was conducted to estimate economic impacts on businesses not directly tied to the energy development. A business survey was conducted in Beulah and Hazen, since these two cities contain over 55 percent of the county's population and account for 94 percent of taxable sales and purchases. A description of the secondary business sector follows.

TABLE 16. DEMOGRAPHIC TRENDS IN MERCER COUNTY, 1970-1980

| Age (Yrs.) | 1970 | | % Male, Total Pop. | % Female, Total Pop. | Age Group as % of Male Pop. | Age Group as % of Female Pop. | 1980 | | % Male, Total Pop. | % Female, Total Pop. | Age Group as % of Male Pop. | Age Group as % of Female Pop. | Numerical Change, 1970-80 | | Percent Change, 1970-80 | |
|---------------|-------|--------|--------------------------|----------------------------|-----------------------------------|-------------------------------------|-------|--------|--------------------------|----------------------------|-----------------------------------|-------------------------------------|---------------------------------|-------|-------------------------------|-------|
| | Male | Female | | | | | Male | Female | | | | | M | F | M | F |
| 0- 5 | 251 | 239 | 4.1 | 3.9 | 8.3 | 7.6 | 474 | 417 | 5.0 | 4.4 | 9.7 | 9.3 | 223 | 178 | 88.8 | 74.5 |
| 5-13 | 572 | 628 | 9.3 | 10.2 | 18.8 | 20.0 | 702 | 660 | 7.5 | 7.0 | 14.3 | 14.7 | 130 | 32 | 27.7 | 5.1 |
| 14-17 | 247 | 281 | 4.0 | 4.6 | 8.1 | 9.0 | 332 | 343 | 3.5 | 3.6 | 6.8 | 7.6 | 85 | 62 | 34.4 | 22.1 |
| 18 | 50 | 34 | .8 | .6 | 1.6 | 1.1 | 75 | 54 | .8 | .6 | 1.5 | 1.2 | 25 | 20 | 50.0 | 58.8 |
| 19 | 27 | 28 | .4 | .5 | .9 | .9 | 70 | 60 | .7 | .6 | 1.4 | 1.3 | 43 | 32 | 159.3 | 114.3 |
| 20 | 15 | 22 | .2 | .4 | .5 | .7 | 80 | 63 | .9 | .7 | 1.6 | 1.4 | 65 | 41 | 433.0 | 186.4 |
| 21 | 24 | 30 | .4 | .5 | .8 | 1.0 | 112 | 80 | 1.2 | .9 | 2.3 | 1.8 | 88 | 50 | 367.0 | 166.7 |
| 22-24 | 80 | 116 | 1.3 | 1.9 | 2.6 | 3.7 | 298 | 270 | 3.2 | 2.9 | 6.1 | 6.0 | 218 | 154 | 272.5 | 132.8 |
| 25-34 | 332 | 317 | 5.4 | 5.1 | 10.9 | 10.1 | 884 | 778 | 9.4 | 8.3 | 18.0 | 17.3 | 552 | 461 | 166.3 | 145.4 |
| 35-44 | 333 | 309 | 5.4 | 5.0 | 10.9 | 9.9 | 569 | 435 | 6.1 | 4.6 | 11.6 | 9.7 | 236 | 126 | 70.9 | 40.8 |
| 45-54 | 397 | 401 | 6.4 | 6.5 | 13.1 | 12.8 | 451 | 408 | 4.8 | 4.3 | 9.2 | 9.1 | 54 | 7 | 13.6 | 1.7 |
| 55-59 | 206 | 208 | 3.3 | 3.4 | 6.8 | 6.6 | 217 | 206 | 2.3 | 2.2 | 4.4 | 4.6 | 11 | -2 | 5.3 | -1.0 |
| 60-61 | 82 | 71 | 1.3 | 1.1 | 2.7 | 2.3 | 88 | 79 | 1.0 | .8 | 2.0 | 1.7 | 16 | 8 | 6.8 | 11.3 |
| 62-64 | 111 | 97 | 1.8 | 1.6 | 3.6 | 3.1 | 116 | 122 | 1.2 | 1.3 | 2.4 | 2.7 | 5 | 25 | 4.5 | 25.8 |
| 65-74 | 191 | 234 | 3.1 | 3.8 | 6.3 | 7.5 | 299 | 330 | 3.2 | 3.5 | 6.1 | 7.3 | 108 | 96 | 113.7 | 41.0 |
| 75+ | 124 | 118 | 2.0 | 1.9 | 4.1 | 3.8 | 132 | 200 | 1.4 | 2.1 | 2.7 | 4.4 | 8 | 82 | 6.5 | 69.5 |
| | 3,042 | 3,133 | 49.2 | 51.0 | | | 4,899 | 4,505 | 52.2 | 47.8 | | | 1,867 | 1,372 | | |

SOURCE: U.S. Department of Commerce, Bureau of the Census, 1980.

TABLE 17. BUSINESS TRENDS IN NORTH DAKOTA AND MERCER COUNTY, 1972-1980

| | North Dakota | | | | | |
|-----------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | 1972 | | 1977 | | 1980 | |
| | No. of Establishments | No. of Employees | No. of Establishments | No. of Employees | No. of Establishments | No. of Employees |
| Construction | 984 | 8,733 | 1,977 | 10,662 | 1,829 | 12,848 |
| Manufacturing | 437 | 9,272 | 539 | 14,695 | 542 | 16,650 |
| Transportation | 726 | 8,216 | 816 | 9,828 | 815 | 12,720 |
| Wholesale | 1,656 | 12,773 | 2,020 | 16,358 | 2,079 | 20,010 |
| Retail | 4,459 | 34,025 | 4,843 | 42,289 | 4,788 | 47,321 |
| Finance | 1,121 | 7,619 | 1,432 | 9,976 | 1,526 | 11,728 |
| Repair | 346 | 1,830 | 519 | 3,161 | 683 | 4,953 |
| Services | 781 | 4,920 | 806 | 6,333 | 764 | 7,063 |
| Recreation | 166 | 1,175 | 158 | 1,069 | 147 | 1,535 |
| Professional | 1,587 | 20,716 | 1,899 | 1,128 | 1,953 | 32,490 |
| Public Administration | -- | 9,428 | -- | 9,970 | -- | 9,393 |

