

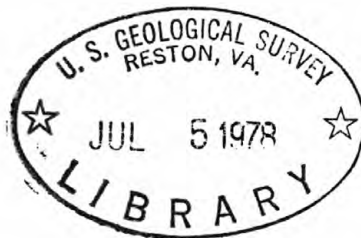
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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



IMPACTS ON THE COMMUNITY ANTICIPATED TO RESULT
FROM THE PROPOSED PRONGHORN COAL MINE,
CAMPBELL COUNTY, WYOMING

Open-File Report 78-551



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[Reports - Open file
series]

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FROM THE PROPOSED PRONGHORN COAL MINE,
CAMPBELL COUNTY, WYOMING

By F. J. Anderson, D. D. Sohocki, and L. G. Marcus

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IMPACTS ON THE COMMUNITY
ANTICIPATED TO RESULT FROM THE
PROPOSED PRONGHORN COAL MINE
CAMPBELL COUNTY, WYOMING

By Frank J. Anderson, Dennis D. Sohocki, and Linda G. Marcus

ABSTRACT

The Pronghorn coal mine in Campbell County, Wyoming, will provide direct employment to about 850 workers, resulting in an additional 1800 people residing in the county. The Pronghorn mine is only one of the many energy developments that will result in an increase in county population from 21,000 in 1977 to 64,000 in 1990. Most of the population increase will occur in and near the City of Gillette, which already is experiencing inadequate housing, a lack of public services, and the social problems associated with "boomtown" conditions. The future increase in population will continue to impact all local government services, private businesses, and the residents of Gillette and Campbell County. Most of the impacts will be adverse. A majority of residents indicate that most government-provided services are currently in need of improvement.

Older residents of the county have experienced a change in traditional values, newer residents commonly experience a lack of acceptance. These experiences have psychologically impacted both old and new residents.

Although the county and the city are moving rapidly to accommodate the changes that are occurring, services will lag due to time and financial restraints. New taxes and mineral royalties will in time provide the financial support required to implement needed services, but between 1978

and 1982 the City of Gillette will be able to finance only \$35 million of the \$58 million needed for new facilities. After 1982, the city's financial position should improve rapidly. Financial impacts on the county and its school district will be negligible over the short-term and largely beneficial over the long-term.

A shortage of housing exists in the area, particularly the most desired single-family homes. High cost precludes the purchase of permanent housing by many new residents and, therefore, mobile homes supply much of the housing for new residents. The town of Wright, sponsored by the Atlantic Richfield Company, is presently a 311-unit mobile home park, housing a November 1977 population of 850. The town is planned for a maximum population of 6,000 people. Much of the planned housing will be permanent homes.

INTRODUCTION

This report describes changes that have occurred in Campbell County, Wyoming, since FES 74-55, Volume I of "Proposed development of coal resources in the eastern Powder River Basin of Wyoming" (hereafter referred to as FES 74-55, p. I-392 through I-458) was prepared. FES 74-55 contains information on population, employment, income, housing, education, health services, police departments, and community attitudes.

Employment and population figures have been revised on the basis of current and anticipated employment for coal mining activities, plus employment from a local power plant and railroad. The effects of future Federal coal leasing are not evaluated.

Most of the socioeconomic information concerning Campbell County and the City of Gillette is taken from the following: Gillette/Campbell Department of Planning and Development (1977), Gilmore (1976), Gladstone Associates (1976), Moore and others (1977), Moore and Loomis (1977), Gillette/Campbell County Department of Planning and Development (1977), U.S. Department of Commerce (1976), U.S. Department of Housing and Urban Development (1976), Wyoming Services Project (1976), and Bell (1977).

This analysis of impacts on the community is based on existing energy development and a projection of anticipated energy development through 1990 in Campbell County. The projection is complicated by its dependence upon State and national energy development actions, policies regulations and financial controls. The sequence, form, and magnitude of future energy development will create a cumulative impact on the community

far greater than those produced by Federal approval of the proposed Pronghorn mine, which would be operated by the Mobil Oil-Consolidation Coal Company, hereafter referred to as the mining company. An economic analysis of supply and demand rate of return and costs for the proposed Pronghorn mine that is used to evaluate economic impacts was based on assumed future Federal actions and policies. Because sociological impacts are usually generated by economic impacts, they are also based on these assumptions. As a result, this analysis indicates the trend, but not necessarily the sequence or magnitude, of impacts on the community.

The Pronghorn coal mine is only a small part of the potential development of coal resources planned in the eastern Powder River Basin. Federal approval of the proposed Pronghorn mine will continue and will accelerate the rate of energy development in Campbell County and consequently will add cumulatively to ongoing impacts on the community resulting from operating and proposed coal mines in the county. Significant impacts on the community have and will continue to occur regardless of the Federal decision on the proposed Pronghorn mine.

SOCIAL PROFILE

REGIONAL AND LOCAL DEMOGRAPHY

Table 1 shows the estimated population and annual rate of change of population from 1950 to the present, and population projections for Campbell County through 1990.

Campbell County experienced a 121-percent population increase between 1960 and 1970, due primarily to the "oil-boom" in the region. This caused Gillette to grow at an average annual rate of 7 percent.

