

STATE RESPONSES TO THE ADVERSE IMPACTS
OF ENERGY DEVELOPMENT IN TEXAS

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INTRODUCTION

Among the states experiencing the impacts of rapid energy development, Texas is distinguished by a lack of public outcry, despite the fact that adverse impacts have occurred. It may be that residents of impacted areas or boomtowns do not expect anyone to take them seriously or that the percentage of communities affected is so small that their collective voice amounts to only a whisper. They may lack the political sophistication to demand attention. Boomtown residents may expect the long-term benefits to compensate them for the personal and citywide costs, which they perceive to be temporary. Cities that began as energy boomtowns -- Houston, Beaumont -- may now look inviting to boomtown residents. They expect these and similar benefits eventually to exceed the costs and suffering imposed by rapid growth. For whatever reasons, public attention has not focused on the adverse impacts of energy development, and most state officials have behaved as though the impacts have been insignificant. A few officials, however, have begun to realize that these impacts are significant and deserve state attention. This case study addresses the questions, "How has energy development affected local communities in Texas?" and "How have state and local officials responded to adverse impacts?" In particular, this study focuses on the local point of view -- the affected communities' perspective of local problems -- which often reflects previous experience with energy development. Some of these communities lack actual "boomtown" experience, but they are familiar with the stories surrounding Texas' oil boom days. Although the state of Texas responds to many different aspects of energy development, this study discusses only those actions and opinions bearing some relationship to the adverse impacts felt at the local level.

The assistance of many people made this case study possible. The people of Texas -- from state officials to boomtown residents -- spent hours of their time providing me with information and an understanding of energy development in Texas. One official, David White of the Governor's Energy Advisory Council, became my Texas contact and helped me arrange interviews with the appropriate state officials and kept me abreast of legislative changes. Donald Patterson of the National Governor's Conference participated in some interviews, acted as my liaison with Texas state officials,

and guided the preparation of parts of this report. The guidance and criticism supplied by Larry Susskind deserve special note.

I. ENERGY DEVELOPMENT IN TEXAS: AN OVERVIEW

Oil and Natural Gas Development

The history of energy development in Texas involves basically three fuels: oil and natural gas have dominated energy production for most of the twentieth century; lignite recently has been revived as an alternative to natural gas. Although Texas is still a leading producer of both oil and natural gas, its production and its reserves are declining (see Table 1). Attention has shifted to increased offshore drilling, but so far offshore wells contribute less than one percent of the state's annual total production.* Despite the decline, petroleum production** is still pervasive across the state, occurring in 211 of Texas' 254 counties [1].

Over time the state's fiscal health and its overall economy have grown dependent on petroleum production and processing. Last year state-owned mineral leases produced more than \$180 million for Texas public education and \$200 million for university education [2,3]. In addition, tax revenue from petroleum production directly contributed almost 30% of the state funds expended for public education and accrued more than 20% of the 1976 state tax revenues*** [5]. Currently proposed legislation would increase the state's fiscal dependence on the oil and natural gas industry by substituting a refinery tax for the current ad valorem tax that supports school districts [4].

The state retains mineral rights to 22.5 million acres [35]:

- 4.25 million acres -- Submerged offshore lands
- 1.00 million acres -- Riverbeds
- 3.25 million acres -- University of Texas System
- 2-3 million acres -- Agencies and Special Schools
- 7-8 million acres -- Uplands, mineral rights only
- 0.87 million acres -- Uplands, outright ownership
- 3.25 million acres -- Under contract to Texas veterans

Before the discovery of oil and natural gas, much of this acreage appeared worthless, but the state's mineral holdings in west Texas

*45% of the offshore production occurs on state mineral leases.

**In this study "petroleum" refers to both oil and natural gas.

***Texas currently taxes crude oil production at 4.5% of its value and natural gas at 7.5%.

Table 1

TEXAS PRODUCTION AND RESERVES OF OIL AND NATURAL GAS

	Oil	Natural Gas
Production:		
Peak Year	1972	1972
% of National Production	37	35
Predicted % annual decreases:		
without price deregulation	4.7	3.1
with price deregulation	3.1	1.4
Reserves:		
Peak Year	1963	1967
% of National reserves	33	31.1

Source: [5].

include the oil-rich Permian Basin, and the offshore lands host increasing oil and natural gas production (see Figure 1). Revenues from these lands and mineral leases support public education in Texas. The University of Texas System lands are rich with oil reserves; profits from these lands support the operating costs of the University of Texas and Texas Agriculture and Mechanical University.

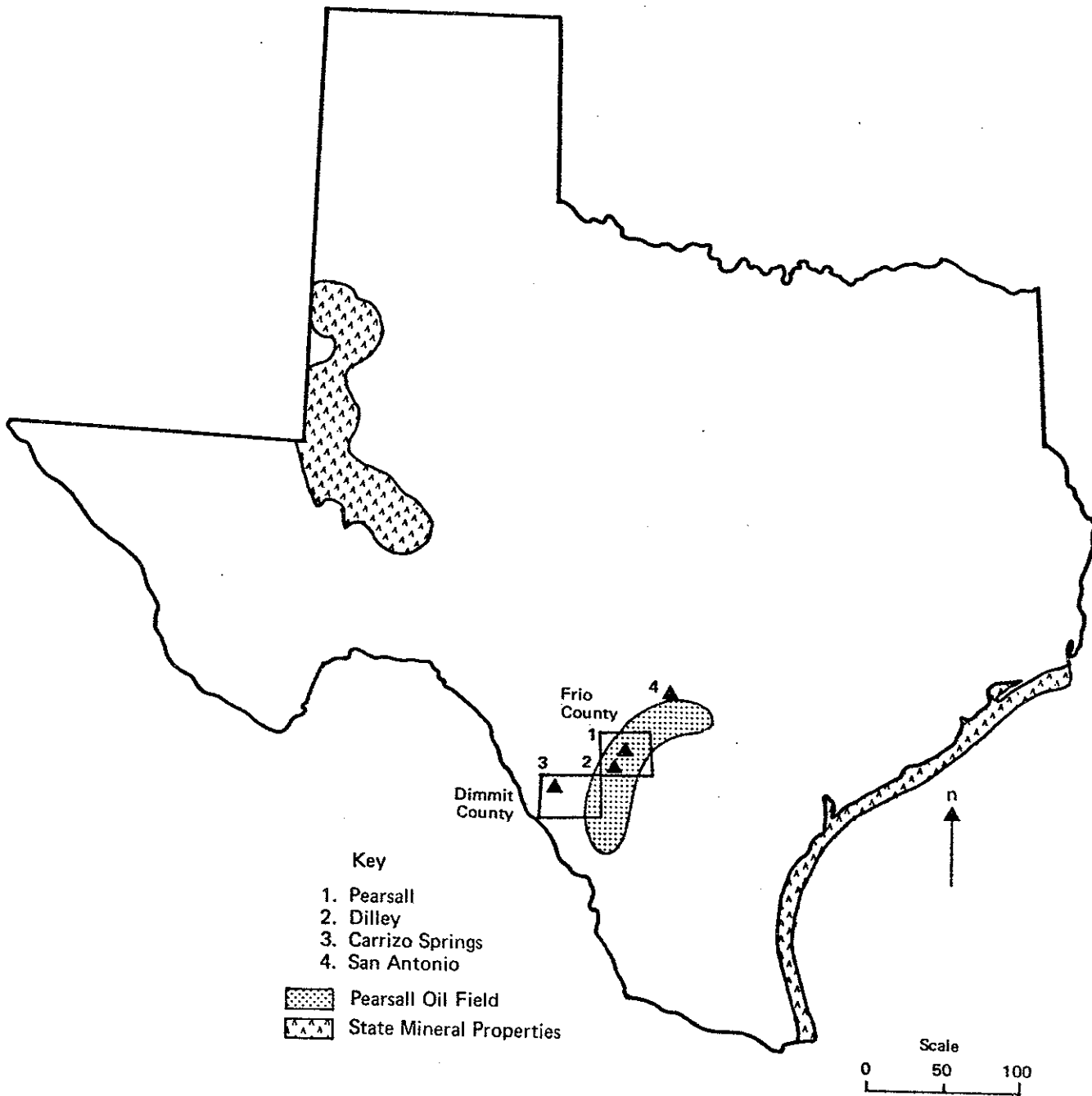
State aid to school districts averages 80% of their calculated operating costs and comes from three funds: the Available School Fund, the Foundation School fund, and the General Fund. The revenue earned from the Permanent School Fund and public school lands, including lease sales, lease revenues, mineral bonuses, and royalties are placed in the Available School Fund along with one-fourth of motor fuel taxes. The Foundation School Fund is partially supported by the Omnibus Tax Fund, half of which comes from oil and gas revenues. The state funds available for Texas public education thus depend heavily on petroleum production.*

The state also benefits indirectly from petroleum's economic activities. Oil and natural gas production and processing account for almost 300,000 jobs in Texas. The state hosts 26.3% of the nation's refining capacity, most of it along the Texas Gulf coast. By 1928 Texas was the leading producer of oil and natural gas; and during the last five decades it has become economically dependent on the petroleum industry [1].

Besides being a major petroleum producer, the state also has become a major consumer, developing a complex industrial structure dependent on

*The Mid-Continent Oil and Gas Association estimates that oil and gas taxes pay 28% of state funds spent on public education [1].

Figure 1. Location of Intensive Oil and Gas Developments in Texas



the ready supply of petroleum products. For example, it consumes 22% of the nation's natural gas. Texas industries use more than half of this fuel and electric generating plants burn almost 40% of it [1]. Even agriculture and especially ranching have become dependent on an abundance of inexpensive fuels needed to pump water and feed. As fuel prices increase, ranchers are finding operating costs prohibitive. Many are shifting to agricultural production that involves less mechanization.

Although the state's main interest has been to maintain the "life" of petroleum production and thus protect its economic base, necessary environmental regulations have been imposed on oil and natural gas drilling and production. The Railroad Commission now issues drilling permits on the condition that proper transportation and disposal of waste water from drilling activities are assured, effectively preventing pollution of the water supply. Water and air pollution regulation has reduced environmental damage attributable to processing facilities. The recently authorized Water Conservation and Subsidence Districts* and a series of coastal zone management acts protect environmentally sensitive areas along the Texas coast.

While previous oil and natural gas development has taught Texans to protect the physical environment, they have drawn a different conclusion about the social environment: cities with serious rapid growth problems during the oil boom days have survived. Present day Beaumont and Houston have been cited as examples. In the minds of some old-time rural residents along the coast, "We've boomed and busted and survived before; we can boom and bust and survive again." In the past people viewed efforts to mitigate adverse

*Rapid extraction of water can cause land subsidence, or sinking, and can be prevented by slower rate of groundwater extraction.

environmental, social, or economic impacts as a hindrance to energy development. But an increasingly prevalent attitude maintains that efforts to alleviate impacts can peacefully coexist with the desire for increased energy production.

Although not discussed in detail in this document, the combination of geothermal* and petroleum development along the Texas coast could create unique impacts in that region. Texas has three known geothermal systems: two, found in rock formations in West Texas, contain high temperature, pressurized groundwater; one, found in geopressured sand, contains medium temperature, pressurized groundwater. The geopressured sand formation is found within a 100 km strip along the length of the Texas coast; predictions claim its energy could provide the coast with two-thirds of its energy needs and substantial amounts of water needed in the lower Rio Grande valley [56]. These geopressured sands are also expected to contain methane, an important component of natural gas. This same coastal area will probably host increased onshore facilities supporting new offshore petroleum developments; some expansion has already begun in the Brazoria County area. Because of two conditions in the Texas coastal area, these developments could produce unique impacts there. First, the area already suffers from land subsidence due to extraction of groundwater. Without adequate precautions, geothermal wells and increased industrial demand could accelerate subsidence. Second, land speculation during previous oil and natural gas booms has left a fragmented land ownership pattern, further complicating efforts by state and local officials to effectively manage growth from energy development.

Lignite Development

Texas lignite development began in the 1880's when railroad companies discovered lignite to be a better fuel than wood. Production

*In geothermal developments, high temperature, high pressure groundwater is tapped in a process similar to oil drilling. Pressurized steam extracted from the geothermal well is used to turn turbines which generate electricity [56].

of Texas coal and lignite peaked about 1913 and declined to almost nothing by the end of World War II. One coal-fired electric generating plant started operation in 1926 and many more followed, but they either shut down or converted to natural gas as it became a more plentiful, inexpensive and cleaner fuel [6].

Lignite has recently been "rediscovered" in Texas as an economical substitute for now expensive natural gas. New surface mining equipment and transportation vehicles, combined with the higher natural gas prices, have made it profitable to extract near-surface lignite for on-site conversion to electricity.* In 1954 Alcoa's Sandow plant began using Texas lignite, followed by Texas Utilities Big Brown Plant in 1972. Since then numerous lignite surface mines and lignite-fired generating plants have either been proposed or begun (see Figure 2). Annual lignite production is expected to reach 55 million tons by 1985, placing Texas among the top ten coal producing states. Texas has an estimated 10 billion tons of near-surface lignite and over 100 billion tons of deep basin lignite. At current prices, about one-fifth of the combined Texas lignite reserves are recoverable, and its BTU value exceeds that of Texas oil and natural gas reserves combined [8].