| | Mercer County | | | | | | | | |
|-----------------------|---------------------------------------|------------------|---------------------------------|---------------------------------------|------------------|---------------------------------|---------------------------------------|------------------|---------------------------------|
| | 1972 | | | 1977 | | | 1980 | | |
| | No. of Establishments (% of Total) | No. of Employees | Annual Payroll (Thou. of \$) | No. of Establishments (% of Total) | No. of Employees | Annual Payroll (Thou. of \$) | No. of Establishments (% of Total) | No. of Employees | Annual Payroll (Thou. of \$) |
| Construction | 9(7.6) | 24 | 96 | 31(19.5) | 106 | 1,458 | 30(18.3) | 153 | 3,948 |
| Manufacturing | NA | NA | NA | 6(3.8) | 23 | 287 | 3(1.8) | NA | NA |
| Transportation | 10(8.4) | 128 | 1,040 | 8(5.0) | 276 | 4,350 | 10(6.1) | 339 | 7,000 |
| Wholesale | 12(10.1) | 84 | 384 | 17(10.7) | 121 | 690 | 19(11.6) | 163 | 1,586 |
| Retail | 45(37.8) | 192 | 600 | 51(32.1) | 312 | 1,656 | 56(34.1) | 431 | 2,865 |
| Finance | 8(6.7) | 32 | 136 | 13(8.2) | NA | NA | 14(8.5) | 74 | 1,060 |
| Services | 35(29.4) | 202 | 680 | 33(20.8) | 208 | 1,350 | 32(19.5) | 351 | 3,002 |
| Public Administration | -- | 45 | 368 | -- | 36 | 110 | -- | 42 | 628 |
| Total | 119 | 707 | 3,304 | 159 | 1,082 | 9,901 | 164 | 1,553 | 20,089 |

SOURCE: U.S. Department of Commerce, County Business Patterns, 1981.

TABLE 18. TAXABLE SALES AND PURCHASES AND TAXES COLLECTED, MERCER COUNTY,
1972-1981

| Location | Taxable Sales Plus Taxable Purchases | | | Taxes Collected | | |
|---------------|---|-----------|------------|--------------------|---------|---------|
| | 1972 | 1977 | 1981 | 1972 | 1977 | 1981 |
| Mercer County | 14,124,312 | 9,358,527 | 13,413,367 | 562,894 | 294,720 | 389,450 |
| Beulah | 6,534,648 | 4,281,687 | 7,401,486 | 260,274 | 132,471 | 213,676 |
| Hazen | 4,037,928 | 4,324,568 | 5,248,330 | 160,675 | 137,684 | 153,286 |

NOTE: All figures are deflated using the Implicit Price Deflator of Gross National Product, Base Year 1972 = 100.

SOURCE: North Dakota Sales and Use Tax Statistical Reports, 1972-1981.

Impacts on Area Businesses

The population increase in Mercer County might be expected to generate a substantial amount of new business for area firms. In addition, new businesses often move into rapid growth areas to take advantage of expanded markets. Negative impacts may include difficulty in attracting and keeping quality personnel due to the lure of high wages at the energy facilities and problems in obtaining financing for needed expansion (Denver Research Institute, 1982).

In Beulah and Hazen, most of the stores which predate the construction boom are still in business. The local bank has also been credited by local businessmen interviewed with being very helpful in providing financing and in obtaining outside funds.

A survey of area businesses (exclusive of those working directly on the energy projects) yielded characteristics of both local firms and their employees. The five-year period (1977-1982) showed an average increase in business size from 3.5 to 5.4 employees, with average hourly wage paid increasing from \$4.00 to \$5.37 (Table 19). Most (89.3 percent) businesses were privately-owned; 43.4 percent of the sample were retail trade firms, 15 percent wholesalers and 13.3 percent service establishments (see Appendix B).

Area businesses appear to have responded to rapid growth through expansion of both work force and floor space. Facilities have been expanded 57.3 percent, and 62.9 percent of the employers surveyed noted substantially increased wage payments in the last five years. In addition, difficulty in attracting quality workers and increased turnover rates were noted (45.6 percent and 39.2 percent, respectively). Although the average number of years in business was 13, more than half of the businesses surveyed were established in 1975 or later, indicating creation of many new firms in response to energy development.

Most (86.5 percent) employees of area businesses lived in Beulah or Hazen; average distance traveled to work was 5.7 miles, but more than half traveled less than one mile. The average respondent was a resident of the area for 9.6 years and held his (her) current job for 3.6 years; the median values for these categories are far lower (four years and one year, respectively) since the long-term residents bias the average number of residence years upward. The average worker also held 2.3 jobs during the sample period. An interesting note on this statistic is that an econometric analysis showed that, for each additional job held over this period, average present wage declined about 16 cents an hour (see Appendix B, Table 4).

TABLE 19. CHARACTERISTICS OF BEULAH AND HAZEN BUSINESSES

Average Number of Employees

| <u>Year</u> | <u>Number</u> |
|-------------|---------------|
| 1977 | 3.5 |
| 1978 | 3.7 |
| 1979 | 4.5 |
| 1980 | 4.9 |
| 1981 | 5.3 |
| 1982 | 5.4 |

Ownership Characteristics, 1982

| <u>Type</u> | <u>Number</u> | <u>Percent</u> |
|----------------|---------------|----------------|
| National Chain | 4 | 3.6 |
| Regional Chain | 5 | 4.5 |
| Franchise | 3 | 2.7 |
| Private | 100 | 89.3 |

Average worker's age was 31 years. About one-fourth (22.2 percent) of those married had spouses working at one of the energy projects. Many (50.8 percent) listed a previous residence outside Mercer County but within North Dakota, while 28.2 percent resided outside North Dakota prior to moving to Mercer County (see Table 20). These figures indicate that although a substantial number of employees are directly connected to the energy facilities, and many immigrants to the area may be attracted by job opportunities generated by rapid growth, many are longtime North Dakota and Mercer County residents. The education levels of survey respondents were high. Most (76.4 percent) had at least a high school diploma. Distribution of employees by wage, business type, and gender is listed in Table 21.