Table 1.--Population of Campbell County and the City of Gillette
(1950-76), and projected population of
Campbell County (1977-90)

Date	Campbell County		City of Gillette	
	Population	Annual rate of change (percent) ^b	Population	Annual rate of change (percent) ^b
1950 ^a -----	4,839	--	2,191	--
1960 ^b -----	5,861	+2	3,580	+5
1970 ^b -----	12,957	+8	7,194	+7
1973 ^b -----	12,283	-2	7,801	+3
1975 ^b -----	13,090	+3	8,215	+3
10/75 ^c -----	16,934	--	9,881	--
1976 ^b -----	14,500	+11	--	--
6/76 ^c -----	19,766	+26 ^d	10,446	+9
1977 ^e -----	20,811	--	--	--
2/77 ^c -----	21,000	+10 ^d	11,225	+13
7/77 ^c -----	23,829	+37 ^d	11,891	+15
12/77 ^c -----	24,406	+6 ^d	12,317	+9
1978 ^e -----	25,322	+22 ^f	--	--
1979 ^e -----	26,233	+4 ^d	--	--
1980 ^e -----	31,676	+21 ^f	--	--
1985 ^e -----	48,947	+9 ^f	--	--
1990 ^e -----	63,694	+5 ^f	--	--

Date	Campbell County exclusive of City of Gillette			
	Population	Annual rate of change (percent) ^b	Gillette area only ^g	Annual rate of change (percent)
1950 ^a -----	2,648	--	--	--
1960 ^b -----	2,281	-1	--	--
1970 ^b -----	5,763	+10	--	--
1973 ^b -----	4,484	-8	--	--
1975 ^b -----	4,875	+4	--	--
10/75 ^c -----	7,053	--	2,860	--
1976 ^b -----	--	--	--	--
6/76 ^c -----	9,300	+51	3,821	+47
1977 ^e -----	--	--	--	--
2/77 ^c -----	9,683	+7	3,929	+4
7/77 ^c -----	11,938	+65	4,519	+40
12/77 ^c -----	12,089	+3	5,424	+55
1978 ^e -----	--	--	--	--

See footnotes on facing page.

Footnotes for table 1.

^aAnnual rate of change (r), in percent, is calculated using $r = \left(\frac{P_n}{P_o} - 1 \right) \times 100$ where P_o is initial population estimate, n is number years elapsed to following population estimate (P_n).

^bU.S. Department of Commerce, 1976.

^cBell, 1977.

^dCalculated using source in footnote b.

^eMoore and others, 1977.

^fCalculated using source in footnote e.

^gA 30-square-mile area around the City of Gillette extending about 1 to 1-1/2 miles beyond the city limits.

During 1970 to 1977, the county experienced an 88 percent increase in population due to the development of coal resources. During the same period, Gillette's population increased 71 percent, making it the fifth largest city in the State by December 1977. During February to December 1977, the county population increased at an annual rate of 18 percent, while Gillette grew at an annual rate of 11 percent. Other indicators show rapid growth (fig. 1). During periods of rapid population growth, the most rapid growth tends to occur in the county just outside the city limits of Gillette (table 1).

When population increases at a rate exceeding approximately 5 percent per year, local government is often forced to expand facilities and services at a rate greater than it can physically and financially support (Gilmore, 1976). Currently, both the city and county are growing at rates that are severely straining the resources of local government--creating a "boom-town" or "hyperurbanization" condition, as described by Gilmore (1976).

Rapid growth can be expected to continue increasing the population from an estimated 21,000 in 1977 to 64,000 in 1990 (table 1), an increase of 205 percent.

HISTORIC OVERVIEW

Northeastern Wyoming has undergone a succession of boom and bust cycles since 1878. From open-range grazing in the last century, through homestead land acquisition and farming after the turn of the century, to petroleum development during the 1950's and 1960's, Campbell County periodically has had short-term booms followed by longer busts that resulted in a low, regional, long-term rate of population and economic growth.