Most lignite development in Texas has been sponsored by utility companies. Private utility companies have concentrated along the Wilcox Formation while municipal and cooperative (property-tax exempt) utilities have developed lignite in the Jackson-Yegua Formation (see Figure 2). Wilcox lignite has a higher BTU content per pound and a lower sulfur content than lignite in the Jackson-Yegua Formation. Utility companies began developing lignite several years ago, but non-utility companies are just beginning. About ten non-utility companies are now developing lignite.

Besides showing interest in its own coal, Texas companies are also showing increased interest in Western coal. At least eight

*In 1976, lignite cost about 35¢ per million BTU and natural gas cost about \$2 (on the intrastate market). Even though lignite-fired generating plants are more expensive to build than natural gas-fired plants, Texas Utilities' lignite plants (built in 1970) saved consumers about \$1.17 per million BTU. Recently required stack scrubbers will reduce that economy only somewhat [7].

Figure 2. Texas Surface Mining Operation and Coal-Fired Generating Plants

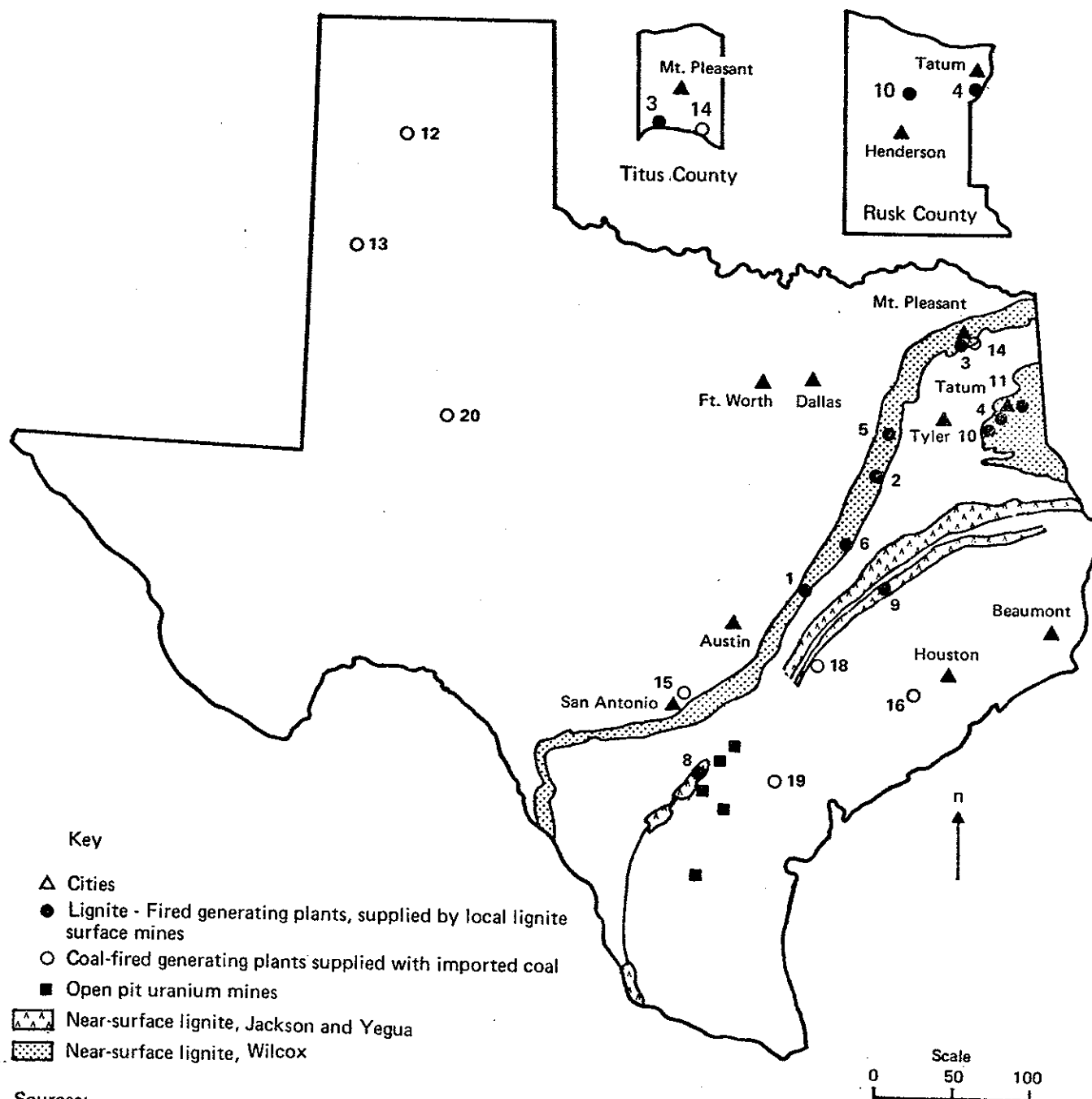


Table 3a
LIGNITE-FIRED GENERATING PLANTS UTILIZING
LOCALLY AVAILABLE NEAR-SURFACE LIGNITE

Plant	Location: County (City)	Company	Coal Formation	Megawatts	Operation Date
1. Sandow	Milam (Rockdale)	Alcoa	Wilcox	360	1954
2. Big Brown	Freestone (Fairfield)	TUGCO ¹	Wilcox	575 575	1971 1972
3. Monticello	Titus (Mt. Pleasant)	TUGCO	Wilcox	575 575 750	1974 1975 1978
4. Martin Lake	Rusk (Tatum)	TUGCO	Wilcox	750 750 750 750	1977 1978 1979 1981
5. Forest Grove	Henderson (Athens)	TUGCO	Wilcox	750	1981
6. Twin Oak	Robertson (Franklin)	TUGCO	Wilcox	750 750	1982 1983
7. Unnamed	Unsite	TUGCO	Wilcox	1150	1985
8. San Miguel	Atascosca (Tilden)	So. Texas & Medina Elec. Coop; T.M.P.A. ²	Jackson-Yegua	400 400	1979 1980
9. Grimes	Grimes	T.M.P.A.	Jackson-Yegua	400 400 400	1982 1983 1984
10. Mills Creek	Rusk (Henderson)	TUGCO	Wilcox	750	1985
11. Darco	Harrison	ICI	Wilcox	---	---

¹Texas Utilities Generating Company

²Texas Municipal Power Agency (sometimes referenced as Texas Municipal Power Pool).

Table 3b
COAL-FIRED GENERATING PLANTS
USING IMPORTED COAL

Plant	Location: County (City)	Company	Source of Coal	Megawatts	Operation Date
12. Harrington	Potter (Amarillo)	SWPS ¹	Wyoming	360	1976
			Wyoming	360	1978
			Wyoming	360	1980
13. Plant X*	Lamb (Muleshoe)	SWPS		475	1982
				475	1984
14. Welsh	Titus (Carson)	SWEPCO ²	Wyoming	528	1977
			Wyoming	528	1980
			Wyoming	528	1982
15. J.T. Deeley	Bexar	City Public Service Board of San Antonio	Wyoming	447	1977
			Wyoming	447	1977
			(May use lignite)	375	1983
16. W.A. Parrish	Fort Bend (Richmond)	Houston Lighting and Power Company	Wyoming	750	1973
			Wyoming	750	1979
			Wyoming	750	1981
			Wyoming	750	1982
17. Unnamed*	Unsite	Houston Lighting and Power Company	Unspecified	750	1985
18. Fayette	Fayette (La Grange)	LCRA ³ and City of Austin	Montana	550	1979
			Unspecified	550	1980
19. Coletto Creek	Goliad (Fannin)	Central Power and Light	Wyoming	550	1979
			Wyoming	550	1986
20. Morgan Creek*	Howard (Big Spring)	TUGCO ⁴	New Mexico	---	----

*Estimated Location reported here

³Lower Colorado River Authority

¹Southwestern Public Service Company

⁴Texas Utilities Generating Company

²Southwestern Electric Power Company

Source [6, 10]

utility companies are building facilities which will burn Montana, New Mexico, and Wyoming high grade coal (see Figure 2 and Table 3).

Although lignite mining and consumption have increased dramatically since 1972, currently the state's economy does not depend on it either as a source of employment opportunities or as a fuel source. Texas utilities are the major consumers of lignite and in 1975 only 9% of their fuel was lignite. However, by 1985 this figure is expected to increase to about 23% [10]. State policy encourages utility companies to convert from natural gas to either lignite or coal for generating electricity; given the current cost and supply advantages, this policy receives substantial voluntary support.

Lignite development has very little impact on state revenues. The state currently imposes no tax on coal extraction, and no lignite leasing is expected to occur on state lands.* A severance tax has been proposed but its passage is doubtful [9]. Both the Governor and many of the legislators pledged "no new taxes" and thus far have kept that campaign promise. Should the severance tax pass, one fourth of its revenue would accrue to the Available School Fund [48].

By 1973, lignite mining had disturbed only 3,200 acres in Texas, little of which was left unreclaimed. An effective Surface Mining and Reclamation Act, adopted in 1975, prevents lignite (and uranium) miners from either polluting the water or leaving land unreclaimed [11]. Fortunately, reclamation adds only 4% to the cost of Texas lignite, as calculated for Wilcox Formation lignite in East Texas [49]. Other parts of the state having less rainfall may experience higher reclamation costs.

*In general, neither the state nor federal government own land with significant amounts of coal or lignite. However, federally owned coal reserves at Camp Swift, an army resource in Bastrop County, may be developed.

II. EVIDENCE OF BOOMTOWN PROBLEMS: THEIR APPARENT CAUSES AND THE RESPONSE OF LOCAL GOVERNMENT

Overview of Impacts

The adverse impacts of energy development most often perceived by local officials are (i) inadequacy of public services; (ii) financial inability to expand public services; (iii) housing shortages; (iv) disruption of agriculture; and (v) social problems. Judgements on service quality included in this study are those reported to us by local officials. In general, they emphasize public service problems that reflect local governments' inability to manage rapid -- even if expected -- population growth and increased business activity. The following analysis of five communities shows how the severity of these problems often depends on the initial size of the local population, the growth rate, the quality of public management preceding and following the boom, the type of energy development, and the social milieu. These variables thread their way throughout the following analysis. The conclusion shapes them into a picture portraying their impact on the local costs of energy development.

The communities studied are experiencing rapid population growth because of either oil or lignite development. Three oil development towns, located in southwest Texas, are of special interest: Pearsall and Dilley (Frio County) and Carrizo Springs (Dimmit County). This part of southwest Texas has traditionally depended on ranching, but in the last fifteen years agriculture has gained economic importance. The key ingredient is water, since there is ample rich soil and a long growing season. If irrigated, this arid land provides a wide variety of vegetables; watermelons and peanuts are its major crops. In the center of Dilley there is a monument to the World's Largest Peanut (the Manager claims their area produces more peanuts than Jimmy Carter ever thought about), and nearby Pearsall claims to be the home of the World's Largest Watermelon! Many seasonal

farm laborers have made these towns their homes. While the population is typically poor and of Mexican descent (see Table 2) recent racial conflicts have caused major shifts in local political power which favor this group.

New oil development has attracted many new businesses to this area, especially a large number of small drilling and service companies* whose dispersed nature makes it difficult to get "company" estimates of the number of immigrating families. Thus towns have little forewarning about population growth. The rapid turnover in drilling crew employment means that operators may not even know where their employees come from.

Residents in these communities often recite the benefits from economic development and population growth, but the costs tend to catch them by surprise. According to local officials, water and sewer services in Dilley have become seriously overutilized, and its schools are now overcrowded. Both fire and police protection have become ineffective, and vacant housing is scarce. Pearsall's officials report that its water and sewerage capacities have been surpassed and expansions are planned. Currently its schools are overcrowded and in disrepair, but future improvements and expansions have been approved. Neither its fire nor its police departments can adequately manage the demand for services, although the former has been improving. Pearsall also suffers from a housing shortage. A Carrizo Springs' official claims population growth has resulted in overutilized water and sewerage systems. The quality of their police protection has deteriorated, but their current fire service is expected to be sufficient for the near future. Their schools will need expansion in another one and a half years, despite their recent construction of new facilities.

In East Texas, new lignite mines and coal-fired generating facilities have also imposed some social and economic costs. The experiences of two small towns, Mt. Pleasant (Titus County) and Tatum (Rusk County) are

*"Service companies" maintain drilling apparatus and provide operating supplies, such as drilling mud, required by the drilling activities. "Drilling companies" actually drill the well and contract "service companies" for maintenance.

Table 2
POPULATION AND ECONOMIC DATA FOR ENERGY BOOMTOWNS

	Pearsall	Dilley	Carrizo Springs	Tatum	Mount Pleasant
1970 Population	5545	2362	5600	684	8877
Estimated Current Population	7000	3000	10000	1100	14000
Estimated Annual Growth Rate, 1975 and 1976.					
Population	20%	20%	20%	20%	10%
School Attendance	13%	15%	---	10%	3% - 5%
Starting Date, Rapid Population Growth	1/1975	1/1975	1972	1974	1972
1970 Median Income ¹	\$3,739	----	\$4,059	----	\$5976
Effective Property Tax Rate ²	\$.55	\$.39	\$.81	\$.63	\$.90

¹For families and Unrelated Individuals.

²Mill rate times the assessment ratio; rate per \$100 market value.

illuminating. Each town lies adjacent to a surface mining operation and a generating facility sponsored by Texas Utilities Generating Company (TUGCO). Mt. Pleasant has experienced rapid growth for the past several years and Tatum is just beginning to grow. Both have populations with low to medium incomes and are heavily dependent on farming, ranching, and food processing industries. Unemployment levels are relatively low in both communities.