TABLE 20. PREVIOUS RESIDENCE OF SURVEY RESPONDENTS

| | <u>Number</u> | <u>Percent of Total</u> |
|--|---------------|-------------------------|
| Mercer County | 56 | 21.0 |
| North Dakota (excluding Mercer County) | 135 | 50.8 |
| Outside North Dakota | <u>75</u> | <u>28.2</u> |
| Total | 266 | 100.0 |

TABLE 21. BUSINESS TYPE BY WAGE AND SEX

| Business Type | Average Wage | Male | Female | Total |
|-----------------------|--------------|----------|----------|----------|
| Construction | \$ 9.30 | 15 | 1 | 16 |
| Manufacturing | 5.35 | 14 | 6 | 20 |
| Transportation | 11.50 | 14 | 6 | 20 |
| Wholesale | 6.97 | 17 | 3 | 20 |
| Retail | 5.06 | 73 | 108 | 181 |
| Finance | 4.32 | 0 | 5 | 5 |
| Repair | 7.17 | 9 | 2 | 11 |
| Services | 3.72 | 1 | 19 | 20 |
| Recreation | 5.62 | 1 | 1 | 2 |
| Professional | 5.82 | 10 | 2 | 12 |
| Public Administration | 8.17 | <u>1</u> | <u>1</u> | <u>2</u> |
| Total | | 155 | 154 | 309 |

It was initially thought that the survey results would show a high percentage of immigrants with spouses at one of the energy projects. However, cross-referencing respondents' previous residence with his (her) spouse's occupation showed that only 21.6 percent of the spouses of those immigrating from outside North Dakota were employed at the energy facilities, while 26.3 percent of those immigrating to Mercer County from within North Dakota had spouses with energy-related occupations. This does not differ significantly from the 22.2 percent of the total sample with spouses working at the energy facilities.

Some area businesses have capitalized on the increased demands generated by the construction work force. Some, however, have been unable to stock the quantity or types of goods needed and have not benefitted as much (Schock, 1982; Tveite, 1982).

Unique Aspects of Impact Management in Mercer County

Several features of Mercer County's experience in managing energy impacts were novel or different from other western counties experiences. As such, these institutions and management measures are given detailed attention regarding their success and usefulness to other energy-impacted areas. These are the Energy Impact Office of North Dakota, the Mercer County Energy Development Board, the Inter-Industry Technical Assistance Team, and the Prairie Hills Subdivision.

The Energy Development Impact Office

The Energy Development Impact Office, or EIO, is the source of more than half the revenue utilized by the city and county governments for impact mitigation. As such, a discussion of its history, philosophy, and guidelines is needed in a discussion of energy development in rural North Dakota.

History

The EIO was founded in 1975 to administer grants to counties, cities, and school districts experiencing impacts from coal development. Originally called the Coal Development Impact Office (CIO), it acquired its present name in 1981 when its role was expanded to handle gas and oil development impacts.

Funding for the EIO is obtained from the state General Fund through state Coal Severance and Conversion Taxes. The General Fund, which receives part of its revenue from the Coal Severance and Conversion taxes, Oil and Gas Production Tax, and the Oil and Gas Extraction Taxes, provides funding for oil and gas impact mitigation and one-half of administrative expenses, while coal impact grants and the remaining administrative expenses come directly from Coal Severance and Conversion Taxes.

The EIO awards grants to communities which can demonstrate that their proposed projects

- 1) are needed to offset negative energy impacts;
- 2) will alleviate those negative impacts; and
- 3) cannot be implemented without the EIO's help.

The director of the office, in addition to reviewing and authorizing grants, is responsible for assisting communities in developing mitigation strategies and applying for grants (EIO, 1982).

Funding

The amended legislation which established the EIO's funding obligations is North Dakota 1981 House Bill No. 1502. Appropriations are provided by House Bill No. 1039 and are summarized in Table 22.

TABLE 22. ENERGY DEVELOPMENT IMPACT OFFICE APPROPRIATIONS FOR 1981-1983

| | |
|------------------------------|-------------------|
| Grants, Benefits, and Claims | |
| Coal | 12,000,000 |
| Oil and Gas | 10,000,000 |
| Administrative | <u>349,887</u> |
| Total | <u>22,349,887</u> |

SOURCE: EIO, 1982.

Guidelines

Some of the regulations for grant awards through the EIO are summarized in the following criteria:

- 1) The applicant must demonstrate that it is experiencing, or will experience, "extraordinary expenditures" due to energy development.
- 2) Only programs to carry out basic governmental service programs will be considered. Secondary impacts, such as sociological problems which may or may not be energy-related, will not be considered.
- 3) Basic governmental services presently reliant on local property taxes for funding will receive high priority.
- 4) Basic governmental services currently receiving funding from sources other than local tax revenues will receive lower priority.
- 5) Capital improvement or construction requests will be reviewed taking into consideration tax efforts of the grantee, and the extent to which funding is available through appropriate bonds.
- 6) All potential grantees will be encouraged to seek federal financial assistance for the proposed project.
- 7) A principal factor shall be the grantee's need for the program, service, or capital construction project proposed, as determined by the director.

Activities of the EIO in Mercer County

The main purpose of the EIO in coal producing counties is to provide the front-end money to manage development impacts until the county receives tax revenues from its coal mines and power plants. Of the city and county officials interviewed, all 10 were satisfied with the office's performance. The EIO provides funding for capital facilities, roads, and some service

personnel. Discussions with Mercer County public service professionals credit the EIO's staff with being both responsible and responsive. Some difficulties have been noted in obtaining social service personnel, partly regarding the school system but chiefly with the Social Services Board. The major problem stems from the fact that the EIO's statutory obligations preclude funding for "secondary" impacts--that is, those impacts not directly attributable to energy development, such as "sociological phenomena."

The EIO itself is not dissatisfied with the wording of the law in this respect. The office has issued funding for social service personnel if a direct relationship between energy development and social impacts could be demonstrated. In addition, the EIO's funding for roads, facilities, and other matters often releases county and city money which would have been used for those purposes; this money can then be used for social services, if deemed appropriate.

As noted in Table 22, the EIO is funded for \$12 million to deal with claims from coal development impacted counties. About 30 percent of grant funds requested are approved. Although the Association of Oil and Gas Producing Counties may feel that their allocation of \$10 million is insufficient, the Coal Conversion Counties Association shows no indication of desiring changes in the severance tax or distribution formulas (Luptak, 1982).