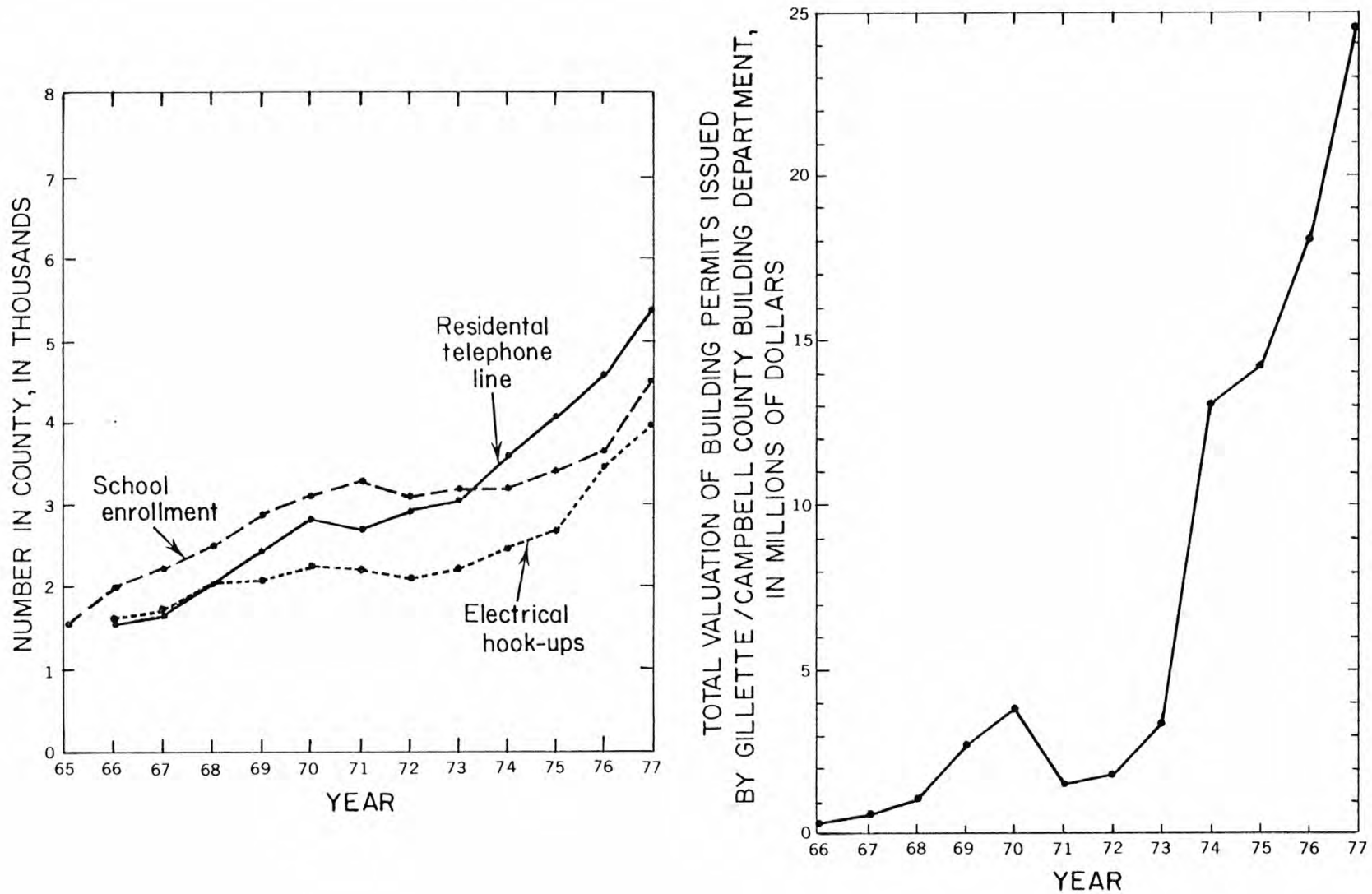


Figure 1.-- Growth indicators in Gillette/Campbell County. (Bell, 1977, p. 5, 7).

The current boom is projected to last for more than 30 years and will result in long-term population and economic growth of an unprecedented magnitude (U.S. Department of the Interior, 1974). National interests, policies, and economic needs are involved to a far greater degree than ever before--often overriding and nullifying State and local planning efforts and actions. The cumulative impacts of mining at seven existing Federal leases and one existing State lease, with anticipated Federal approval to mine at nine or more existing Federal leases, and with potential future Federal coal leasing, is inexorably changing the population, economy, and lifestyle of Campbell County.

COMMUNITY CHARACTERISTICS

The City of Gillette is experiencing boom-town conditions as described in Gilmore (1976) and by the Department of Housing and Urban Development (1976). The following general description of boom-town impacts on the community is from Rapid Growth from Energy Projects, Ideas for State and Local Action published by the Department of Housing and Urban Development (1976, p. 1-2).

Construction and operation of an energy project can provide many benefits to the region in which it is located. The economic base may be expanded and diversified, providing new employment opportunities--especially for young workers who might otherwise have to leave the region for work. The energy supply may be maintained or improved, and the tax base of the region strengthened. Comparative case studies show that in Tullahoma, Tennessee (with the Arnold Engineering Development Center) and in Idaho Falls, Idaho (with the National Reactor Testing Station--both Atomic Energy Commission facilities) the "quality of life appears to have been enhanced." (Denver Research Institute, 1975). The reason for this was a moderate growth rate, followed by stable permanent population. The impact was gradual enough to allow public services to keep up with demands.

All too often, however, while benefits are long-range and regional, the negative impacts are immediate and local. The severity of the impacts on communities depends on several factors: original population size, rate of growth, level of unemployment, condition of local services and facilities, and quality of planning. Impacts also vary by the type of energy project. Of all these indicators, the rate of growth appears to predict severity of impacts best. In its studies of energy impacts, the Denver Research Institute concluded: "An annual growth rate of ten per cent strains local service capabilities. Above fifteen per cent seems to cause breakdowns in local and regional institutions." (Denver Research Institute, 1974).