Although Mt. Pleasant aggressively attacked the expected problems of rapid growth, local officials believe its public services have deteriorated. Water and sewerage capacities were surpassed and have been expanded. Its schools are just adequate for the number of new students and will be expanded soon. Both police and fire departments face tasks beyond their current capacity, as do municipal employees in general. In Tatum, city officials claim the water and sewerage systems are operating at their maximum capacity and cannot be expanded in the near future. Its schools have kept up with demand but must be expanded shortly. Currently, Tatum has no police force but plans to create one in the near future.

Inadequacy of Public Services

Provision of public services, especially those heavily constrained by the size and condition of capital facilities, often falters during periods of rapid growth. Prior to the advent of energy development, several impacted communities maintained facilities that were barely adequate -- perhaps in poor condition or operating at capacity for a small population. The rapid influx of people has required service expansion and improvement, but few boomtown areas were forewarned about coming developments or the need to enhance their fiscal capacity. Delays in providing services have caused serious problems for residents in some host communities.

Water Services

Water is often an initial problem for these communities. Some have funds for expanding service capacity, but others must suffer inadequate service systems. Before the recent oil drilling began in Dilley, water was supplied without charge. Newly arrived industries and drilling operations began drawing from the same sources, and the city began charging all consumers for water as it sought additional funds to build a new well and storage tank. Besides threatening the city's water supply, the increased usage accelerated the drop in the groundwater level, which increased the cost of pumping and treating water. Eight wells out of ten in Carrizo Springs, located on the edge of the Carrizo Aquifer, have gone dry because of the drop in the water level. The influx of people over the last four years (not due entirely to energy development) has hastened the decline of Carrizo Springs' previously inadequate water service. For the surrounding area, the water shortage has been described as a serious threat to agriculture.

Sewerage

Overutilized sewerage facilities also plague these communities. Some were fortunate to have excess capacity or the ability to expand their facilities to prevent overutilization. But others operate at capacity and cannot issue more bonds.* At least two cities, Dilley and Carrizo Springs, have been reprimanded by the Texas Water Quality Board for continual discharge of almost raw sewage. Dilley had made arrangements to irrigate surrounding farmland with partially treated sewage, but the system has not functioned properly. The farmers have failed to irrigate regularly, as planned, leaving the city with partially treated sewage and no disposal system. During the peak of its boom, one of Mt. Pleasant's sewage treatment plants was operating at almost twice its designed capacity, causing its discharge

* Cities may issue bonds for amounts up to a certain percentage (usually 10%) of their assessed taxable property value; usually separate maxima are set for water and sewer bonds and other capital improvements.

to fall below EPA standards. The city faced long delays in expanding its sewage collection system. Even after doubling its Sewerage Department staff and adding new equipment, demands for sewer service were still twice what the department could handle -- and maintenance jobs were six to eight months behind schedule [53]. A new policy in Mt. Pleasant helps control the demand placed on their sewerage system. All industries must hold sewage, pretreat it, and discharge it over a 24 hour period rather than during an eight-hour work day. This policy has allowed the city to delay further sewerage expansion for several years.

Public Schools

A sudden increase in school-age children has caused overcrowding in some of the public schools, even where steps were taken to prevent it. Total enrollment has increased as much as 15% a year and has concentrated in the elementary grades.* Class size often exceeds 35 students. Schools in poor physical repair before the oil boom are now seriously overcrowded. For example, Pearsall added six temporary class rooms in October of 1976, and approved a bond issue to construct new permanent facilities. But its kindergarten still meets in a condemned building,** and the area's housing shortage makes it difficult to recruit teachers (although some new teachers are wives of oil field workers).

Other schools had some excess capacity before the boom which prevented immediate overcrowding. School officials have assumed a continuation of their current growth rates and have approved school expansions to handle the anticipated boom. However, as Carrizo Springs recently discovered, their predictions may be conservative and further expansions may be required sooner than expected. Only the Mt. Pleasant Independent School District received both forewarning about energy

*A Superintendent disappointedly noted that the growth brought them only one additional football player!

**The city owns this building which is being renovated and converted to a community center.

development and offers of advance tax payments to meet the expected demands.* With this cooperation, they have been able to prepare adequately for additional students.

Protective Services

A decrease in the quality of protective services in these boomtown areas stems from two pressures: increased demand causes services to become overutilized; overutilization elevates previously insignificant flaws to serious dimensions. Despite its recent expansion, Mt. Pleasant's Fire Department faces an increase in fire calls beyond what they feel they can manage.** In 1976 the State Insurance Board penalized Mt. Pleasant because of its low firemen/population ratio; to remove the penalty requires adding at least ten more firemen, another sub-station, and a pumper [53]. Unfortunately, the city currently has no funds for such expansion. Several smaller cities with volunteer fire departments can no longer provide adequate service as they did before the boom.

The additional demands from rapid growth not only have caused an overutilization of services but also have exaggerated some of the weaknesses of existing services. Within volunteer departments poor response rates were tolerable before the number of calls increased. Additional calls meant the few conscientious firemen, each responding to a greater number of calls, missed substantial numbers of workdays from their regular jobs. Their increasing absences brought complaints from employers. To overcome this problem, Pearsall purchased better equipment, it increased the fire department's budget, and the men elected a new, more aggressive fire chief. Together these actions improved morale and participation.

Before the boom the more rural towns typically had no police force and depended on the county sheriff for protection. As the demands on county services increased, the counties often placed more officers

*These taxing arrangements will be discussed in detail below.

**Reported grass fires, for example, have increased ten fold.

outside towns and encouraged the towns to supply their own protective services. Because the towns had no experience in operating police forces, these new officers tended to be ineffective and inadequate for the job. For example, before the oil boom the Frio County Sheriff's office voluntarily provided city protection; when their workload almost doubled, these services to the cities were discontinued. Dilley now has a two-officer police force where it had none before the boom, and the city manager describes it as ineffective and expensive.

The increase in crime experienced by smaller communities involves mostly nuisance problems, but the increased criminal activity in Mt. Pleasant is more serious. From 1973 to 1975, major crimes (Class A offenses) per capita increased from .006 to .105, and the incidence increased from 59 to 197. From 1970 to 1975 robberies, burglaries and thefts in industrial/commercial areas rose 759%. The police force remained at 18 men, but their hours increased and they stopped patrolling residential areas (unless answering a call) [53]. This increase in crime has been attributed to organized criminal activity from the nearby Dallas metropolitan area, about an hour and a half drive away.

General Government Services

City services have also fallen short of local needs because the increase in municipal personnel has not kept pace with the population growth. A recent survey of public employees in Texas reveals that cities of a size similar to Mt. Pleasant have approximately 350 public employees per 10,000 inhabitants compared with only 100 per 10,000 in Mt. Pleasant. The city manager does not expect to "catch up" with demand for another three years.

Sources of Problems and Their Solutions

Although many factors affect the quality of public services in boomtowns, the main determinants appear to be the lack of forewarning and the lack of front-end financing. Because developments involve

land acquisition, business managers tend to hide their plans. If communities had expected rapid growth, they could have planned ahead more effectively. However, predicted growth is seldom guaranteed growth. A decision to expand public facilities prior to the actual arrival of new inhabitants involves risks that most local officials are not willing to take. A sudden decrease in oil prices, for example, could have caused drilling in the Pearsall Field to cease suddenly. Unlike the Carrizo Springs Independent School District, many communities have been unwilling to expand facilities unless company representatives agree to reveal the number of newcomers expected. When growth depends on decisions by many companies, ascertaining this number can be difficult indeed. For example, the Pearsall I.S.D. received word from the Western Company in September 1976 that approximately 82 families would arrive that fall. The school officials assumed that six new classrooms would be sufficient to serve these and other new students, but their estimates fell short by approximately 4 classrooms. Enrollment exceeded the predicted level by more than 100 students.

Even where accurate forecasts are available, local governments may lack the resources needed to provide services. Passing a bond issue, letting bids, adding properties to the tax rolls, and acquiring grants and loans all take time. While the process proceeds the problems intensify.

But these problems can be prevented. When energy development began in Titus County, TUGCO officials notified the school district of the expected increase in children. They suggested that the school district adjust TUGCO's assessed property values so the schools would receive enough tax revenue in the initial years to manage the sudden enrollment increase. The adjustment process started with the total amount of property taxes TUGCO was expected to pay over the coming three year period. By adjusting the company's assessed property value, they effectively shifted these tax payments toward the earlier years to help meet the school district's sudden revenue needs. While school officials have applauded TUGCO for their forethought and consideration, a few have become suspicious of their apparent good

intentions. The tax pre-payment has helped the school district in the shortrun, but it has saved TUGCO tax dollars in the long-run. Intentionally or not, TUGCO underestimated the market value of its property, and therefore the expected tax payments for the three-year period. Thus the company paid fewer taxes than if there had been no agreement and property values had been set annually.

Zoning policies have also been used to help alleviate the pressures placed on public services. Both Pearsall and Mt. Pleasant attempt to improve service delivery by restricting mobile homes to parks. Long-time residents have resisted the arrival of mobile homes, but landscaping and lawns can reduce some of this resistance. In order to prevent widespread destruction of their city streets, Pearsall is creating an industrial park to concentrate movement of heavy vehicles on roads built for that type of traffic.

Financial Problems Affecting the Provision of Additional Public Services

Increased Public Service Costs

Few Texans seem to believe that energy development can create financial problems for local governments. Increased net costs for either residents, businesses, or the public sector catch them unaware. When oil drillers coming from the east Texas fields found the cost of living 30% higher in Dilley, they decided to return to the lower wages and the lower cost of living in east Texas. When converting a dilapidated school into a community center, the Pearsall city manager found building materials 30% more expensive than in San Antonio, only 50 miles away. And grocery stores increase prices on weekends and evenings to capture extra dollars from oil drillers.

Increased costs for municipal personnel stems from competition with construction firms and service industries. At least two towns have increased some salaries by as much as 40% in order to hold their more experienced skilled and semi-skilled employees. The city of Mt. Pleasant competes with TUGCO for employees. Even after increasing firemen's salaries to \$500 per

month, the city still pays far less than the utility company.* Pearsall competes with a drilling service company which recently launched an intensive campaign to attract local employees. The firm requires that employees live within 10 miles of the plant, which precludes the possibility of commuting from metropolitan San Antonio. Previously they had transferred employees to the area, but the local housing shortage prevented many from staying. Employment on drilling crews, being much less secure than that for construction or service industries, apparently does not compete with municipal jobs. With the driller's higher salary comes job insecurity -- a price greater for most municipal workers than the salary difference.** However, a municipality offering less job security might face competition from these drilling jobs. At a time when these local governments want desperately to expand their services, when their staffs are working week-ends and evenings, they find that increased salaries have absorbed much of their increased personnel allocations.

Revenue Shortages

Even though growth expands the sales and property tax bases, at least in the short-run revenues have increased more slowly than costs. Despite a 19% increase last year in sales tax revenue, Mt. Pleasant has already increased property tax rates several times. Even with its 68% increase in sales tax revenues, Dilley finds itself short of operating funds.*** One city manager (who wishes to remain anonymous) believes his town faces bankruptcy.

* Before the energy development booms, municipalities had to compete mainly with agricultural wages, which were generally low. For example, the Pearsall city manager claims agricultural wages averaged about \$1.50/hour, giving the city \$2.30/hour a competitive advantage. New drilling service companies started workers at \$3.75 to \$4.00 per hour, substantially above the area's usual wage rate.

** Drilling jobs have successfully competed with farming jobs.

*** All Texas cities have a one-percent local option sales tax [12].

With revenue-producing activities increasing everywhere, what causes these financial problems? Although sales tax revenue responds more quickly to growth than other major revenue sources, there is about a six-month delay between the commercial establishment's payment to the state and the state's reimbursement of the city. Pending legislation in Texas might remove all state and local sales taxes on gas and electric bills [13]. To at least one local official, this move would further hinder local ability to "keep up" with increasing public service demands. Communities experiencing rapid growth perceive the sales tax revenues as the key to survival.

School districts receive no sales tax revenue; they depend entirely on property taxes and contributions from the state. There is a one and a half to two year delay between the time property is purchased and the time the taxing jurisdiction receives its revenue. The state's contributions through the Foundation School Program, based on the previous year's average daily attendance, lags actual needs.

Since most energy development takes place on property located outside the city limits, counties receive more financial benefits (from increased property values) and experience fewer costly problems. While Dilley, Pearsall, and their school districts are suffering from increased costs and insufficient revenues, the County of Frio has managed its affairs quite well. The County's financial reserves have covered necessary expenditure increases and have forestalled increases in the already low property tax rate (30 cents per \$100 market value). Texas counties typically provide few social services and concentrate on road maintenance; thus their expenditures correlate less dramatically with population changes than do a city's.

Counties may face financial problems when tax-exempt companies sponsor developments. Municipal utility companies pay no property tax and have met resistance in rural counties. The Texas Municipal Power Agency (T.M.P.A.), a consortium of municipal utility companies in Garland, Greenville, Denton and Bryan, is mining lignite and constructing an electric generating plant in Grimes County (outside its service area). T.M.P.A. is a tax exempt

"political subdivision"* that finances its operations by selling bonds and power (although it cannot sell power to anyone but the member utilities). When T.M.P.A. started its operation in Grimes County, they explained to the local people what they were doing and that they were tax exempt. Initially there was no resistance, but eventually the school district officials openly opposed the development. In response to local criticism and complaints, the company hired a consultant to study the social and economic impacts that its development might have and to outline possible solutions. A bill to remove the tax-exempt status from such companies was proposed but dropped because its legality was questionable [50].