The Energy Development Board of Mercer County

One of the most interesting aspects of the Mercer County case was the establishment of the Energy Development Board (EDB) to coordinate and enhance the county's efforts to manage growth. The concept for the EDB was an offshoot of a French planning process developed by a group called SCET (Societe Centrale pour l' Equipement du Territoire) and imported to the United States by Resource Planning Associates (RPA). The Department of Energy's (then the Energy Research and Development Administration, or ERDA) Division of Buildings and Community Systems officials decided to test the procedure as a model for managing energy development in rural U.S. communities. Mercer County was chosen because it was typical of western energy communities and also because of North Dakota's state owned bank and Joint Powers Act, which permits municipalities and counties to plan, finance, and jointly operate public facilities (Peirce and Hagström, 1979).

In August 1977, the six cities, four school districts (Beulah and Pick City joined later), and the county government formed the EDB. The intent of the board was to "plan for and manage energy related growth in the county and to ensure that energy conservation and technologies are fully incorporated into the planning and development process" (Garnaas, 1978). The staff of the board consisted of an executive director, three planners, and an administrative assistant. Stated objectives of the board were

- 1) to improve the quality of community development induced by anticipated development of energy resources and facilities in the county; and
- 2) to promote energy conservation and the efficient use of energy resources.

The project was initially funded for three years for \$600,000 by DOE.

Some of the initial intentions for EDB powers were rejected at the local level. One scenario envisioned the creation of an energy-efficient model town existing independently of the county's cities. Local citizens and officials viewed this idea with disfavor, however, since the new town would have sapped many of the economic benefits from the existing cities. The power of eminent domain was also wanted for the board; again, local interests were against the idea.

The board was funded through 1981, when it was disbanded. A final report on the project has not yet been released. The questions to be answered regarding the EDB are

- 1) What projects did it complete, and how did the community view the usefulness of these projects (and the board in general)?
- 2) How far did it progress towards reaching its stated objectives?
- 3) Is the EDB approach applicable to other energy development situations?

As stated in EDB's Mercer County Growth Management Plan (1979), the board had set forth three "primary tasks" which needed to be completed in reaching its objectives. These included: completion of a growth management plan to revise the county's 1968 comprehensive plan; provision of technical planning assistance to the communities of Golden Valley, Hazen, Beulah, Stanton, Zap, and Pick City; and investigation of energy conservation techniques and demonstration projects.

The EDB completed a ten-volume growth management plan which addressed such topics as conservation, growth alternatives, monitoring, economic alternatives, and growth forecast scenarios. The board also brought together representatives of the county, cities, and school districts in a coordinated planning process. Finally, the board completed several research projects, including an energy conservation handbook and a report on possible economic uses of fly ash (one of the waste products resulting from lignite burning).

Reactions to the board in the wake of its disbanding are mixed. Some of the original provisions made to the county in return for hosting the EDB proved impossible to follow through. An informal agreement for DOE to help obtain funds for the county from other government agencies was difficult to fulfill. It was also suggested that locals contribute funding to the board several years after the EDB was instituted, when the original understanding called for no local financial commitment.

Another problem stemmed from decision making policies of the board; for example, Pick City (pop. 173) having as many votes as Beulah (pop. 2,911) contributed to friction among towns. General local reactions were that too many "outsiders" were involved with Mercer's affairs, too many projects were conducted which often were not of high local priority, and the EDB was an inefficient use of the large amount of federal money invested in it.

Notably, two major EDB projects were never completed (not entirely through the fault of the board). The board attempted to conduct a total energy audit of the county, which DOE cancelled after deciding that the audit should be industry's responsibility. The second major undertaking left unfinished was the TOTEM (total energy module) project, which would have installed small, super-efficient electricity and heat producing units in Hazen Memorial Hospital and the Beulah High School gymnasium.

On the positive side, the EDB yielded some substantial benefits to the county. Perhaps its principal accomplishment was to establish a regional and local planning structure where none previously existed. It is doubtful that Beulah or Hazen would have had planners as early as they did were it not for the EDB. The EDB coordinated interaction among different subdivisions and induced them to discuss joint needs. Through this planning process, interaction with the EIO and other agencies was facilitated, allowing the funding process to run more smoothly.

In 1979, midway through the EDB's lifespan, many spoke out in praise of the board. Ailsa Simonson, then director of the Coal Impact Office, credited the EDB with helping Mercer County avoid many of the development problems felt in other western communities. Philip Burgess, director of the Western Governor's Policy Office, stated:

Mercer County is one of the most successful examples of integrating the interests of the general public, local elected officials, and the state in a cooperative and focussed effort to deal with the problems of energy impact (Peirce and Hagstrom, 1979).

As far as the EDB's philosophy, it appears that much of the underlying social structure was overlooked. Some of the French system's approaches are inapplicable on the North Dakota prairie. The idea of a separate energy city was foreign to the area towns. Provision of the board with power of eminent domain and bonding authority was also not akin to local interests. The executive director of the EDB felt that political constraints forbade the board itself from handling impact funds, and that the allocation of impact management funds through the EIO in Bismarck was the most efficient system. The director also felt that the board would have been more productive if local entities had contributed some financial resources, thereby increasing their stake in seeing the process succeed (Stroup, 1982).

A final problem noted was a lack of state inclusion in the planning process. DOE bypassed much of the state government and dealt directly with the local entities. This type of activity is often viewed with disfavor by state governments.

Although it may be difficult to apply Mercer County's experience to other western communities, several features of the EDB are valuable. The idea of initiating a planning process in rural communities is a useful one; however, efforts should be made for the communities to have the lead role, with outside assistance from other sources if needed. This could avoid some of the pitfalls of the Mercer County EDB.

The Prairie Hills Subdivision

As noted earlier, one of the most significant impact management efforts initiated by industry was the Prairie Hills project. Initially financed by the Coyote Consortium⁴ and Basin Electric for about \$3.5 million, the development houses over 1,000 in the dormitories (Prairie Hills I) and provides facilities for 215 RVs (Prairie Hills II). Ownership has subsequently

been transferred to GPGA, which plans development of a permanent subdivision nearby (Prairie Hills III) to accommodate Great Plains' operating employees. When the need for bachelor housing declines as construction winds down, the modular housing units can be removed and permanent dwellings constructed to take advantage of the existing water, sewer, and road facilities.

Local response to the facility is generally favorable--some problems are noted, but no more than for any other subdivision. According to the Beulah City Planner, the city leaders of Beulah felt that since the facility would be built (and create impacts) anyway, it was best to have it within city limits where there would be more local control (Rogers, 1982). Prairie Hills I also pays the city \$65,000 annually in taxes.