Employment and Population

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

Land Use and Housing

In most cases, the first local impact is on housing. The few vacant houses are quickly snapped up, by either temporary or permanent residents. The most visible sign of the energy boom is the mobile home. When all available standard housing has been taken up and little new housing is being built, workers and their families turn to mobile homes. If there are not enough spaces within the existing community, the units will scatter across the landscape creating "aluminum ghettos." It is not the mobile home itself which is the problem, but inadequate planning, lack of control over siting, and few amenities.

Community Life

Life in the community changes as a fast rate of growth produces symptoms of urbanization, such as a speeded up pace of life, congestion, inflation of prices and scarcity of amenities. Particularly significant are possible tensions between long-time residents and newcomers, and the lack of activities for wives of project workers. A major problem in human services is likely to be medical care, getting enough doctors for increased population. Traffic is often a problem, and added housing puts large demands on the water and sewer systems.

Fiscal Impacts

Revenues from energy developments are generally sufficient--in the long-run and at the regional level--to offset induced costs. However, for the individual community, there are problems of timing and geographic distribution of revenues:

- Revenues may appear too late. The taxes imposed on the energy project come in after the project is completed. Where is the city or county to get money to solve problems which are there now?
- Revenues may be distributed without regard to need. The taxes on the plant usually go to the county (and the state), while the major impacts are in the cities where the people live. The cities may get no tax money at all from the energy project. Or the project may be in one county, while the community where workers live is across the county (or even state) line. How can tax revenues line up with needed expenditures?"

Gilmore (1976) analyzes boom-town conditions and offers some suggestions.

The specific impacts of boom-town conditions in Campbell County and the City of Gillette follow.

CHANGES IN EMPLOYMENT, INCOME, AND POPULATION

EMPLOYMENT AND INCOME

Table 2 shows the projected employment for the Pronghorn mine from 1978 through 2001. During 1978 and 1979 construction employment is estimated to be 50 and 70 workers, respectively. Details of the construction work force are shown in table 3. Approximately 30 percent of this work force can be expected to be generated in Wyoming (Gladstone Associates, 1976, p. 25).

Permanent mine employment will begin during 1979 and continue through 2001 (table 2). An estimated maximum of 293 workers will be employed at the Pronghorn mine. Table 2 contains an estimate of the other (secondary or non-base) employment that will be created as a result of the mining operation. An estimated maximum of 450 new jobs will be created as secondary employment in addition to employment at the mine (table 2).

Employment and income figures for 1970 are given in FES 74-55 (v. V, p. C-75 through C-145). Recent data show a marked increase since 1970 in employment levels and income due to inflation and the rapid increase in the number of skilled construction and mine workers. Between 1960 and 1975, the number of employees in Campbell County rose by 6,740--an average annual increase of 12.3 percent (Lawler, 1976, p. 1). From October 31, 1976 to October 31, 1977, the county's labor force increased from 8,591 to 11,073--an annual rate of 29 percent (Employment Security Commission of Wyoming, December 1977). This abnormally high rate of increase further underscores "boom-town" conditions.

Table 2.--Estimated employment and population by year, for the Pronghorn mining operation, 1978-2001.

(Source: Task Force for Environmental Impact Statement, Pronghorn mine in consultation with Denver Research Institute.)

	Year									
	1978	1979	1980	1981	1982	1983-84 ⁵	1985-95 ⁵	1996-99 ⁵	2000	2001
Construction employment at mine ¹	50	70	--	--	--	--	--	--	--	--
Multiplier effect on other (secondary or nonbase) employment ²	1.2	1.2	--	--	--	--	--	--	--	--
Other related (secondary or nonbase) employment	60	84	--	--	--	--	--	--	--	--
Total employment related to mining construction	110	154								
Permanent mining employment ³	0	149	226	251	251	270	279	293	293	231
Multiplier effect on other (secondary or nonbase) employment ²	2.4	2.4	2.4	2.2	2.2	2.1	2.0	1.9	1.9	1.9
Other related (secondary or nonbase) employment	0	358	542	552	552	567	558	557	557	439
Total employment related to permanent mine operation	0	507	768	803	803	837	837	850	850	670
Total employment	110	661	768	803	803	837	837	850	850	670
Total population increase ⁴	250	1500	1743	1823	1823	1902	1900	1930	1930	1521

¹Construction employment is based on an annual average calculated from data supplied by the mining company.

²Multipliers used to determine other related (secondary or non-base) employment are greater than those often used in Wyoming, especially for the years 1978-80. General growth in the area has outstripped growth in the service sector. The multiplier of 2.4 represents the rapid service growth and the additional secondary growth that results as this portion of the economy catches up with growth. By the 1990's, Gillette will have become a regional trade center and will capture some of the trade now going to other trade centers. Hence, multipliers of 2.0 and 1.9 were used.

³Data supplied by the mining company.

⁴Calculated using an assumed labor participation rate of 0.44 (jobs held per resident). This rate is higher than regional and national norms because of the greater percentage of: (1) working wives, (2) low unemployment rate, and (3) workers with families that are nonresidents of Campbell County.

⁵Average values.

Table 3.--Pronghorn mine construction work force schedule
(Data supplied by the mining company.)