Inadequacy of Available Solutions

These boomtown communities face at least a temporary cash flow problem, a period when tax revenues fall short of expenditure needs because the tax base has not yet reflected the new growth. To solve the cash flow problem, why not sell bonds that can be repaid when the tax base "catches up" to growth? Unfortunately, bonding capacity, under state enabling legislation, also lags growth. It is based either on taxable property value or on excess operating revenues. In order to get some types of revenue bonds (for sewer and water facilities) a city must collect excess revenues equalling 1.5 times the expected monthly bonding payments for a twelve month period. General obligation bonds are limited to 10% of the jurisdiction's market value. Delays in reporting increased property values affect this bond limit. In many instances, jurisdictions have already issued bonds up to their current limit. Further improvements will depend on future grants, loans, surplus tax revenues, or property value increases.

*The municipal power companies' qualification as a "political subdivision" of the state specifies their rights and privileges, specifically their tax-exempt status. The current controversy is whether political subdivisions, including counties, cities, special districts, and municipal power companies, are forbidden from making payments in lieu of taxes to other political subdivisions [51].

Loan-granting agencies often avoid lending money to high risk jurisdictions, which by definition include energy boomtowns. These agencies expect a population exodus before all their loans have been repaid. Residents who remain will probably face low-paying jobs similar to those they held before the boom. Thus banks and other lending institutions concerned with security and return on investments consider these towns a poor financial risk.

While the expected "bust" reduces a city's chances for loans, its current "boom" minimizes its prospects for receiving certain government grants. Energy development brings in higher paid workers, which increases the city's income level; it provides some local employment, which reduces joblessness. High income and low unemployment rates disqualify certain communities experiencing energy development from receiving some grants, even though many long-time residents' incomes remain unchanged. Without grants or loans, providing additional services for the newcomers means taxing both those with and those without increased financial benefits.

Both public and private utility companies appear genuinely confused over the legality of giving financial assistance to local governments. TUGCO believes it cannot make payments to Mt. Pleasant to alleviate pressures from rapid growth because the company owns no property there.* However, a Public Utilities Commission representative claims they may donate money to Mt. Pleasant. T.M.P.A. believes it cannot make payments in lieu of taxes to local jurisdictions, although another tax-exempt utility company is currently negotiating payments in lieu of taxes with impacted communities. Texas Supreme Court rulings in the late 1940's prohibited municipal utility companies from making payments in lieu of taxes. The state's constitution is unclear on this issue, and the municipal utility companies have asked the Attorney General's office for a ruling on their tax-exempt status [51].

*To avoid the legality question, TUGCO has "lent" Mt. Pleasant electricians to string lights in the city's new ballpark.

Local Responses to Fiscal Disparities

Control the Development

Neither counties nor municipalities have much control over energy development. Although utility companies avoid using their power of eminent domain, the threat precludes the county and local jurisdictions from rejecting lignite operations. Recently adopted legislation removes the power of eminent domain from the mineral development activities of both public and private utilities in the state [14]. Texas counties, lacking ordinance making powers, have almost no control over energy developments within their jurisdiction. The past three legislative sessions have seen proposals to give zoning authority to counties, but the real estate and ranching lobbies have been able to defeat them. When the current proposal [15] was reported out of committee, its broad ordinance-making authority was considerably trimmed. Certain types of ordinance-making powers, such as land-use zoning and control over food and fiber production, explicitly were denied counties. But the remaining powers would allow counties to adopt building codes, housing codes, health and sanitation licensing, and subdivision regulations. Although the House has passed the bill, it is facing stiff opposition in the Senate committee. Should the proposal pass, counties would be better able to manage problems of energy development.

Increase Local Tax Burdens

Both state officials and the general public unfamiliar with boomtown problems often resent the boomtown's reluctance to finance additional public facilities with loans, bonds or increased property taxes. They see no reason for state assistance to communities not yet taxing themselves to the maximum. However, considering the nature of energy boomtowns, this reluctance has merit and deserves closer attention. First, newcomers generally have higher income than long-time residents, yet those least able to pay end up bearing the brunt of initial facility expansion.

Second, a "bust" period (substantial population decrease) will follow the current "boom" unless cities can attract permanent replacement industries -- a possible but not probable event. Facilities which accomodate the larger boom population will be excessive for the smaller permanent population, but the latter gets left with bills for both themselves and those who have moved. Communities perceive higher taxes as a subsidy for energy, especially where utility companies are developing lignite outside their own service areas.

Seek Federal Assistance

Rather than burden their own people -- or the state -- with excessive capital costs, local governments have sought federal financial assistance to improve their public services and housing. This approach conflicts with a desire among rural residents to avoid dependence on federal funding, but they "justify" their action by arguing that no other assistance is available and that the federal dollars are partially "theirs" -- why suffer higher taxes when money already paid to the federal government can solve the problems? Although people express uneasiness about federal funds (they would prefer state assistance), they have turned to federal funds as a last resort, having tried unsuccessfully to acquire state funds.

The smaller cities affected by the oil boom have found Farmers' Home Administration grants easier to come by than funds from other agencies. Both Pearsall and Dilley have received funds for subsidized rental housing (24 units and 46 units, respectively) and area residents have qualified for Farmers' Home low-interest loans. Dilley has received a \$275,000 Farmers' Home grant to construct a water treatment facility and is seeking an additional \$325,000 loan.

The cities have used General Revenue Sharing funds as well as Community Development Block Grants for capital improvements and repairs. Mt. Pleasant used \$150,000 of its Community Development fund to make water and sewerage improvements. Pearsall spent last years' \$63,611 revenue sharing installment on road improvements.

Through the Texas Parks and Wildlife Department, the U.S. Bureau of Outdoor Recreation provided \$44,850 in Land and Water Conservation Funds to Mt. Pleasant for park development. Carrizo Springs was awarded \$9,750 and the De-

partment has recently received an application from Pearsall for \$74,975.

Several boomtowns are using or have applied for Economic Development Administration money for industrial parks. Pearsall has requested \$500,000 for this purpose, and is seeking a \$1.5 million EDA grant for a new Municipal Complex. Dilley received a \$145,000 EDA grant for a new City Hall. Carrizo Springs has a \$2.3 million EDA grant to build a new water treatment facility.

Housing and Urban Development funds have helped several boomtowns: Dilley has used HUD Section 8 funds for low-income housing and \$100,000 from another HUD fund for street improvements; Pearsall has a \$150,000 HUD grant to convert an old kindergarten building into the West Side Community Center in a low-income neighborhood.

The City of Pearsall has received \$4,000 through the Intergovernmental Personnel Act to survey and analyze local salaries.

Two conditions explain the emergence of "grantsmanship" capabilities within these rural communities previously unfamiliar with federal programs. First, both the Councils of Governments and the Department of Community Affairs inform towns about available federal programs and teach them how to apply. Second, the more "successful" towns have new professionally-trained managers, hired specifically to solve public service problems.

Cooperate with Other Jurisdictions

One very unusual and effective solution to energy impact problems runs contrary to common expectations. A few years ago, Mt. Pleasant and Titus county operated as many do in Texas, with little cooperation between them. At the city's suggestion, they now participate in a "Progress Through Unity" program.

City officials sensed that the city, county, and school district could all benefit by cooperating. To demonstrate this philosophy, the city lent the school district its paving equipment to construct a new parking lot. Soon after that the city organized a basketball team; the school district donated the use of its facility. Then the county

needed a new land fill site and couldn't find one. The city offered to share its site with the county, splitting the expenses accordingly. Through these moves the city demonstrated to both county and school district officials that cooperation could work -- to everyone's advantage.

The city became more aggressive. It sponsored dinners for representatives from all county, city, school, and non-profit agencies. The organizations eventually adopted the motto, "Progress Through Unity", and a logo (appearing on letterheads), and they meet monthly to discuss problems and possible solutions.

In the first year the city spent several thousand dollars developing this program, but the payoffs for participants justify the expenditures. The creation of a new water district covering part of the county provided the needed bonding capacity to construct Lake Bob Sandlin. A new hospital district has supplied improved ambulance service to the county and city. The city police and the county sheriff help each other when the need arises. Both the county and the city finance the fire services -- the county donated a brush truck and pumper which are housed in the city fire station and operated by city employees. The city responds to fire calls in the surrounding countryside. The state's provisions for special districts and its Interlocal Contracting Act are the primary enabling laws which permit this type of cooperation among jurisdictions within a county [16].

What caused the Mt. Pleasant/Titus County cooperation to succeed when attempts in other counties have failed?* A recent shift in attitudes increased the political power of people bent on solving the problems produced by rapid energy development. They avoided cooptation, by carefully maintaining the balance of power among county, city, and school district. They let officials experience the benefits from cooperation before they began formalizing it.

*Carrizo Springs and Dimmit County merged police forces, but city residents claim the county controls the new police force and has reduced coverage of the city.

Adopt Commercial Location Policies

Despite the benefits of cooperation, each locality must solve the bulk of its financial problems on its own. While "Home Rule" cities, like Mt. Pleasant, may initiate annexation proceedings, "General Law" cities, like Dilley and Pearsall, can only try to motivate taxable businesses to locate within their boundaries.* Boomtowns have used utility rates** to pull businesses into the city, at which point the city can gain sales and property tax revenue [17]. The boomtowns charge utility rates as much as 50% higher outside the city than inside and charge higher connection fees outside the city. Several also charge businesses the full cost of extending utility lines to property outside the city. Officials in Pearsall do not feel that this policy has affected the location of new businesses, although it has helped them to recoup losses incurred when mobile home owners' leave without paying utility bills.***

Another utility policy has affected business location. Dilley has more requests for service connections than it can handle, so it gives no guarantee that services will ever be provided outside the city limits. Yet owners of commercial property outside the city limits who petition for annexation find themselves suddenly near the top of the city's work schedule. The additional city property taxes appear to be less costly to businesses than either long delays in receiving city services or the cost of supplying their own.

Two current legislative proposals would increase the ability of small cities to annex tax paying property. One bill would reduce the minimum population requirement for Home Rule cities from 5,000 people to 1,500

* Cities with at least 5,000 inhabitants may adopt Home Rule Charters, which allows them to annex set amounts of contiguous property, with the consent of the property owners to be annexed. The smaller General Law cities have fewer local powers. They may not initiate annexation proceedings, but must wait until contiguous properties petition for annexation.

** "Utilities" refer to water, sewerage, and gas services supplied by the city. Cities also may set rates for privately supplied gas services.

*** Several cities reported mobile home owners leaving without paying \$200 utility bills. Cities usually depend heavily on these service charges to finance city operations, since mobile home owners pay little property taxes. Some towns are raising deposits in order to protect themselves from the loss of utility service charges.

[18]. Another proposal would give annexation privileges to all municipalities, whatever their size or classification [19]. Relaxed annexation laws would help municipalities acquire benefits more commensurate with the costs they bear.

To guarantee a stable tax base in the long run, several cities are creating industrial parks and are seeking permanent industries. So far their searches have failed; a commercial food processing plant planned for Dilley has been postponed, as area farmers, suffering a farm-labor shortage, could no longer guarantee the quantity of produce needed to support the operation.

Housing Shortages

A shortage of housing plagues all boomtowns. The conventional housing industry cannot respond quickly enough to the demand for new homes, and there are almost no older homes for sale. Private market housing supply lags demand by about a year, reflecting both the time required to shift resources to new areas and the homebuilders' demands for a guaranteed market. Rural areas in Texas have few local builders, and contractors from nearby metropolitan areas are reluctant to supply these new markets. For example, local builders in Pearsall and Dilley cannot respond to the demand for housing, and the San Antonio builders, only fifty to sixty miles away, have shown no interest in the Pearsall-Dilley market. Originally the local builders could not meet Mt. Pleasant's housing demand; after a one and one half year delay, Dallas area builders, about 100 miles away, began serving the Mt. Pleasant area.

This absence of non-local builders has complicated the housing situation in Pearsall, since the local builders generally provide "substandard" housing ineligible for FHA and VA housing programs. If mortgage money were readily available, the lack of federal guarantees would not matter. However, local bankers follow very conservative lending policies and are reluctant to provide mortgage money to well-paid employees associated with the oil development. Even when service company employees intend to stay twenty years, banks perceive them as unstable and as a risky venture.

Increased costs of both buying and renting housing also point to a housing supply shortage. In the oil boom areas, small modular homes which sold two years ago for \$18,000 now sell for \$30,000; small brick homes increased in price from \$28,000 to \$45,000. Residential lots within cities more than doubled in price. Even the cost of mobile homes now exceeds the previous cost of some housing; mobile homes have been selling for \$12,000 to \$15,000.

Mobile homes are a common short-term solution to the housing shortage. The city of Tatum reports approximately 140 mobile homes, and Carrizo Springs has almost 400 in its vicinity. But the shortage of public services described earlier affects even this solution to the housing problem. Several towns are a month or more behind in providing utility connections. Tatum recently spent almost \$100,000 extending utility lines to 114 sites for new single family homes. They have no additional bonding capacity to finance additional utility extensions.