In a survey of the Prairie Hills subdivision conducted for Basin Electric (BE) by Burtco, Inc., resident satisfaction with services and prices were found to be extremely high. Principal reasons for choosing to live at the mancamp were proximity to work place and convenience. High levels of satisfaction⁵ were found with: meals (breakfasts, 75.5 percent; dinners, 86.7 percent; lunches, 45.1 percent with 22.6 percent neutral); cost (69.8 percent); camp rules and management (73.5 percent and 81.1 percent, respectively) and rooms and bathroom facilities (92.4 percent each). Eighty three percent of the workers surveyed felt that there were few problems between camp residents and townspeople. The major disadvantage of living in the camp was seen as the separation from family, with some negative comments about the lack of activities. Overall, on a scale of one (low) to ten (high) of satisfaction with the camp, 55.6 percent gave a ranking of nine or ten; 37.8 percent gave a ranking of seven or eight; and only 6.7 percent expressed a ranking of six or less (note: only 45 residents responded to this question, as opposed to about 50 respondents for the other questions).

According to Basin Electric officials, the company's experiences in Wheatland, Wyoming (home of the Laramie River Power Station) "sold" the company on the effectiveness of the use of mancamps. Responses to survey questions on food satisfaction also shed important light on one of Prairie Hills' management policies: dinner hour is strictly limited to 5 to 6 p.m. Since the food is high quality (50.9 percent very satisfied, 35.8 percent satisfied), workers tend to make an extra effort not to miss dinner. This in turn reduces the amount of alcohol consumed on workday evenings (a common complaint about construction workers). It appears, then, that seemingly

minor considerations such as meal time can make a significant reduction in negative social impacts (Selby and Boe, 1982).

The Role of Industry in Impact Management

Industries participating in energy development in Mercer County are required by the Energy Facility Siting Act to take certain mitigation measures, including monitoring of the construction work force. The Inter-Industry Technical Assistance Team (ITAT) was formed to deal with these provisions. In addition, ITAT provides technical assistance to area communities and aids locals in grant preparation and other management measures. ITAT has also provided direct financial assistance to the area on occasion.

In siting the Antelope Valley Station, certain conditions were imposed upon Basin Electric by the Public Service Commission which seem to have become the standard in North Dakota for industry's socioeconomic impact mitigation responsibilities. These were that Basin Electric

- 1) designate a minimum of two persons as local agents to assist and work with all government agencies;
- 2) assist governmental agencies in managing and maintaining construction impacts at acceptable levels;
- 3) prepare and distribute an information packet to all construction workers;
- 4) compile verifiable data to aid designated state and local governmental agencies in the ability to react to impacts arising from the influx of construction workers;
- 5) develop and submit a program to monitor and evaluate socioeconomic impacts;
- 6) assist the affected communities to see that certain areas (e.g., law enforcement, school systems, etc.) are managed;
- 7) that should adverse impacts arise, the commission⁶ may require Basin Electric to show cause why it should not be required to manage the adverse impact at its own expense; and
- 8) in order to minimize the cumulative effects of the impacts, Basin Electric shall participate and cooperate with other utilities in any joint control and monitoring programs the commission may require (Basin Electric, 1981).

Basin Electric alone has spent over \$6 million dollars for impact mitigation in Mercer County between 1977 and 1981, exclusive of severance and coal conversion tax payments. Industry has recently helped fund a family violence specialist (through Mercer County Social Services) to deal with cases of child abuse and neglect.

Monitoring

ITAT publishes a monthly construction work force report which classifies workers by commuting, relocating, and local status, and provides actual and projected construction employment for the year. ITAT's semiannual Mercer County Socio-Economic Impact Mitigation Assessment provides population forecasts, construction work force characteristics, population and household projection tables, and a list of adopted and potential mitigation strategies. The industry also conducts a monthly housing survey to catalog the type of housing for rent and for sale within the county.

Housing

As described elsewhere in the report, perhaps the single most important mitigation measure taken by industry was construction of the \$3.5 million Prairie Hills bachelor quarters. Basin and GPGA also have housing assistance programs for their workers. This includes mortgage assistance, interest differential payments, and buy back guarantees, should the facility close prematurely.

Finally, the industry has taken a number of direct measures in the housing market. These include plans for Prairie Hills III, a permanent subdivision for the GPGA's operating employees; purchase of an apartment building for plant employees; and leasing of 36 mobile homes owned by Basin Electric to Antelope Valley Station families.

Economic Assistance

The chief contribution to impact assistance by the energy industry is its payment of coal severance and conversion taxes. Much of these funds is then distributed to impacted counties and cities through the Energy Development Impact Office. A percentage of these funds also goes directly to the community. Mercer County energy firms have also made substantial direct contributions to various entities within the county.

The industry also has an informal commitment to buy locally whenever possible. However, this has not helped some local businesses, because they either do not or cannot stock sufficient inventory of goods needed by the firms. Main beneficiaries of this policy are hardware, automotive and fuel, and insurance concerns.

ITAT also shares its technical expertise with the community in preparing grant applications. In addition, the industry has bought bonds for public projects (e.g., Beulah Airport, Hazen Hospital) at interest rates of from 6 to 10 percent. Since this is less than the money would earn in other investments, the loss of revenue is equivalent to a subsidy of these projects.

Community Development and Planning Assistance

In the mid-1970s, when most of the county's energy development was still in the planning stage, industry made an important move by aiding the community with advanced planning. This involved a "field trip" of community leaders to several western energy development sites--among them, Basin's Laramie River Plant at Wheatland, Wyoming--to observe how other communities have managed growth. Through this experience, actors in the county's impact management scheme were able to see the strengths of certain mitigation policies and the weaknesses of others.

ITAT also tries to maintain interactions with communities and schools to be sure they are aware of potential impacts. A monthly meeting is held for public information. Finally, ITAT was a major force behind formation of the Mercer County Task Force (MCTF), a local board consisting of representatives of county interests--social services, schools, etc.--designed to promote information exchange between industry and the public.

Although the MCTF is still active, it was not mentioned by any of the community officials interviewed as having been a major force in shaping the area's mitigation policies. Problems mentioned regarding the task force are that it is too broadly based--for example, a representative concerned with water and sewer problems need not have a say in school affairs--and that the MCTF's presence tends to overcomplicate the planning process (Rogers, 1982).