Construction Task	1978								1979										
	Quarters																		
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Construction Starts																			
Coal Loading Starts																			
Coal Handling Facility	10	30	50	55	60	60	60	60	60	60	60	60	60	60	55	50	45	30	60
Shop, Office, Warehouse										10	15	20	20	15	10				20
Shovels, Construction		10	15	15															15
Trucks, Construction	10	16	16	16	12	10													16
Pre-strip							30	35	35	35	35	35	30						35
Railroad Construction												15	20	20	20	20	10		20
County Road Relocation					6	6	6												6
Power Line Relocation									6	6									6
Totals																			178

CT

Unemployment in Campbell County during September 1977 was 2.2 percent and was lower than the State and national averages of 2.8 and 6.9 percent (seasonally adjusted), respectively. Projected total employment in Campbell County exclusive of the Pronghorn mine is shown for the period 1976 to 1990 in table 4; total employment including the Pronghorn mine is shown in table 5. Footnotes for these tables are contained in table 6. About 20 percent of those employed in Campbell County are expected to reside outside the county (Moore and others, 1977). The proposed Pronghorn mine will create an estimated average of 4 percent of the projected total employment in Campbell County after 1983, when the mine achieves full coal production.

By regional standards, wages in Campbell County are high. Mine wages averaged \$19,700 per year in 1977 dollars; all other occupations combined averaged \$14,400 per year (oral communication, Wyoming Department of Employment Statistics, 1977). Assuming an average salary of \$19,700 per year in 1977 and inflation adjustments of 5 percent per year, the payroll associated with permanent mine employment is estimated to be \$7,128,000 in 1983, when full employment occurs. Assuming an average salary of \$14,000 per year in 1977 and inflation adjustments of 5 percent per year, the payroll associated with other employment caused by the Pronghorn mine is estimated to be \$10,940,000 in 1983.

New tax revenues will come from wage expenditures and personal property of the employees and the local purchases required for mine construction and operation. The income for local government generated by this mining operation will create significant positive changes that will benefit the local economy.

Table 4.--Projections of employment in Campbell County, Wyoming, without the Pronghorn mine.

(All values are based on the number of workers expected to reside in the county. Assumptions used are given in Appendix B. Table and appendix are from Moore and others, 1977.)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<u>Permanent basic employment¹</u>														
Coal mining and related industry														
Existing developments or firm proposals ²	1,200	1,540	2,190	2,810	3,260	3,900	4,130	4,370	4,580	4,680	4,780	4,820	4,880	4,910
Moderately firm developments ³	--	--	--	--	100	150	200	300	380	390	410	420	420	420
Additional contemplated developments throughout the county ⁴	--	--	--	--	--	210	210	1,070	1,070	1,720	1,720	3,140	3,140	3,930
Petroleum and natural gas ⁵	1,300	1,300	1,300	1,300	1,300	1,350	1,350	1,350	1,400	1,400	1,400	1,400	1,400	1,400
Agriculture	700	700	700	650	650	650	650	650	650	650	650	650	650	650
Subtotal	3,200	3,540	4,190	4,760	5,310	6,260	6,540	7,740	8,080	8,840	8,960	10,430	10,490	11,310
<u>Coal-related construction employment</u>														
Existing developments or firm proposals ²	1,750	1,400	1,200	960	630	200	60	130	10	--	--	--	--	--
Moderately firm proposals ³	--	--	--	150	200	--	100	150	--	--	--	--	--	--
Additional contemplated developments throughout the county ⁴	--	--	--	90	170	350	700	270	530	570	1,150	320	640	--
Subtotal	1,750	1,450	1,200	1,200	1,000	550	860	550	540	570	1,150	320	640	--
<u>Permanent basic/nonbasic employment multiplier⁶</u>														
	2.4	2.4	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
<u>Construction basic/nonbasic employment multiplier</u>														
	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	--
<u>Nonbasic employment</u>														
	9,780	10,236	11,940	12,298	13,332	14,927	15,928	18,270	18,986	20,691	21,593	23,914	24,398	25,498
<u>Total employment</u>	14,730	15,226	17,550	18,488	19,892	21,987	23,598	26,787	27,886	30,381	31,983	34,944	35,808	37,088

Table 5.--Projections of employment in Campbell County, Wyoming, with the Pronghorn mine.