A shortage of available mobile home sites has also restricted the supply of temporary housing. Several boomtowns have relaxed mobile home restrictions because other available housing is inadequate. Pearsall limits mobile homes to parks, but the existing parks are full. A revised ordinance permits mobile homes on single residential lots if all nearby land owners consent. The condition requiring neighborhood approval was designed to permit property owners to exclude mobile homes when land owners felt threatened or bothered by their presence in a single-family area. Some neighborhoods, especially lower-income areas, consistently have done that. However, other people admittedly have used this power to exclude particular kinds of people rather than a particular type of housing. At least two incidences have been reported where property owners excluded mobile homes because their owners were either black or involved with the oil development.

The response of one service company in Pearsall reflects the seriousness of this housing shortage. The company recently transferred almost 100 families to Pearsall. When many could not find homes, the company had to transfer them elsewhere. To avoid that problem in the

future, the company leased 23 mobile homes and made arrangements with a Pearsall land-owner to create a mobile home park for them. The company had never been involved in the housing business before and disliked it greatly. They realized, however, that without at least a temporary supply of housing their operation was restricted to the local labor force.

TUGCO's response to the shortage of mortgage money in Mt. Pleasant reflects that area's housing problem. The company made prior arrangements with local banks and savings and loan associations for mortgage financing for new homes constructed by local contractors. Although interest rates and downpayment requirements were high, the high-salaried TUGCO and subsidiary workers could afford it. After solving the financing problem, the shortage of local contractors and available public service utilities still restricted the supply of housing [53].

Another common response to the housing shortage is construction of federally subsidized housing for low and moderate income families. However, that solution does not affect the supply of housing for middle and upper income families.

Disruption of Agriculture

Oil Development Areas -- Southwest Texas

The conflict between energy development and current land uses is perceived to be short term. The nature of energy development in Texas, the supply of water, and the attitudes of farmers and ranchers cause people to define current conflicts as temporary. Some farmers and ranchers have ceased operations because of their new oil revenues, but people generally expect them to return to work or to lease their land to others.

Oil drilling causes little conflict with ranching: drilling activities are locally concentrated and the locations are sparsely scattered over a large area. Once drilling is completed, only a pump and its surrounding embankment occupy space.

While it goes on, drilling does conflict with farming schedules and procedures, and it has definitely drained farming of its unskilled and semi-skilled laborers. A shortage of farm labor in the Frio County area made a proposed food processing plant unpromising. One farmer, not to be defeated by oil development, turned to a previously latent labor market -- women. He's been so pleased with their work that he claims in the future he'll only hire men for heavy labor.

A water shortage appears to be serious in the Carrizo Springs area; both oil drilling and refining consume significant amounts of water. The area has reportedly begun a permanent shift away from farming toward ranching and oil development, specifically because of the water shortage.

Lignite Mining Areas -- East Texas

Strip mining and the submersion of land for new reservoirs to support lignite mining and electric generation in East Texas has threatened agriculture and ranching. Although not all of it may be mined, about 65% of the Titus County land area has been leased for mining, and reservoirs are expected to submerge large sections of land [52]. Strip-mining takes land out of production for nine to ten years. Actual mining activities usually take three or four years, and the Texas reclamation law requires an additional six-year test period -- with no grazing or farming -- to guarantee complete and proper land reclamation [20].

With or without energy development, East Texas lands would probably soon be converted to big business ranching operations; energy development simply accelerates that trend. Many elderly ranchers and farmers are selling their properties outright and are moving to the city. While many of these properties have been in the same family for several generations, the children of current owners have left the area or have taken up other occupations. Although these people and their children are leaving farming and ranching permanently, their property is expected to return to production once the land has been reclaimed. The utility company purchasing the land is expected to sell the property eventually in several large parcels to be operated as ranches and farms. Until mining is complete

and the land has been reclaimed energy development is expected to conflict with previous agricultural and ranching land uses.

Social Disruption and Resistance to Development

Attitudes Toward Rapid Growth and Newcomers

Sources of Disfavor or Opposition

One explanation for the relatively positive view toward energy development in Texas is the absence of serious social disruption such as that experienced in Montana and Wyoming [57,58,59]. Texans have seldom directed their efforts toward stopping energy development. Within this overall pattern, however, differences can be discerned. Ranchers and farmers, the influential landowners, have shown less enthusiasm than other groups for energy development. These land-owners have been influential in county politics for several generations, and they stand to lose local political control. In Dilley they have courted the newcomers by sponsoring a barbeque, but these immigrants appear uninterested in local affairs. Immigrants employed by power companies have been more active politically than either construction workers or drillers and have contributed to a shift in political power in Mt. Pleasant.

Bankers in Southwest Texas have resisted the new arrivals, causing some newcomers to feel so uneasy that they bank outside the city just to avoid contact with these people. Some long-time middle and lower-income residents also regret the arrival of these newcomers. Many people interviewed in the course of this study commented on the newcomers' orderly behavior, but complained about their air of superiority. Certain city staff in Dilley resent the newcomers because they create extra work for the city and often leave large unpaid bills. While Dilley residents reject open resistance, some neighboring Pearsall residents have used their veto over mobile homes to exclude the "oil people."

Several cities reported that residents have an initial aversion to additional growth; while these feelings seem to subside after a year or so, active resistance to development has occurred in two cases. In the first case, two utility companies, TUGCO and SWEPCO, want to build coal-fired generating plants in an area that already has two such plants and that happens to be in SWEPCO's service area. SWEPCO representatives have claimed that the ambient air quality standards will permit only one more facility. Some of SWEPCO's customers oppose the proposed TUGCO plant because they want SWEPCO to receive the permit for the third and supposedly final facility. The residents are not concerned with the arrival of another generating plant -- as long as their service company owns it. In the second case, Grimes County residents oppose the T.M.P.A. development because it pays no property taxes.

Residents in neither area have opposed the facilities on environmental grounds. Environmentalists in Texas have resisted some projects, but only if they are expected to cause significant pollution or to seriously endanger the physical environment. For example, some San Antonio residents have resisted a request by their municipal power company for a six-month variance from state air pollution regulations. At the state level, the Texas Environmental Coalition has succeeded in stopping an allocation for unspecified water development projects.* Texans balance their need for economic development against their need to protect the environment. This trade-off is displayed through the Air Quality Control Board's enforcement procedures discussed in greater detail in Section III.

In areas experiencing energy development, people have not vocalized much opposition to facilities on environmental grounds. To date almost all lignite mines have been properly reclaimed and more serious water pollution has been prevented. Air pollution from lignite-fired generating plants has not incurred popular alarm. Units #1 and #2 of TUGCO's

*The Coalition unites various Texas chapters of state environmental groups and national groups, such as the Sierra Club and the Audubon Society; however, it has little clout at the local level and is only marginally effective at the state level.

Monticello Plant were under construction before the EPA's new source standards and thus are subject only to Texas' old source standards (which are lower than its new source standards). Their particulate emissions of 4000 pounds per hour (50 to 60% opacity) exceed the 1500 pounds per hour (30% opacity) required by Texas law. By December 1977 the Air Quality Control Board anticipates only 1000 pounds per hour emission, the reduction being due to TUGCO's retrofitting with bag houses [52]. The facilities have no scrubbers to reduce sulfur dioxide emission, which are about twelve to thirteen thousand pounds per hour (within regulations for old source standards). When the facility first began operating, the excessive particulates emission (at 100% opacity) instigated only a few local complaints. And despite this incidence, local residents have shown no resistance to proposed additional generating facilities. If the Monticello plant's current emission level does not offend people, then it is unlikely that the newer facilities (subject to stiffer emission standards) will disturb them. It appears that as long as state forests and wildlife reserves are maintained, and as long as projects don't pollute or leave surface land less valuable than it was at the outset, environmental advocates in local communities are satisfied that the environment has been properly protected.

Sources of Approval -- A Desire for Growth

Rural Texans tend to perceive rapid population growth as economic development. But they fail to distinguish between normal growth and rapid growth. In order to get any growth, people assume they must tolerate all the problems peculiar to rapid growth. In Dilley, the majority of the city councilors are businessmen. They are so fearful of discouraging growth that they have avoided restrictive policies, including a mobile home ordinance, and have

hesitated to enforce even existing zoning regulations.

Besides the business leaders, other citizens express a desire for growth because it means "progress" -- new ideas, new faces, opportunities for their children, better stores, etc. They often explain, with some humility, that they are somewhat provincial and "out of date", arguing that growth will "bring them into the mainstream" of modern America and will broaden their perspectives. As long as newcomers "behave", many townspeople are not threatened by them and even welcome them.

Texans also tend to believe growth from energy development will bring financial benefits -- better salaries, employment opportunities, revenues from leases and sales, and increased property tax revenues. This faith in financial gain seems to obscure any realization that not all people will benefit financially. The city manager of Mt. Pleasant estimates that 20% of the city's population will face higher property taxes, rents, and living cost without realizing any increase in income or wealth. The manager in Dilley believes his city is in the same situation.

One indicator of local attitudes toward growth is a desire to attract other industries to replace the boom's temporary businesses. Instead of discouraging temporary growth, boomtowns in Texas tend to construct permanent facilities and to seek permanent industries to replace the temporary businesses.

Mt. Pleasant residents have been the most active in attracting newcomers, as indicated by their participation in financing a new community center. When city and county officials together could not finance a new community center, city residents decided to supplement the government's money with private donations. Eventually residents raised more than \$200,000 to build a community center. Earlier, city officials tried to raise funds for the project but were unsuccessful. Long-time residents felt a growing town should have a civic center large enough to handle community meetings. A new center might make the town look more inviting to newcomers and new industries. Also, in Mt. Pleasant

an enterprising young couple is converting several contiguous and empty downtown stores into a small shopping mall, expected to discourage the loss of downtown business to two new shopping centers.

Social conflict between newcomers and long-time residents has not developed into open confrontation, but Mt. Pleasant's leaders have still taken steps to ameliorate what little animosity has surfaced. The city sponsors barbeques during good weather, inviting city, county, school district, and company officials and citizens. Their philosophy is that social events facilitate friendships that will ultimately develop into mutual understanding.

Informal help has come from TUGCO. Initially people perceived immigrant TUGCO workers as "uppity" -- displaying an air of superiority, trying to control local politics, but thinking themselves immune from local regulations. In response to community complaints, the company instructed its employees to mind their manners, to participate in community organizations and events (but not to run for office), and to show more respect for Mt. Pleasant's social ways. People report a noticeable change in employee behavior; they are more active and socially accepted than are newcomers in the oil development areas.

Why has TUGCO shown so much concern about local reactions? Several explanations seem probable, although none can be "proved." Sources indicate that the company believes its future depends heavily on their reception at the local level. If suspicion and hostility develop, then the long-run efficiency of their operation is threatened. Another explanation is that TUGCO is strictly an intrastate company and, therefore, feels a responsibility toward Texas.

Some land owners, administrators, and politicians have bargained effectively with the power companies over lease terms; others have not. One rancher, when asked why she accepted a lower lease price than others, responded, "I was afraid if I tried to bargain for a higher price, they would change their mind. They told me it was a now-or-never offer." Like many people in East Texas, where TUGCO is developing the lignite mines, she displayed great faith in the utility company and took them at their word.

These Texans believe that TUGCO is genuinely concerned with their welfare.

Defining the Problem: Comparing Costs and Benefits

Temporary Costs

How do people reconcile the conflict between the new problems they face everyday because of energy development and the high value they place on the benefits of growth? Their tax bills have increased; they must pay for water that used to be free; roads are in disrepair; farm help is scarce; their schools are crowded, houses and cars must be locked. In part, they perceive these as temporary costs or inconveniences that must be tolerated in order to reap the expected long-term benefits. The major lesson history has taught Texans is that somehow, whatever their problem during a boom, some towns survive and become pleasant places to live. In light of their historical experiences and their expected future benefits, communities perceive their current problems as temporary and tolerable and, indeed, as the price for future benefits.

Long-Term Benefits

Their image of energy development is incompatible with an image of poverty and social problems. The prevalent perception combines energy development and prosperity and makes it very difficult for Texans especially those living outside the impacted areas, even to imagine adverse impacts from energy development. Texans tend to believe that energy developments in the 1930's and 1940's saved Texas from the worst of the Great Depression, and that energy production has since shielded them from the worst of this country's recessions. The expected long-term benefits from growth entice people to overlook

today's problems. Many current boomtowns have never had significant growth but have long dreamed of it. Their failure to distinguish between moderate and rapid growth may blind them to the true cost of growth's benefits.

Some city administrators, especially in oil drilling areas, are less confident that these problems will disappear. Most mineral properties being developed are those outside the city limits; municipal residents will still have low-incomes when drilling ceases; they will still face loan payments after service industries and mobile homes have left. Their intent is to reap what short-term benefits they can and try to attract permanent industries that are independent of drilling activities. Unfortunately, the short-term problems consume most of their time.

The Complication of Racial Conflict

In Southwest Texas the response to growth has been complicated by racial antagonism between the Mexican-Americans and the Anglos. Although Dilley is about 75% Mexican-American and Pearsall about 80%, until a few years ago most elected officials in both communities were Anglo. Recent political activism among the Mexican-Americans caused tension between the two ethnic groups and shifted political power toward Mexican-Americans, a shift coincident in time with the oil boom. As a result Frio County faces court-ordered redistricting, and a special election for all county commissioner positions.

In general, the political leaders of both ethnic groups face an uncertain future. By September of 1976 they had developed a working relationship. However, recently they have lined up on opposite sides of the rapid growth issue. Anglos who are losing control appear less eager for oil related growth, whereas the Mexican-Americans, many of whom operate small businesses, tend to favor growth.*

*The influential Anglos hope the immigrants will increase their political power, but the drilling personnel have displayed little interest in local politics.