As a final note to this section, it is useful to review ITAT's philosophy toward impact management. The industry has taken substantial and expensive measures to promote orderly, manageable growth. Officials of the industry firmly believe that ITAT is a "stabilizing force" in the county. Some disagreement still exists over whether industry and the EIO provide as well for social services and school personnel as they do for roads and buildings, but this situation is not especially severe (nor uncommon in other development areas) (Boe and Selby, 1982; Pearson, 1982).

Perhaps the industry's aim in impact management is summarized by the final statement in one of Basin Electric's mitigation reports:

Be it resolved, that Basin Electric Power Cooperative urges industry, private citizens, and units of local, state, and federal government to work in close cooperation in the development of adequate programs for impact alleviation to overcome the difficult problems in planning, financing, and realizing the effective alleviation of adverse impact on the human environment (Basin Electric, 1981).

Summary

In this case study, we have attempted to identify the benefits and costs that energy development has brought to Mercer County and its residents. Especially important in any project of this type is a review of socioeconomic impact management measures taken by industry, cities, county, and state and federal governments. Through analysis of these measures, implications can be drawn which can benefit future developments in other rural areas of the country. A summary of these factors, plus some observations as to their applicability to other projects, completes this report.

Mercer County Energy Development: Winners and Losers

Mercer County has experienced a substantial amount of growth in the past five years. This growth has resulted in a large number of jobs in the energy field, and many new jobs in the support industries. Many local businesses have benefitted through increased business volumes and sales. Some, however, have not been able to supply the energy developments with the type or quantity of goods needed, and have not profitted as much. In addition, the attractiveness of high wages at the construction sites has both lured employees away from, and caused higher levels of compensation to be paid by, some local businesses.

Financially, the county, cities, and school districts can anticipate massive revenue infusions from coal conversion and severance tax monies when the energy facilities are operational in the mid-1980s. Presently, the Energy Development Impact Office fills most of the service revenue-cost gaps with grants for new facilities and personnel. Grants to the county from the EIO and other sources have totalled more than \$27 million over the past seven years. Assessed valuation for the cities has also more than doubled over this period.

One area which is both a problem and a benefit is the road system. In the long run, the county will experience substantial upgrading of its road system, with many improved and paved roads. In the short run, however, it must deal with congestion and deterioration problems caused by the construction work force.

In the public health sector, EIO grants in conjunction with local funding are providing for expansion of services at the area's hospital, especially the emergency room section. The major problem in this sector is a shortage of physicians. The county has implemented programs to attract new physicians to the area.

The school system has experienced substantial enrollment increases. Facilities have been expanded considerably, and additional staff added. Problems have arisen due to the lack of social service personnel for student and parent counseling. This problem was also noted by the Mercer County Social Services Board, which has had to curtail some of its services to the county. Part of this problem stems from limitations of the EIO in funding personnel. Some funds have been made available by the EIO and industry, however, and the county government has been credited with being very helpful in supporting the Social Services Board.

The quality of life in the county has certainly changed, but whether for the better or worse depends on whom one consults. The trend of declining population has been reversed, and the cities are exhibiting dynamic growth. Culturally, much more diversity is present. Groups strongly dissatisfied with new developments appear to be those not experiencing many benefits, such as fixed income groups coping with higher housing costs, or full-time farmers faced with high fuel costs and deteriorated roads.

The housing market has seen severe strains. Rents and house prices are high, which has led to problems attracting personnel. Industry has responded with the Prairie Hills Bachelor Quarters, permanent housing construction for permanent employees, and mobile home provision. Mobile homes account for a substantial amount of Beulah and Hazen's housing stock.

Major Impact Management Measures

Mercer County's development experience involved interaction between the community and three principal entities: industry, the State Energy Development Impact Office, and the federal government. The industry, through its Inter-Industry Technical Assistance Team (ITAT), remains a

strong and stable force within the county, providing both technical expertise and direct funding to mitigation attempts. Most of the funds used in the county, however, come from the state's EIO. The federal government also attempted, for several years, to manage growth in the area through its Energy Development Board (EDB). A description of these groups' key attempts at impact management follows.

Industry Initiatives

Companies involved in Mercer have made several significant moves towards inducing balanced growth. ITAT's community relations have been good; a high level of information exchange exists (much of it informal) between the communities and industry, particularly through monthly meetings. A key undertaking was the arrangement of face-to-face contact of local officials with their counterparts in other energy development areas, so that Mercer County could learn from their experiences firsthand. Industry's housing measures have also alleviated impacts, particularly through construction of the Prairie Hills subdivision and various housing assistance programs. Though area housing remains expensive, these measures and encouragement of weekly and daily commuting have avoided many potential negative impacts.

Finally, ITAT's monitoring system is both timely and comprehensive. Industry and county officials are, therefore, able to evaluate growth areas and anticipate possible problems.

The Energy Development Impact Office

The EIO has proved an effective method of dispensing impact funds. Although somewhat constrained in funding areas by statutory obligations, the office has provided the county with invaluable assistance in dealing with energy development impacts. Although no one specific measure taken by the EIO can be pointed to as being "key" or essential, the general structure of severance, conversion, and production taxes and the distribution formulas and methods seem to work very well for the North Dakota situation.

The Energy Development Board

The EDB, although an ambitious undertaking, does not seem to have lived up to its potential. Some of the basic problems with the Board were flaws in its initial philosophy, such as the concept of a new energy city,

and granting powers of eminent domain. Inconsistency in timing of funding⁷ also plagued the EDB. Although the board did complete several projects, most local officials felt that it was an inefficient use of the amount of funds budgeted.

The most positive aspect of the EDB experience was the introduction of a planning structure into the community, where none had previously existed. In this respect, the Energy Development Board has made a lasting impression on the county, since both Beulah's and Hazen's city planners are the direct result of the Board's activities. The EDB was also instrumental in bringing the local communities together. However, it would seem that a more efficient method of achieving these results would be to allocate funding to the local communities for planning, possibly under the provision that they provide a portion of the funding for the project. In this way, there would be more incentive to see the project succeed. Creation of a separate entity for planning and growth management does not seem to be applicable to North Dakota.