(All values are based on the number of workers expected to reside in the county. Assumptions used are given in Appendix B. Table and appendix are from Moore and others, 1977.)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<u>Permanent basic employment¹</u>														
Coal mining and related industry														
Proposed Pronghorn Mine	--	--	150	230	250	250	270	270	280	280	280	280	280	280
Existing developments or firm proposals ²	1,200	1,540	2,190	2,810	3,260	3,900	4,130	4,370	4,580	4,680	4,780	4,820	4,880	4,910
Moderately firm developments ³	--	--	--	--	100	150	200	300	380	390	410	420	420	420
Additional contemplated developments throughout the county ⁴	--	--	--	--	--	210	210	1,070	1,070	1,720	1,720	3,140	3,140	3,930
Petroleum and natural gas ⁵	1,300	1,300	1,300	1,300	1,300	1,350	1,350	1,350	1,400	1,400	1,400	1,400	1,400	1,400
Agriculture	700	700	700	650	650	650	650	650	650	650	650	650	650	650
Subtotal	3,200	3,540	4,340	4,990	5,560	6,510	6,810	7,990	8,360	9,120	9,240	10,710	10,770	11,590
<u>Coal-related construction employment</u>														
Proposed Pronghorn Mine	--	50	70	--	--	--	60	130	10	--	--	--	--	--
Existing developments or firm proposals ²	1,750	1,400	1,200	960	630	200	100	150	--	--	--	--	--	--
Moderately firm proposals ³	--	--	--	150	200	--	700	270	530	570	1,150	320	640	--
Additional contemplated developments throughout the county ⁴	--	--	--	90	170	350	860	550	540	570	1,150	320	640	--
Subtotal	1,750	1,490	1,270	1,200	1,000	550	--	--	--	--	--	--	--	--
<u>Permanent basic/nonbasic employment multiplier⁶</u>														
	2.4	2.4	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
<u>Construction basic/nonbasic employment multiplier</u>														
	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	--
<u>Nonbasic employment</u>														
	9,780	10,280	11,940	12,300	13,430	14,930	15,930	18,180	18,990	20,690	21,590	23,910	24,400	25,500
<u>Total employment</u>	14,730	15,310	17,550	18,490	19,990	21,990	23,600	26,720	27,990	30,380	31,980	34,940	35,810	37,090

Table 6. Footnotes to tables 4 and 5

^{1/} Basic/nonbasic industries--According to Tiebout (1962), sectors of the economy that are producing goods and services for export outside of the area are referred to as "basic" industries (e.g., agriculture, mining). Likewise, those industries whose goods and services are primarily for use within the area are referred to as "nonbasic" or population serving employment. Economic activity in the basic sector supports the local economy as employees of basic industries purchase goods and services locally. Thus, employment in the local service sector is likely to increase as basic employment increases. This relationship can be expressed as a basic/nonbasic employment multiplier.

²Includes employment figures for AMAX's Belle Ayre and Eagle Butte Mines, ARCO's Black Thunder and Coal Creek Mines, Black Hills PP&L Wyodak Mine, Carter's Caballo and North Rawhide Mines, El Paso and Western Fuels' Thunderbird Mine, Gulf's Wildcat Creek Mine, Kerr McGee's East Gillette, East Gillette #16, and Jacobs Ranch Mines, Peabody's North Antelope and Rochelle Mines, Shell's Buckskin Mine, Sun Oil's Cordero Mine, PP&L's Wyodak Power Plant, and the Burlington Northern Rail Line.

³Includes employment figures for Gulf's Norfolk Mine and NERCO's (PP&L) Antelope Mine.

⁴Source: Moore and others, 1977, based on data from BLM (Casper Office). BLM estimates of "Contemplated Development" (development in addition to presently announced leases and lease intentions) were reduced by 40 percent to allow for potential time slippage and other development uncertainties. Construction figures assume a 2-year construction period and an average of 14 workers in year one and 28 in year two per ton of new production capacity. (These are rough estimates based on examination of present production and employment figures from the Campbell County Chamber of Commerce. Actual figures vary greatly from mine to mine.) Permanent figures assume 34.46 workers per tons per year of production (average productivity in Campbell County for 1978, based on projections made by the Campbell County Chamber of Commerce).

⁵While oil and gas production is expected to decrease slowly over the years, employment should increase slightly due to increased exploration activities.

⁶Multipliers for 1977-79 are inflated to reflect the high level of activity in the county.

Source: Campbell County Chamber of Commerce, 1977; Gladstone Associates, 1976; and interview with Jack Seeley, BLM (Casper office).

Gillette had the third highest cost of living in Wyoming during January 1978, being 8.8 percent more expensive than the average cost of living for 23 representative municipalities in Wyoming (State of Wyoming, 1978). Housing and medical expenses affected local residents most severely. The housing cost index for Gillette was 132.96, 33 percent and 15 percent more expensive than Cheyenne, Wyoming, and Denver, Colorado, respectively; the cost of medical care was 30 percent and 16 percent more expensive than Cheyenne and Denver, respectively.

POPULATION

Table 2 also shows the total estimated population increase that would result from the development of the Pronghorn mine--about 1900 people. An estimated 98 percent of these people will reside in Campbell County (Moore and others, 1977, p. C-5). Of the total population (64,000) projected for Campbell County in 1990, an estimated 3 percent will be the result of the Pronghorn mine.

SOCIAL AND CULTURAL IMPACTS

ATTITUDES AND VALUES

Traditional regional agrarian attitudes and values common in northeastern Wyoming are being altered by attitudes and values related to the process of industrialization. The potential for conflicts between the two sets of attitudes and values is great. In June 1977, a Citizens Policy Survey was conducted by the Gillette/Campbell County of Planning and Development. Portions of this survey are in appendix A. The findings of this survey provide the most current information on local attitudes and values.

Land use

The people of northeastern Wyoming historically have been opposed to land use planning. However, they are concerned about the future growth of urban areas. Campbell, Converse, and Sheridan Counties have prepared or are preparing needs surveys, interim concept plans, and general comprehensive plans indicating some support for evaluation of land use and possible controls.