In the Dilley Independent School District, all property outside the city limits had been classified as ranch property assessed at \$35 per acre, and improvements were tax exempt. The wealthier families often live outside the city limits whereas the poor, predominantly Mexican-American families, tend to live within the city. Mexican-American representatives to the School Board proposed and won (i) repeal of special tax status for properties outside the city limits and (ii) property revaluation. This move reinforced popular support for new Mexican-American leaders and quickly increased tax revenues.

Carrizo Springs has also been affected indirectly by racial strife in a neighboring community, Crystal City.* Conflicts in the community of Crystal City caused large numbers of its Anglo residents to move to Carrizo Springs. Both Anglos and Mexican-Americans, having been shaken by the experience in Crystal City, have worked to prevent a repeat in Carrizo Springs.

Variables Affecting the Severity of Local Costs

Initial City Size

The five categories of costs discussed above are found in almost every energy development town, but the severity of each cost varies according to the particular characteristics of each town, its region, and the type of energy development it hosts. The severity of a particular cost may be a function of more than one variable. For example, one town characteristic may cause the public service cost to increase while a second causes it to decrease. The previous discussion concentrated on the final outcome, the severity of each cost; the following discussion emphasizes the factors affecting these costs.

*Conflicts in Crystal City began in 1963 with the organization of a Mexican-American political party, which fielded candidates for city offices. Although there was no violence, the city split politically over the race issue which created tension and apparent hatred between the two ethnic groups.

As mentioned earlier, five variables influence the severity of local costs. The initial city size partially determines the types of public services available before the boom and the city's ability to improve them, both of which affect the severity of boomtown costs. Larger cities tend to provide more public services than smaller cities, and expanding an existing police force or sewerage facility is easier and cheaper than creating an entirely new police force or facility. A service's excess capacity is also a function (in part) of city size, and it can reduce the impacts of initial population growth. In Texas, cities under 5,000 population must wait until property owners petition for annexation whereas larger cities may initiate the process themselves. Annexation of surrounding property allows the city to expand both its sales and property tax bases, which affect not only its tax revenue but also its bonding capacity.

Population Growth Rate

Because of bonding and tax revenue limitations and delays, the population growth rate in large part determines whether demands on public services will increase faster than the localities can expand them. A moderate growth rate notifies officials that services will soon need expansion, and it leaves them ample time to do so. But a rapid growth rate exposes the need for expansion almost at the same time it is needed. Unless a facility has excess capacity, a rapid growth rate creates overutilized services and high costs. For example, Mt. Pleasant's 3% annual increase in school enrollment first filled the excess capacity (caused by decreasing birth rates), but the 13% enrollment increase in Pearsall immediately surpassed its excess capacity and resulted in overcrowded classrooms.

Poor Public Management

Poor public management preceding the rapid influx of people often means public services are poorly maintained, outdated, and barely adequate for the long-time population. These services simply break down under the additional strain imposed by rapid population growth. Expanding well-maintained, modern facilities is easier, quicker, and cheaper than replacing antiquated, poorly maintained services. During and following the boom, the quality of public management also affects how quickly and effectively cities can provide acceptable public services and can reduce the costs from development. For example, before the oil boom, both Dilley and Pearsall had poor police and fire services. These services are still inadequate in Dilley, but Pearsall's managers have been able to correct them. Likewise, Mt. Pleasant's manager effectively regulates commercial demands on some services and thereby prevents further facility overutilization. Less effective managers in other cities forget about reducing demand and therefore the need to expand facilities.

Types of Energy Development

Different types of energy development produce different types of rapid population growth and land use, both of which affect the severity of local costs. Coal development's surface mines and supporting coal-fired generating facilities disturb large tracts of land and disrupt ranching. However, a coal-development project involves only a few companies, making it easier for localities to predict population growth, to negotiate with companies, and thus to decrease local costs. Petroleum developments involve many small companies which makes it difficult for cities to ascertain the number and expected arrival time of immigrants. A larger portion of these employees take temporary work than do lignite development workers. This temporariness reduces chances for capital loans and discourages construction of public facilities to serve the newcomers. Despite these pressures, which increase local costs in oil boomtowns, oil development's minimal disturbance of the land and its low visibility decrease local costs.

Social Milieu

The local attitude toward growth and the existing social problems influence the public's perceptions of energy development, which affects their responses to it. Since many people perceive rapid population growth as a blessing rather than a problem, they welcome it and avoid responses which might discourage it. While this attitude reduces the frequency of mental disorders and social conflict, it discourages cost-saving policies which impose upon newcomers. Societal traditions of public involvement and of acceptable social class behavior also affect the types of activities people seriously consider. For example, middle and lower-income residents of southwest Texas traditionally have left governing to the landed class, perpetuating a type of paternal government prevalent in many rural towns; their day-to-day approach to problems discourages participation in projects requiring extensive public involvement. Existing social problems preoccupy the public's attention and blind them to energy development impacts until the costs reach severe proportions. These customs and preoccupations create an inertia which precludes the active, aggressive public involvement displayed in Mt. Pleasant.

III. STATE RESPONSE TO ADVERSE IMPACTS OF ENERGY DEVELOPMENT

Councils and Permitting Agencies

Texas has not developed programs aimed specifically at mitigating the adverse social and economic impacts of energy development. Most state officials assume the local governments do not face problems that exceed their administrative or financial capacity. Despite previous experience, Texas is just beginning to consider seriously the alternatives for reducing the local costs wrought by energy development. The State has no formal energy policy. No single agency or office collects information on all aspects of state energy programs or procedures. What follows is a description of those agencies that either regulate energy development in Texas or administer programs that might be used to assist local governments facing problems resulting from energy development.

The Governor's Energy Advisory Council

By executive order in 1973, Governor Briscoe created an Energy Advisory Council to advise him on energy-related matters and to administer energy-related research contracts. The Energy Policy Planning Act of 1975 (Senate Bill 519) established the Council legislatively and authorized it to conduct energy related research, to advise the Governor and to prepare an energy policy for consideration of the Legislature. The Council's voting membership includes the Governor, the Lt. Governor, the Speaker of the House, the Attorney General, the Railroad Commissioner, the Agriculture Commissioner, the Comptroller, a Senator, and a Representative; nonvoting members include the chairman and vice-chairman of the Citizen Advisory Committee. The Governor as Chairman of the Council has sole responsibility for calling meetings.

The Council's primary responsibilities reflect the state's focus on energy production and include:

1. developing and maintaining an energy data base system and an econometric model of the state;
2. analyzing manpower needs for anticipated and desired economic developments caused by energy development;
3. analyzing technological developments of particular importance to the state's development;
4. maintaining an awareness of all energy related research inside and outside of the state in order to promote information exchange and coordination;
5. monitoring and reviewing existing and proposed actions and policies of all state and federal agencies to determine their energy impact and to recommend possible alternatives more consistent with state energy policy; and
6. recommending legislation and executive action to foster the development of increased energy supplies, more efficient energy systems, and increased conservation of energy.

The Energy Advisory Council has collected more information about energy development than any other office in the state. It maintains contact with energy companies, informs legislators of current technologies, and reviews energy-related legislation when asked to. Although it has not suggested comprehensive policies or prepared legislation, it has prepared testimony on energy related legislation and has adopted a preliminary though incomplete energy policy statement (discussed below). A public awareness program was begun but that has been dropped. Now the Council focuses primarily on long-range planning.

The Council's staff displays only limited concern for the social and economic impacts of energy development at the local level. They have very little contact with local governments and do not regularly receive information about local problems. Some staff members express disbelief that problems experienced locally are serious enough to warrant state action -- or even that problems exist at all. Other staff members anticipate serious problems in the near future that may catch local officials by surprise. Their basic concern is to maintain a regulatory climate in Texas which does not discourage energy development and which guarantees a continuation of substantial energy-related employment.

The Energy Advisory Council is not unconcerned about local impacts; members of the Council "want to know how energy development affects local communities. If there are significant problems beyond local control," they agree that the state should show some concern.

The members of the Council recently approved an important policy paper [22]. However, instead of drafting legislation to implement the policies, the Council depends on individual legislators to draft legislation reflecting parts of the approved policy. Several bills currently under consideration include recommendations found in the policy paper. The policy paper does not claim to be comprehensive. It makes several recommendations for each of 26 different topics covering a wide range of issues. Selected recommendations, summarized below, seem to portray the general tone of the Council's document:

Demand Policies:

- o Encourage gradual reduction of natural gas as a boiler fuel;
- o Encourage combined generation of steam and electricity;
- o Encourage conversion to alternate fuels and free market pricing of hydrocarbon resources, to preserve petrochemical feedstocks industry;
- o Reform utility rate structures to encourage conservation and efficiency;

Supply Policies:

- o Encourage orderly elimination of price controls on crude oil and eventual deregulation of natural gas well-head prices;
- o Immediately eliminate price and allocation controls on refined products and natural gas liquids;
- o Provide federal support for synthetic fuels and nuclear power development programs;
- o Encourage environmentally safe development of OCS and make revenue sharing funds available to impacted communities.

Energy policy-making plans include a continual reassessment and modification of this first policy paper.

The Interagency Council on Natural Resources and the
Environment (ICNRE)

This office was formed in 1967 as a part of the Division of Planning Coordination [23]. By executive order it later became one of four interagency councils. In the fall of 1976, when the Division of Planning Coordination was combined with the budget office to become the Division of Planning and Budget, this Interagency Council became a separate entity. The Council's former Director, Jim Rose, became the Governor's Special Advisor on Natural Resources, and the ICNRE staff serves him. They answer to the governor but are funded through the Water Development Board.

The ICNRE staff conducts research with other state agencies and accepts special research assignments from the Governor. They have worked with the School Land Board and the Submerged Lands Advisory Committee to prepare a comprehensive study of the Texas Coastal area. Recently the governor asked them to review the problem of providing "mitigation lands" in conjunction with a reservoir construction.*

In 1972, as a part of the Division of Planning Coordination, they prepared and adopted Environmental Impact Statement Guidelines, suggesting procedures for their eighteen member agencies to use when reviewing permit applications [24]. In this document the Council adopts a broad definition of "environment", encompassing first and second-order changes in physical, economic, and social conditions. By signing this document, each agency agrees to use these or similar procedures in assessing the permit applications they receive. Unfortunately, the Council has no statutory authority to enforce the Environmental Impact Statement requirement, and only two of the member agencies, the Highway and Public Transportation Agency and the Water Development Board, actually follow it.**

*"Mitigation lands" refers to property set aside as wildlife refuges or to house animals displaced by a reservoir.

**The Water Rights Commission has formally adopted the ICNRE guidelines as part of its procedural rules. They reserve the right to require such information from permit applicants [25].

A spokesman for the ICNRE sees the document's value as providing an impetus for future discussions. He senses that the difficulty of both predicting and preventing adverse environmental impacts means we can do little more than "keep our heads above water and hope we prevent the worst from happening."

The source of the political pressure to produce such a document is not obvious. One source claims the Governor, concerned with possible second-order impacts from state facilities, wanted it; another source says that the initiative came from the Highway Department, since this simplified document would be easier to manage than current Federal requirements. There was no public outcry demanding environmental impact statements. Many of the agency staff interviewed knew nothing about the document; they tended to doubt its usefulness as a part of their permitting procedures.

The proposed Natural Resources Council Act of 1977 would convert the ICNRE into a stronger agency by requiring cooperation from member agencies. Beside specifying certain responsibilities for coastal land management, the Act also strengthens the Council's ability to coordinate non-coastal permitting processes. A spokesman for the ICNRE believes this legislation will increase the Council's ability to implement E.I.S. guidelines; however, the bill does not spell this out.

Despite mention of secondary impacts, the ICNRE spokesman shows more concern with the physical than the social and economic impacts of energy development. The staff seems to presume that local governments have the resources and powers to manage impacts from energy development, except in cases involving Federal developments (such as the proposed Strategic Petroleum Reserves program for storing oil in depleted salt domes). State involvement, it appears, must be contingent on evidence that a local community has done everything it can to manage its own problems. There is a fear that too much state involvement would foster state imposed standards that would infringe on the right of localities to choose lower quality public services and lower tax bills.

The Railroad Commission

Two divisions of the Railroad Commission are involved in energy development in Texas: the Oil and Gas division, formed about 1919, and the Surface Mining and Reclamation Division, formed in 1975 [26]. The Railroad Commission, established in 1890, was the first regulatory agency in Texas. In 1917 pipelines were declared common carriers and placed under the control of the Railroad Commission. When, in 1919, the legislature adopted statutes requiring conservation of natural resources, the Railroad Commission was given enforcement authority since it could easily expand its involvement with oil and gas companies. The main focus of the Oil and Gas Division is to maximize long-term production while preventing water pollution.

...The Oil and Gas Division is charged with the responsibility of regulating the oil and gas industry for the purpose of conserving the natural resource, preventing its waste, providing for equitable production among operators and protection of fresh waters from pollution by oil and gas operation [26].

The Commission implements this mandate by issuing drilling permits, by regulating the discharge of water during drilling operations, and by establishing the depletion allowance -- the maximum amount of resources which may be extracted through each well. Drilling permits, in accordance with Railroad Commission regulations, are valid for one year, may be renewed annually, and require no public hearing; permits at variance with standard regulations (usually the well-spacing requirement) are issued for six-month periods and may require a hearing. Although the Commission sets maximum rates of extraction, it sets no minimum. It cannot require or encourage production -- those arrangements are between the lessor and the lessee.