Conclusion: The Lessons of Mercer County

Mercer County has managed to avoid many of the negative impacts of energy development suffered by other western communities. Although in any situation of change there will be individuals dissatisfied--many of whom are, in fact, made genuinely worse off than before by these changes--Mercer County seems to have adjusted well to the population and economic growth brought by the energy industry. Through a concerted effort of local, state, federal, and industry groups, growth appears to have been balanced and reasonably manageable.

The value of several mitigation tools and measures seems applicable to other rapid growth areas. First, predevelopment measures in Mercer were very effective. These included development of a planning structure, industry initiatives to establish liaison with local officials and to assist with planning efforts, and the existence of a state organization to dispense front-end impact funds (the EIO). Another important tool an area should possess is zoning controls to manage development. Measures concurrent with development include provision of temporary housing--mobile home facilities and bachelor quarters. Communication among affected parties remains essential during this stage. Finally, monitoring of project characteristics throughout

construction and operation provides a means both for assessing the effects of mitigation measures and for formulating additional plans if unanticipated impacts develop.

Questionable management acts attempted in the county were directed at community organization through the EDB and Mercer County Task Force. Although the ideas behind these measures were well-founded, problems arose by involving too many actors in the mitigation process.

Endnotes

- ¹The Energy Development Impact Office (EIO), prior to 1981, was called the Coal Impact Office. References in this report to the Coal Impact Office or CIO refer to that office's activity during that period.
- ²Local workers are defined as those living in Mercer County prior to the construction phase of the project.
- ³Outpatient visits include anything done on an outpatient basis--lab, x-ray, etc. This figure is also inclusive of emergency room visits.
- ⁴The Coyote Consortium includes Montana-Dakota Utilities Co., Otter-Tail Power Co., Minnkota Power Cooperative, Minnesota Power and Light, and Northwestern Public Service Co.
- ⁵Response choices were satisfied, very satisfied, neutral, dissatisfied, or very dissatisfied. Here, high levels of satisfaction refer to respondents answering either satisfied or very satisfied.
- ⁶The North Dakota Public Service Commission.
- ⁷The Department of Energy's grants often arrived later than scheduled.

APPENDIX A
Secondary Business Survey

NORTH DAKOTA STATE UNIVERSITY

Mercer County Energy Impacts Study

EMPLOYER SURVEY

This survey is being conducted by the Department of Agricultural Economics at North Dakota State University to help estimate the impacts of energy development on support industries in Mercer County. Your participation will help in developing plans to aid small communities in dealing with rapid growth. Your answers will be strictly confidential.

1. What type of business do you run? (Name) _____

2. What year and month was your business established? _____

3. How many workers do you employ? _____

| | Full Time | Part Time |
|--|-----------|-----------|
| 4. How many workers did you employ in: | | |
| 1977 | _____ | _____ |
| 1978 | _____ | _____ |
| 1979 | _____ | _____ |
| 1980 | _____ | _____ |
| 1981 | _____ | _____ |

5. What is the average hourly wage you pay your employees? _____

6. Has this average wage increased substantially over the past five years? _____

If yes, by approximately how much? _____

(The following questions relate to the past five years.)

7. Have you noticed any increased difficulty in attracting quality workers?

8. Have you experienced increased turnover rates? _____

9. Has your business expanded lately (either in floor space or quantity and types of goods sold)? _____

10. Is your business a: _____ franchise
_____ part of a national chain
_____ part of a regional chain
_____ privately owned

11. How many employee surveys did you distribute to your workers? _____

Thank you for your cooperation. If you want a copy of the final report, please fill out the form furnished by the interviewer.

ADDITIONAL COMMENTS

NORTH DAKOTA STATE UNIVERSITY

Mercer County Energy Impacts Study

EMPLOYEE SURVEY

This survey is being conducted by North Dakota State University in order to estimate the effects of energy facility development on Mercer County. All answers will be strictly confidential--do not write your name on this survey. Please fill out this survey and return it to your employer. Your cooperation is appreciated.

1. What is your occupation (job title)? _____

2. What type of business do you work in? _____

3. How long have you worked at this job? _____

4. What is your hourly wage? _____

5. What is your husband/wife's occupation? _____

6. What type of business does he/she work in? _____

7. How long has he/she worked at that job? _____

| | | | |
|---|-------------|-------------|------|
| 8. Please list your work history for the past five years. | | | |
| Occupation | City, State | Hourly Wage | Year |

| |
|-------|
| _____ |
| _____ |
| _____ |
| _____ |
| _____ |
| _____ |

9. How far do you travel (one way) to work? _____

10. Where is your local place of residence? _____
(Town)

11. How long have you lived there? _____

12. Where did you live before that? _____
(City, State)

13. Do you own or rent your home? _____ Own _____ Rent

14. Do you live in:

| | |
|------------------------------|-----------------------------|
| _____ Single Family Home | _____ Motel |
| _____ Apartment | _____ Travel Trailer |
| _____ Town House/Condominium | _____ Camper, Van |
| _____ Mobile Home | _____ Other (Specify) _____ |

15. What type of housing do you prefer?

| | |
|---|--|
| <input type="checkbox"/> Single Family Home | <input type="checkbox"/> Motel |
| <input type="checkbox"/> Apartment | <input type="checkbox"/> Travel Trailer |
| <input type="checkbox"/> Town House/Condominium | <input type="checkbox"/> Camper, Van |
| <input type="checkbox"/> Mobile Home | <input type="checkbox"/> Other (Specify) _____ |

16. Sex: Male _____ Female _____

17. Number of dependents (spouse and children) living with you at your local place of residence? _____

18. Number of children: 0-4 years _____
5-12 years _____
13-18 years _____
Over 18 years _____

19. Age _____

20. Formal education (years in school): _____ 8 years or less
_____ 9-11 years
_____ 12 years
_____ 13-15 years
_____ 16 or more years

21. What is your race?

| | |
|---|---------------------------------|
| <input type="checkbox"/> White | <input type="checkbox"/> Indian |
| <input type="checkbox"/> Spanish-American | <input type="checkbox"/> Black |
| <input type="checkbox"/> Other (Please Specify) | |

THANKS FOR YOUR HELP!!

APPENDIX B

Tables

APPENDIX TABLE 1. OCCUPATION OF SURVEY RESPONDENTS

| | <u>Number</u> | <u>Percent of Total</u> |
|--------------|---------------|-------------------------|
| Professional | 47 | 18.7 |
| Sales | 80 | 31.7 |
| Service | 66 | 26.2 |
| Farming | 2 | .8 |
| Craftsman | 43 | 17.1 |
| Laborer | 14 | 5.6 |

SOURCE: Mercer County, Energy Impacts Survey, 1982.