There are indications of change in traditional attitudes toward specific land uses. For example, 44 percent of the respondents to the Policy Survey expressed concern about damage to the environment; only 15 percent were not concerned (appendix A). The survey also found that 79 percent of the respondents agreed or strongly agreed with the statement that zoning can protect property values and properly guide community development, if enforced.

Government and its entities

The tradition in eastern Wyoming has been to consider government, especially the Federal government, as a threat to individualism and self-determination. Local government, especially city and county, is somewhat more widely accepted and relied on.

The Policy Survey (appendix A) indicates attitudes concerning various city and county services. Services provided in Campbell County which received the lowest ratings include county road maintenance and traffic control. The services or improvements in the City of Gillette which received the lowest ratings by its residents include water quality, street maintenance, and storm drainage. Medical services received the lowest rating of those services provided to both city and county residents with only 5.8 percent of the respondents indicating that they are presently adequate. Twenty-two percent of the respondents said that they either agree or strongly agree with the statement that city government is doing a good job in solving problems associated with rapid growth; 56.7 percent indicated that they disagreed or strongly disagreed. A similar statement

saying that county government is doing a good job in solving problems associated with rapid growth yielded 27.9 percent agreeing and 43.5 percent disagreeing.

Area development and growth

The majority of the people responding to the Policy Survey (appendix A) felt that rapid population growth is not good for the county; on the other hand, 75 percent felt that industrial development is good for the county--indicating a general ambivalence towards growth. The ambivalence arises out of a concern for the consequences of development. The longtime residents generally worry that growth may destroy their small-town atmosphere (Thompson and others). There also are indications that most feel growth and development is inevitable.

Outside influences and people

No area-wide indicators of attitudes toward outside influences and people are known, other than those discussed concerning the Federal government. A survey of residents of Rock Springs in western Wyoming indicates attitudes in Wyoming towards outsiders or newcomers (Old West Regional Commission, 1975): the results indicate virtually no non-work contacts between longtime residents and newcomers, and also indicate that, newcomers are viewed as transients interested in "entertainment" with a greater tendency to engage in criminal and other socially unacceptable acts.

This indicates how polarization based upon misunderstandings within a community can develop. The criticisms are moderated by the recognition that the undersirables are a minority. In general, outsiders are often characterized negatively by the residents of rural communities. The persons who are so characterized are usually involved in construction or new mining activities rather than traditional agriculturally-related jobs.

Summary

Conflicts in Campbell County exist between (1) traditional rural agrarian attitudes and values and the newer urban industrial attitudes and values; and (2) the individual's personal freedoms, values, and attitudes, and the needs, values, and attitudes of the community. Area residents generally seem to want the benefits that mining and development can bring, but they do not want the associated loss of lifestyle and social costs. Some of the citizenry are apparently concerned about specific issues and are wary of government but also are aware that there is no turning back and that the problems must be dealt with through planning and citizen involvement.

PSYCHOLOGICAL IMPACTS

Boom-town conditions also cause psychological impacts manifested by alcohol and drug abuse, single-car accidents, absenteeism from work, divorce, delinquency, mental depression, and wife and child abuse. For example, the 1975 divorce rate in Campbell County was 42 percent higher than the State average, and the 1977 county child abuse case load was the highest in the State (Dr. R. Weisz, Northern Wyoming Mental Health Center, personal communication, November 1977). However, the 1975 divorce rate per 1000 population in Campbell County is estimated to be 7.1 by the Gillette City Government, while the State rate is estimated to be 7.3 (Alan, O'Hashi, Administrative Assistant, oral communication, March 28, 1978). Higher mental health hospital admission rates apparently correlate with those Americans who have migrated into one State from another (Locke and Duvall, 1961). About 70 percent of the construction workers in Campbell County migrated from other States.

The importance of human communication and interaction to mental health has long been accepted. Most new migrants to Campbell County tend to be temporarily isolated from the general community, but isolation tends to severely affect families of construction worker and of some mining workers who settle in mobile home parks.

Boom towns are often not good places for wives. The wives of construction workers are mostly living in "aluminum ghettos" on the fringe of urban settlement. There are few jobs for women in construction work, and the support jobs don't increase as fast as the population. Activities--educational, social and cultural--are limited, and there may be "cultural shock" for those who moved from large urban centers. Schools may be crowded and recreation limited for their children. (Department of Housing and Urban Development, 1976, p. 25).

The lack of local public transportation and inadequate mass transportation to regional trade centers also furthers family isolation.

Boom-town conditions also make it difficult to obtain local services. For example, during 1976 there were 163 percent more people per physician in Campbell County than the State average.

Children have also been affected. A campaign is presently underway in Campbell County for residents to assist social workers in identifying potential child abuse cases. (Gillette News-Record, Mar. 31, 1978.) Many children have moved from school system to school system as their parents have moved from job to job. This factor can lead to poor school adjustment, truancy, and delinquency. The Gillette Chief of Police has noted an extremely high rate of runaways in 1977 (Gillette News-Record, Feb. 7, 1978.)