The criteria used for issuing drilling permits do not reflect concern with the social and economic impacts at the local level. When granting permits, the Commission views the state as a featureless plain, noting only the location of other wells and the mineral reserves. At least one official was not aware of the Railroad Commission's agreement to assess environmental impacts of proposed

drilling operations; if such information were required for each drilling permit, he feels it would probably involve only a simple procedure. The Railroad Commission's main concern appears to be maximizing total production and avoiding water pollution in the process. One commissioner suggests there are no serious problems at the local level and questions whether the state should alter its drilling permitting process to accommodate local needs. If people do not like the changes which accompany oil development, this Commissioner feels they should move.

Gas used in irrigation activities is exempt from Railroad Commission regulation. The private market sets the price. Although farmers and ranchers previously requested the price exemption, they now face prices much higher than those set by the Commission. They have requested the reinstatement of price regulation, and proposed legislation would give the Commission that power [27].

Southwest Texas depends heavily on groundwater, which has been in short supply since the early 1960's. Water used for oil development reduces the supply for agriculture and ranching and increases the cost (a lower water table means increased pumping and treatment costs). In most cases, surface owners control groundwater supplies. They control any water underneath their property, may lease water rights to whomever they please, and may extract it at whatever rate they please. Water Conservation and Subsidence Districts are the only governmental bodies with the authority to control the spacing and extraction rate of water wells. These districts may be formed only by local initiative [28]. Railroad Commission drilling permits can regulate water pollution but cannot consider the impact of drilling on the supply of groundwater.

The Railroad Commission has adopted a policy, referred to as the Railroad Commission Docket 600, which encourages a voluntary and gradual conversion of utility boilers from natural gas to some other type of fuel. The policy has spurred interest in Texas lignite for generating electricity but faces potential conflicts with the state's air quality standard.

The 1975 Surface Mining and Reclamation Act gave the Railroad Commission authority to regulate surface mining of coal, lignite, and uranium. The Railroad Commission delegated this responsibility to its new Surface Mining and Reclamation Division, which regulates land reclamation and recommends standards for mining industries [26].

The Division implements reclamation policies by registering exploration activities, issuing mining permits, and inspecting mines. Permit applicants are required to provide a Certificate of Insurance and a Performance Bond. The latter equals the total cost of reclaiming the proposed mine and can be lowered over time as parts of the mine are properly reclaimed. A failure to comply with reclamation standards forfeits the bond. A Reclamation Fund, money collected from permit fees (\$200/permit), \$10 per acre to be mined, and forfeited Performance Bonds is used primarily for two purposes: to pay consultants for independent estimates of the proposed site's reclamation costs; and to reclaim land either abandoned by the operator or reclaimed inappropriately. The state's three operating mines are complying with the reclamation standards, so no performance bonds have been forfeited and the other fees have been used to estimate reclamation costs.

Criteria used in granting surface mining permits stress the preservation of future land uses and the prevention of water pollution, and one purpose of the legislation is to prevent degradation of the quality of life in local communities. However, local abilities to support intensive mining activity are not specifically considered unless presented as formal evidence during a hearing. Land may be declared unsuitable for surface mining because it would create "substantial" and long-term damage to historic or cultural areas, or because it would be too close to national wildlife refuges, parks, etc. The law does not specify expected local social impacts as a rationale for declaring land "unsuitable" for mining. Since no one has tried applying the law in this way, the Railroad Commission's legal counsel does not know how the courts will interpret it. Only "persons affected" may appeal the decisions of the Commission, that is, people living in or operating businesses in the mine's host or contiguous counties and able to "demonstrate that they have suffered or will suffer actual injury or economic damage" [30].

Localities influence the conditions imposed on mining through public hearings. These are held in the county of each proposed mine. Currently the staff informs not only those they are legally required to inform, but also those in adjacent areas which might feel the effects of increased mining activities.

As in the case of the Oil and Gas Division, the official interviewed in the Surface Mining Division was unaware of any policy to assess secondary impacts caused by proposed mining activity. This process, however, goes farther than the law requires in considering local impacts.

The Railroad Commission must circulate each permit application to several other agencies for review. Applications will be denied if either the Water Quality Board or the Air Control Board disapprove for environmental reasons. Although the Water Development Board reviews each application, a finding that the development might cause a serious drain on the water supply does not ensure denial of the application [31].

Most major lignite development companies have cooperated with the Railroad Commission's reclamation and pollution abatement regulations. The only current compliance problem involves a small, independent operation: one farmer decided to mine his own lignite; his lack of mining and reclamation experience resulted in a large hole in the middle of his ranch. The Railroad Commission anticipates forcing him to reclaim the land properly.

Companies mining uranium were initially less cooperative. They opposed the reclamation legislation, claiming that reclamation costs would put them out of business. Reclaiming a lignite strip mine in East Texas costs between \$700 and \$1000 per acre; reclaiming a Texas uranium mine, an open pit mine, costs at least twice as much.* Rather than reclaim the uranium mines, one company wants to convert the pits to reservoirs. Since many mined areas lack surface water, this proposal is being given serious consideration.

The officials interviewed in each of these Divisions are not aware of any serious second-order impacts usually caused by either mining or drilling activities. Both admit that they have not given the question much thought.

*Estimates on the costs of reclaiming open pit mines range from \$2,000 per acre (Exxon) to \$50,000 per acre (Conoco). Differences in their divisions between mining and reclamation activities and differences in the sizes of mines account for this great variation [55].

The Public Utilities Commission (PUC)

The Texas Public Utility Regulatory Act of 1975 created the Texas Public Utility Commission. The PUC began operations on September 1, 1975. Its objective is to "assure rates, operations, and services which are just and reasonable to the consumers and to the utilities" [32]. For certain types of utilities, the Commission has the authority to set rates, to enforce service quality, to provide public information, to hold hearings, and to grant Certificates of Convenience and Necessity for new or expanded facilities.

The Commission cannot regulate municipal utilities, gas utilities, or lignite development undertaken by utility companies; nor does it have overall siting authority. Each proposal must be weighed on its own merits without comparison to alternative sites.

The Commission allows new or expanded services only when they are required by "present or future public convenience or necessity"[33]. When granting a Certificate of Convenience and Necessity, the Commission may consider the adequacy of existing services, the need for additional service, the facility's effect on both consumers and other public utilities in the area, community factors (environmental impacts, aesthetic values, recreation, costs, etc.), and the effect on service quality and costs.

The Public Utilities Commission accepts responsibility for settling conflicts among utility companies and between companies and the public. At the public hearing concerning TUGCO's permit request for a facility in Rusk County, the Commission expected to act as negotiator between the public and TUGCO; but public opposition did not materialize at the hearing. A SWEPCO representative claimed access to evidence proving that the area could support only one more coal-fired electric generating plant (which TUGCO wanted a permit to build); SWEPCO claimed they should be allowed that last plant, since it would be in SWEPCO's service area rather than TUGCO's. However, during the hearing SWEPCO never produced that evidence and local residents did not oppose TUGCO's

proposed plant. TUGCO gained authority to operate under a grandfather clause (they made substantial investments prior to passage of the Act). Thus, there was no real contest for the TUGCO permit. However, a Commission representative claims that public opposition might have significantly changed the decision. The Commission accepts the responsibility for weighing the needs of the consumer against the needs of local communities, including the social and economic costs borne by local communities.

The General Land Office

The General Land Office, formed in 1876, and the School Land Board, formed in 1939, manage public lands and state owned mineral rights in Texas [34]. Revenues from these properties support education in Texas. The tie between state property and oil and gas development is largely the foresight on one particular man. In 1840 Texas switched from Mexican and Spanish civil law to English common law, but intended to retain state ownership of minerals. To settle the confusion which followed, all mineral rights were returned in 1866 (and again in 1976) to surface owners of previously sold lands. The courts later interpreted these actions as giving mineral rights to surface owners of all lands acquired until 1901. The mineral rights were lost because, until 1901, no one classified and separated mineral rights from surface rights on land sales. In that year Land Commissioner Charles Rogan classified as "mineral" the remaining 7.4 million acres and thus retained for the state mineral rights to only 8.6% of the original state public school land. The state and its Universities now own 22.5 million acres [35].

In 1919 the General Land Office received authority to lease public school land for oil and gas production, and the Relinquishment Act of that year permitted surface owners of properties with state-owned mineral rights to act as state agents in leasing lands for production (and to keep 50% of the financial benefits).* In 1939 the School Land Board was formed to assist the General Land Office in handling mineral leases.

*Surface owners of state-owned mineral properties now get only 1/16 of the royalties and lease money.

In response to the 1972 Coastal Zone Management Act, the 1973 Texas Coastal Public Lands Management Act authorized the General Land Office to study impacts of energy development on coastal lands and to develop a coastal zone management program. In June of 1974, the General Land Office made Research and Planning Consultants (RPC) of Austin their primary contractor. The consultants have just completed four recommendations (found in legislation [36]) which would establish a Texas Coastal Management Program.

- a. The Interagency Council on Natural Resources and the Environment should be restructured to serve as a policy-level council for reviewing, proposing and coordinating coastal management policies and activities;
- b. An organized information system, housed in the governor's office, should be established;
- c. The "Activity Assessment Routine" should be established for assessing, in advance, the probable economic, environmental and social effects of specific activities planned for particular coastal locations;
- d. The boundary should include coastal waters and only those shorelands closely related to those waters.

Some Texas environmentalists believe that the proposed legislation is too weak. It is the outgrowth of a long process of citizen participation and consensus building among otherwise incompatible political forces. RPC used a "bottom-up" approach to planning, starting with a series of 18 public hearings and 15 regional workshops to determine the types of controls people considered appropriate. Their advisory committee consisted of 41 people representing every conceivable interest group. Unless the consensus dissolves, RPC believes this process has produced the most rigorous coastal regulation implementable in Texas [46].

The General Land Office appears to be the permitting agency most actively concerned with second-order impacts from energy development. The staff expresses the belief that energy development and impact mitigation can peacefully coexist and that the state has some responsibility to impacted communities.

Air Quality Control Board

Increased public pressure led, in 1965, to enactment of the Texas Clean Air Act which in turn created the Texas Air Control Board and shifted state air quality control responsibilities from the State Health Department to the newly formed Board [37]. The Clean Air Act seeks to protect the State's air resources. Subsequent amendments to the Act have given the Board power to anticipate and "keep pace with" changes in national environmental legislation. The Board began operation on April 1, 1966; it now has more than 300 employees and operates 12 regional offices.

The Air Quality Control Board must issue a permit before construction of a new facility can commence. Permits restrict emission of particulates, sulfur compounds, toxic materials, volatile carbon compounds, and nitrogen compounds. The Board also monitors ambient air quality throughout the state. It will not issue a permit if a facility causes significant deterioration of existing ambient air quality; is located without proper consideration of current land use; or fails to use the best control technology available.* Industries have learned, over the past years, that the Air Quality Control Board means business. They are not reluctant to enforce regulations they consider crucial to air quality in Texas.

In practice, the Board's policies are less stringent than their rules suggest. The Board officially disagrees with EPA's significant deterioration standards. In addition, it will not strictly enforce the rule regarding hydrocarbon content of photo-chemical oxidants, since strict enforcement would mean a halt to many activities in almost all areas of the state. Although the sulfur dioxide levels are currently below prescribed national levels, particulates are above national levels in parts of several metropolitan areas, and oxidant levels are in excess of national standards almost everywhere.

*The Board considers tradeoffs between "economic reasonableness" and its requirement for using the "best available control technology" [38].

The Board seldom rejects a permit application outright; rather, they negotiate with applicants and suggest changes in their proposal, modifications that would bring them into compliance with the standards. However, it does not attempt to negotiate between applicants. Each request is reviewed independently, on a first-come first-served basis. If the Board receives two permits for an area which can only absorb one more facility, they will consider the applications in the order in which they are received.

People in several state offices, including the Energy Advisory Council, site air quality standards as a significant threat to lignite and coal development. They claim that substituting coal and lignite for natural gas in electricity generation will conflict with the SO_2 and particulate emission standards as well as with the "significant deterioration" standard. Two staff members of the Air Quality Control Board maintain that the contribution lignite makes to sulfur dioxide emissions has been exaggerated. They point out that spacing requirements for lignite-fired generating plants makes it almost impossible for the plants to violate the significant deterioration standards. Second, pollution abatement equipment can currently remove about 90% of all sulfur dioxide emissions. In East Texas, three generating plants would have to locate within an area of approximately 25-mile diameter

to threaten air quality standards. Facilities burning imported coal do not face the same location restrictions as do lignite plants. Three or more plants may prefer to locate near the same large water supply or rail-transit facility. Since East Texas has a large supply of both lignite and water, both types of electric generating plants may prefer to locate there.

The Board's spokesmen admit that conversion of bilers to non-natural gas fuels could present problems along the Texas coast, but they doubt it would present a problem in either east or west Texas. The Air Quality Control Board does not think it likely that either particulate or ozone standards can be met in the near future.

A municipal utility company, City Public Service of San Antonio, is constructing a new type of boiler and wants to postpone the installation of expensive air pollution abatement equipment for six months, giving them time to determine the system's economic feasibility. The Attorney Generals office has just ruled that the Air Quality Control Board legally may grant the variance. Earlier the Board favored the variance but its official decision has not been made. Other people, including some San Antonio residents, oppose the variance; they fear the system will not be as "clean" as the company claims. Since a variety of demonstration projects, both public and private, are being planned, a favorable ruling could have broad implications for energy development in Texas.