APPENDIX TABLE 2. EMPLOYEES BY BUSINESS TYPE

| | <u>Number</u> | <u>Percent</u> |
|-----------------------|---------------|----------------|
| Construction | 11 | 4.4 |
| Manufacturing | 12 | 4.8 |
| Transportation | 1 | .4 |
| Wholesale | 20 | 7.9 |
| Retail | 155 | 61.5 |
| Finance | 5 | 2.0 |
| Repair | 11 | 4.4 |
| Services | 22 | 8.7 |
| Recreation | 2 | .8 |
| Professional | 11 | 4.4 |
| Public Administration | 2 | .8 |

SOURCE: Mercer County, Energy Impacts Survey, 1982.

APPENDIX TABLE 3. SECONDARY BUSINESS SURVEY: FIRMS BY TYPE

| | <u>No. of Firms</u> | <u>Percent</u> |
|-----------------------|---------------------|----------------|
| Agriculture | 2 | 1.8 |
| Construction | 10 | 8.8 |
| Manufacturing | 2 | 1.8 |
| Wholesale | 17 | 15.0 |
| Retail | 49 | 43.4 |
| Finance | 9 | 8.0 |
| Repair | 7 | 6.2 |
| Services | 15 | 13.3 |
| Public Administration | 1 | .9 |
| Recreational | 1 | .9 |

SOURCE: Mercer County, Energy Impacts Survey, 1982.

APPENDIX TABLE 4. FACTORS AFFECTING WAGES OF SECONDARY BUSINESS EMPLOYEES IN MERCER COUNTY

| Dependent Variable = Hourly Wage | | |
|-------------------------------------|--------------------|--------------------|
| <u>Variable</u> | <u>Coefficient</u> | <u>T-Statistic</u> |
| Years on Job | 28.5 | 4.3 ^a |
| Wage at Previous Job | .37 | 5.48 ^a |
| Years of Residence | .25 | .16 |
| Number of Jobs, Last 5 Years | -15.7 | -1.52 ^b |
| Distance Travelled to Work | 2.0 | 1.23 |
| Sex (dummy) | -134.4 | -4.04 ^a |
| Age | .2 | .11 |
| Education ^c | 47.9 | 2.99 ^a |
| R ² = .59 | | |
| Mean of Dependent Variable = 509.79 | | |

^aSignificant at 99 percent level.

^bSignificant at 90 percent level.

^cEach one unit increment in education corresponds to one additional level of schooling as specified in question 20 of the employee survey (see Appendix A).

SOURCE: Mercer County, Energy Impacts Survey, 1982.

APPENDIX TABLE 5. RESIDENCE PREFERRED BY TYPE OF RESIDENCE

| | <u>Single Family</u> | <u>Apartment</u> | <u>Town House/Condominium</u> | <u>Mobile Home</u> | <u>Total</u> |
|------------------------|----------------------|------------------|-------------------------------|--------------------|--------------|
| Single Family Home | 137 | 8 | 3 | 1 | 149 |
| Apartment | 11 | 7 | 1 | 1 | 20 |
| Condominium/Town House | 0 | 0 | 2 | 0 | 2 |
| Mobil Home | 43 | 2 | 0 | 15 | 60 |
| Motel | 1 | 0 | 0 | 0 | 1 |
| Trailer | 1 | 0 | 0 | 0 | 1 |
| Van | 0 | 0 | 0 | 0 | 0 |
| Other | 2 | 1 | 1 | 1 | 5 |
| Total | 195 | 18 | 7 | 18 | 238 |

SOURCE: Mercer County, Energy Impacts Survey, 1982.

APPENDIX TABLE 6. HOUSING PERMITS ISSUED, BY TYPE 1977-1981

| | 1977 | | 1978 | | 1979 | | 1980 | | 1981 | |
|-----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|
| | Beulah | Hazen | Beulah | Hazen | Beulah | Hazen | Beulah | Hazen | Beulah | Hazen |
| Single Family | 60 | NA | 70 | NA | 57 | NA | 28 | 33 | 30 | 27 |
| Multiple Family | 18 | NA | 18 | NA | 43 | NA | 14 | 4 | 4 | 2 |
| Mobile Homes | 26 | NA | 87 | NA | 78 | NA | 81 | 2 | 7 | 1 |
| Total | 104 | NA | 175 | NA | 178 | NA | 123 | 39 | 41 | 30 |

SOURCE: Rogers and Frovarp, 1982.

APPENDIX TABLE 7. VALUE OF OWNER-OCCUPIED HOUSING: MERCER COUNTY, 1970-1980

| Value | Number | | | Percentage Change |
|----------------------|----------|------------|------------|-------------------|
| | 1970 | 1980 | Difference | |
| Less than \$10,000 | 542 | 37 | -505 | -93.2 |
| \$10,000-14,999 | 167 | 66 | -101 | -60.5 |
| \$15,000-19,999 | 101 | 78 | - 23 | -22.8 |
| \$20,000-24,999 | 74 | 88 | 14 | 18.9 |
| \$25,000-34,999 | 39 | 172 | 133 | 341 |
| \$35,000-49,999 | 5 | 298 | 293 | 5,860 |
| \$50,000+ | <u>0</u> | <u>628</u> | 628 | -- |
| Total Owner Occupied | 928 | 1,367 | | |
| Total Housing Units | 2,253 | 3,978 | | |

SOURCE: U.S. Department of Commerce, Bureau of the Census, 1982.

APPENDIX TABLE 8. DIRECT BASIN ELECTRIC FINANCIAL ASSISTANCE TO MERCER COUNTY

| <u>Type of Assistance</u> | <u>Amount</u> |
|--|---------------|
| Land Purchase for Housing | 699,000 |
| Development of Temporary Work Force Housing | 3,200,000 |
| County Roads and Rail Crossing | 2,026,478 |
| Beulah Medical Arts Center | 3,200 |
| Hazen Hospital Facility | 15,000 |
| Social Services Family Abuse | 5,000 |
| Beulah Airport Authority | 20,000 |
| Master Planning of Hazen and Beulah Property | 15,000 |
| Law Enforcement Facilities | 90,000 |

SOURCE: Basin Electric, 1981.

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