Texas Water Rights Commission

In 1913 the state formed the Board of Water Engineers to manage water appropriations. In 1962 the name of the Board was changed to the Texas Water Commission and in 1965 to the Texas Water Rights Commission. The increased number of water rights cases coming before the courts accounts, in part, for the political pressure that led to the creation of the Water Rights Commission.

The Commission's duties include issuing water permits, adjudicating water rights claims, collecting data, and supervising water districts. The Commission can only regulate rights to surface water; it has no control over demands placed on groundwater, which is the primary supply of water in west Texas where petroleum development is occurring. The Water Rights Commission may ask applicants to prepare an Environmental Impact Statement; it is the only permitting agency to publish the ICNRE Guidelines as part of its official rules.

State Assistance Agencies

The Texas Department of Community Affairs (DCA)

The department in the best position to help localities experiencing energy impacts is the Department of Community Affairs (DCA). This department helps communities discover and apply for federal funds. It does not allocate state funds to localities, but it does distribute HUD 701 Planning Grants and administers the Intergovernmental Personnel Act funds.

According to its current policy statement, the DCA does not operate any programs itself but acts as a liaison between communities and federal and state programs. It provides assistance only when problems cannot be "totally solved with local resources" and when they do not "fit" other aid programs. The Department is "on call" -- waiting for local governments to approach with requests for help:

The Department provides technical assistance to local governments, councils of governments, and community organizations only upon request or as required by federal programs which are administered by the department [47].

The approaching biennium will show a 17% budget reduction over the previous two-year period [47].

At least three of the boomtowns described earlier have approached DCA for assistance. Pearsall sought help in obtaining Intergovernmental Personnel Act funds. Dilley officials received DCA assistance in analyzing their housing problems and in acquiring federal housing money. Currently DCA is helping Fayette, Angelina, and Freestone Counties plan for pending energy development. Some local officials resent the state's unwillingness to provide financial assistance, forcing them to call on the federal government; but they think highly of the services and assistance received through DCA.

DCA staff members provide no special services for energy impacted communities. They tend to assume that energy developments are close to urban centers which can provide needed services, and that the construction industry will respond to the demand for housing. The experiences in Dilley and Pearsall suggest that construction firms are more local in their operations than DCA suspects.

DCA has been trying to adapt a predictive model to the needs and available skills of local governments. When completed, the revised model will allow localities to forecast environmental and public service impacts of energy development in their communities.

The Texas Education Agency

The Texas Education Agency provides financial aid to school districts according to a formula called the Local Fund Assignment. Previously this formula was quite complex, involving a weighted average of property value, income, and other social and economic factors. Recently it was simplified. Each school district must pay 35¢ per \$100 of real market value; the State pays the difference between this figure and each district's Foundation School Program cost. The Foundation School Program covers operating expenses necessary to provide "basic education" and is based on the previous year's average daily attendance. Expenditures for capital improvements or for additional educational services must be covered by the school district's property tax revenues.

State aid to school districts averages 80% of their calculated operating costs and comes from three funds: the Available School Fund, the Foundation School fund, and the General Fund. The revenue earned from the Permanent School Fund and public school lands, including lease sales, lease revenues, mineral bonuses, and royalties are placed in the Available School Fund along with one-fourth of motor fuel taxes. The Foundation School Fund is partially supported by the Omnibus Tax Fund, half of which comes from oil and gas revenues. The state funds available for Texas public education thus depend heavily on petroleum gas production.*

The Texas Education Agency has no policy for providing special assistance to school districts experiencing rapid growth. When funds are available, as they have been for the past several years, the Agency can make two of the ten monthly payments in September, giving schools some help with large initial expenditures. When a district's enrollment is greater than expected, the Agency will recalculate its payments and make reimbursements at the end of the school year.

*The Mid-Continent Oil and Gas Association estimates that oil and gas taxes pay 28% of state funds spent on public education [1].

Texas Industrial Commission

Several boomtown officials have sought help from the Texas Industrial Commission (TIC). Their impression however, is that this Commission can offer only limited assistance. The Texas Industrial Commission works closely with industry and tries to help firms locate in appropriate and inviting places. Their Industrial Factbook describes the advantages of various industrial locations throughout the state.

But the Commission also provides service to local communities. It sponsors programs that teach community officials how best to "sell" their community to industries, how to attract industry, and how to prepare a local Industrial Factbook. Communities receive technical assistance in applying for Small Business Administration loans, for Economic Development Administration 302 Program funds, and for loans and grants from the Farmers' Home Administration.

The Commission also manages the state's Rural Industrial Development Fund. The Act creating this fund sought to provide "a source of long-term loans for manufacturing facilities in rural areas where local funds are insufficient" [39]. In 1973 the legislature allocated only \$600,000 to the Fund, which permitted only six community loans. The loans ranged in size from \$35,000 to \$160,000, and the recipient cities ranged in size from 1,850 to 21,300.* The Legislature views this program favorably, and its proposed budget includes a \$2 million per year allocation for the next two years.

The TIC makes loans to non-profit community corporations which take responsibility for industrial development projects. These community corporations must invest at least 10% of the projects' total cost, and the TIC may lend them up to 40% of the cost, at less than the prime rate. Loans cover only the costs of permanent improvements. In order to guarantee that they support only financially sound projects, TIC requires a bank to take the first mortgage.

*The Commission estimates the use of those loans generated \$194,150 in state revenue annually over the last three years, almost recouping the entire cost of the program.

The Commission gladly works with communities and directs their efforts, but community leaders are expected actually to do the work of attracting new industries. The Commission's very small staff cannot afford to spend time with communities unwilling to commit themselves to the task. Pearsall and Dilley have reportedly failed to make that commitment of time and effort.

Despite this firm policy, the Director of the Community Services Division of the TIC shows a great awareness of the problems accompanying energy development in rural areas, including their disadvantages and difficulties in attracting permanent industries. Unfortunately, the Commission lacks the resources to attack the industrial development problems faced by energy boomtowns in Texas.

Texas Parks and Wildlife Department

The 1965 U.S. Land and Water Conservation Fund Act makes grants available to communities in states which have prepared an approved state recreation plan. The Bureau of Outdoor Recreation, federal administration of the program, makes funds available for planning, acquisition and development of recreation areas and facilities and requires 50% matching funds from the governmental jurisdiction responsible for the recreation project [40]. The federal fund comes mostly from federal offshore oil and gas revenues, from federal land sales, and park fees. As authorized by the state legislature in 1965, the Parks and Wildlife Department prepares a plan meeting federal standards to enable the state to participate in the program [41]. Texas receives about \$6 million annually under this program.* In recent years, local governments receive almost all of the money that comes into the states.

Twice a year the Department reviews applications and lists projects in priority order. Projects are funded by decreasing priority until all the funds are allocated as part of its State Plan effort. The Department has developed an econometric/gravity model which estimates and projects various regional participation in recreational activity. This data, combined with recreational area and facility inventories,

*Recent amendments to the Federal Act should increase this amount.

allows the Department to estimate needs in jurisdictions as one tool for guiding the allocation of Land and Water Conservation Funds. The participation estimates include considerations for current and projected population data, social and economic data, and results from user and household recreation participation and preference surveys conducted by the Parks and Wildlife Department between 1968 and 1973.

While the Department shows no special consideration for energy development communities, it does consider the special recreation needs of rapid growth communities. If the participation data in the model conflict with local situations, the Department expects and encourages the community to keep it abreast of recent changes, and uses the most recent information in performing evaluations. One criteria, however, could work against energy boomtowns. Since the state considers long-run community needs, localities anticipating a population decrease when development slows down may not be able to win approval for projects. However, this situation is related to the urgency of need, and is not necessarily the case when a community has no or very little public recreation facilities. If their financial condition is unstable, they may also find it difficult to compete for funds due to the matching requirements of the program.

At least two energy impacted communities have benefitted from this Fund. Mt. Pleasant received a \$44,850 grant to construct new ballparks and tennis courts, and Carrizo Springs has also received a \$9,750 grant. Pearsall has recently applied for \$74,975 to purchase and develop a new park.

Texas Water Development Board

Like many western and southwestern states, Texas has been concerned about a shortage of water for many years [42]. A Constitutional Amendment in 1917 allowed the state to implement water conservation measures. In the 1930's and 1940's the state discussed water allocation priorities and citizens banded together to form the politically effective Texas Water Conservation Association. The Thomas Committee, appointed by Governor Shriver in 1952, studied the state's water needs and in 1953 recommended state financial assistance for local water projects. No action was taken immediately.

After severe droughts plagued the state in the early 1950's (lasting seven years in some areas), followed by severe flooding in 1957, the Thomas Committee recommendations received substantial political support. A Constitutional Amendment in 1957 created the Water Development Fund of \$200 million; and the Texas Water Planning Act of 1957 created the Texas Water Development Board to administer the fund [43]. Subsequent Constitutional amendments authorized another \$200 million for the Development Fund and \$100 million for water quality projects. In 1965 the Water Development Board was given increased responsibilities for research, water planning, data system maintenance, and limited permitting.

The Water Development Fund provides low-interest, long-term loans for local governments' water development projects in cases of financial hardship. The Fund was designed to be self-supporting (through repaid loans) by the 1990's; but current estimates predict it will reach that status by the 1980's. To date, August 31, 1976, the Fund has needed only \$29.4 million in general state revenue to cover debt service. Local governments receiving loans must first issue bonds, which bonds are purchased by the Board. Repayment thereon is from revenue produced by the project or from taxes. By August, 1976, \$228,793,804 had been expended or committed for 88 projects. 80% of this money has been allocated to smaller cities.

The demand for this assistance has increased, especially over the last few years. According to the Water Development Board, this increase has been caused by inflation and increasing interest rates, a growing water shortage, and the increased difficulty in acquiring federal financial assistance for water development projects. At least one energy related development, Titus County Fresh Water Supply District #1, has received a loan of \$11,360,000 from the Water Development Fund. This loan, together with the Board's purchase of storage, covered the cost of constructing a reservoir.

The Texas Constitution limits Water Development Fund expenditures to local funds "certified to be available" [41]. As the Board has stated:

The possibility of the State of Texas emulating the City of New York by indiscriminate and irresponsible issuance of State supported debt is extremely remote, if not impossible. Addi-

tional bonds will be issued only after the need is aptly demonstrated to our highly qualified six-member citizen board [45].

In the interest of all state taxpayers, the Board is extremely hesitant to extend funds to financially unstable communities. It reviews a community's long-term ability to repay loans; those with large temporary populations, such as oil drilling areas, and no guarantee of future permanent industries are likely to be considered a bad credit risk.

Councils of Governments (C.O.G.)

Local governments often approach their Council of Governments for assistance in handling the problems created by intensive energy development. The Alamo Area Council of Governments, serving Dilley and Pearsall, has maintained a close working relationship with area communities. They regularly inform cities of funding programs, provide assistance in writing grant applications, refer local officials to appropriate state agencies, and offer local officials a variety of services. When the City of Pearsall recently approached them for assistance in adjusting municipal salaries, the Alamo Area C.O.G. referred them to the Texas Department of Community Affairs which helped Pearsall apply for the funds. They also have helped cities in that area prepare mobile home ordinances. On a regular basis they train city managers who tend to stay in the Alamo area. Acting in their capacity as regional planning agencies, the C.O.G.'s conduct regional planning (with the help of HUD 701 funds) and assist communities in anticipating unusual growth. However, they receive no more forewarning about proposed developments than do their member governments.

IV. SUMMARY

Although energy development seems generally desirable to Texans, it can create problems for certain boomtown communities. These municipalities are often incapable of maintaining public services at a level needed by their rapidly expanding population. This inability stems from a lack of ready resources to hire additional staff and to finance the facilities required; in addition, they lack the information necessary to plan for expansion in a timely manner.

The two types of energy development in Texas -- oil drilling (Southwest Texas) and lignite mining and consumption (East Texas) -- present similar but not identical problems for local officials. Oil drilling involves mostly a temporary population. After eight to ten years, most of the activity will be over, leaving behind only a small population supported by a few small companies servicing the wells. Lignite development involves surface mining for as much as thirty years and facility construction over a ten year period; it leaves behind a larger operation and service population.

Neither elected state officials nor agency staff members tend to be convinced that local governments have serious difficulties providing necessary public services to boomtown immigrants. They imply that service delivery problems are the exception rather than the rule. Should they learn that these problems are indeed typical for communities hosting energy development, state officials may be willing to provide additional help.

This view of the state's role parallels the view of most local officials. They usually maintain that, first and foremost, local governments should manage their own problems. When the problems associated with energy development exceed their abilities then they want state assistance. Only when the state has done all within its power to help local communities do they want the federal government to become involved. Thus, the only significant differences between the views of the state and local officials are (i) whether local governments currently face serious impact problems and (ii) whether they have adequately utilized their own resources to solve those problems.

While state agencies in Texas have not addressed the impacts of energy development per se, with slight modifications several existing programs could provide assistance. The proposed Natural Resources Council could provide a forum for discussing possible changes in state policy. It also could improve the existing permitting processes by calling attention to energy development problems that current regulations can alleviate. Proposed legislation giving counties ordinance-making authority and relaxing annexation procedures could permit localities to improve their management of energy impacts. The recently imposed restriction on utility company's eminent domain powers should strengthen local control over land in their jurisdictions. Company requested clarification of the legality and implications of making payments to impacted localities promises to facilitate more constructive negotiation between energy developers and host communities.

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