Presently help is available in Campbell County for mental health problems. Since 1967, the Campbell County Office of the Northern Wyoming Mental Health Center has been helping people and working with the community to improve the mental health climate. The center is presently staffed by four full-time health clinicians.¹ The coordinator for the center feels that the center needs three or four additional mental health clinicians, particularly in the area of crisis intervention (Dr. R. Weisz, personal communication, November 1977).

1 A clinician has a masters degree or a higher degree in one of the mental health disciplines.

CHANGING LIFE STYLES

One of the most significant social impacts will be the alienation suffered by the newcomers to the community. Newcomers may find it difficult to fit into the established patterns of activity and the lifestyles of the long-time residents. Many newcomers may dislike the isolation, the lack of services and culture, and the unfriendliness of some of the long-term residents. Many of the long-term residents will find population growth and associated change disturbingly different from the small agricultural community life style familiar to them. Those who enjoy outdoor recreation involving solitude may find opportunities increasingly limited. If service industries (including professional services such as doctors), schools, and recreational opportunities do not keep pace with base industry growth, social difficulties will be magnified.

Approval of the proposed Pronghorn mine will add to the cumulative impacts on local lifestyles.

Cultural diversity

Until recently, the communities of eastern Wyoming have been marked by cultural homogeneity. Although there was some diversity between communities, all communities have had a common rural-agrarian theme. Cultural diversity is currently being created in eastern Wyoming by new residents and a growing tourism industry. This diversity is particularly evident in the boom-town atmosphere of Gillette which tends to be characterized by few friendships, and a lack of religious ties and social bonds between newcomers and long-time residents.

Cultural diversity is increasing in Campbell County and the resulting impacts extend beyond the community. Changing life styles, attitudes, and values and the conflicts therein can be reflected in lower worker productivity. In a study by Gilmore (1976), it was noted that coal output per worker declined 25 to 40 percent in Rock Springs, Wyoming, between 1972 and 1974; largely because of the drop in worker productivity. New value positions and new leadership structures may have to emerge if the concensus and cooperation needed to attack community problems, such as acceptance of cultural diversity (Bell, 1968).

Old-timers and newcomers

Table 7 shows the change in the employment in Campbell County from 1960 through 1976. In 1960 agriculture was the major type of work accounting for 43 percent of the employment; mining was fourth, accounting for only 10 percent of the employment. By 1976 agriculture had slipped to 13 percent of the employment and mining had jumped to first place with 23 percent of the employment. It is anticipated that this trend will continue to accelerate during the remainder of the century.

Campbell County residents can be separated into two basic residency groups; old-timers and newcomers. Old-timers tend to be rural and agrarian. Newcomers tend to be less rural and therefore tend to settle in or near Gillette rather than in the county.

It is possible to distinguish some of the differences and similarities between the two groups by analyzing data collected by the Wyoming Services Project of the University of Wyoming in 1976 (Campbell County Parks and Recreation Department Citizen Survey). The study

Table 7--Distribution of total employment in Campbell County by sector

	Percent of Total						
	1960	1971	1972	1973	1974	1975	1976
Agriculture	43	20	18	17	16	13	13
Mining and energy development	10	22	23	22	25	22	23
Construction	2	7	12	12	11	17	16
Transportation, communication, utilities	3	8	6	6	7	7	7
Trade	21	24	21	22	22	21	22
Services	3	9	9	10	11	11	11
Government	17	9	10	10	9	8	8
Total ¹	100	100	100	100	100	100	100

¹Due to rounding, figures may not total exactly 100 percent.

Source: Employment Security Commission of Wyoming, Wolford, personal communication, 1977.

generally indicates that newcomers tend to be younger and have a lower unemployment rate than their old-timer counterparts in Gillette. More newcomers live in mobile homes than do old-timers. The two groups have similarities in terms of their basic geographic backgrounds, and in their racial and religious homogeneity. Both groups have a similar family size and male/female ratio, work about the same average hours per week, and have high average incomes relative to the rest of the State or country.

Regardless of the Federal action taken on the proposed Pronghorn mining and reclamation plan, the conflict of life styles between newcomers and old-timers is expected to continue, although the influence of the old-timers will be weakened as more newcomers become active in local government and the community.

Recreation

Increased population and accompanying increases in recreation participation will alter the traditional recreation experiences of the area. Residents who in the past were essentially free to roam where they pleased, may find such opportunities restricted. A combination of more people competing for the available recreation resources and more people in urban areas will substantially increase the demand for parks, recreation facilities, and programs in the urban setting of Gillette.

LOCAL GOVERNMENT

Annual population growth rates in excess of 5 percent strain the capacity of local facilities and services supplied by public and private sectors of the local economy; however, impacts are apt to be acute in the public sector because local government is subject to more stringent procedural and financial constraints. Both sectors often face critical capital, labor, and time constraints.

The increased use of local facilities and services, such as streets, water supply, sewers, and police and fire protection, has stressed local government and its planning function. In 1982 when the proposed mine would achieve full production it would account for about 11 percent of the increase in county population above the 1977 level. The mine would be expected to similarly increase the cumulative impact upon local government.

"BOOM-TOWN" FINANCIAL ANALYSIS

The University of Denver Research Institute (Moore and others, 1977), under contract to the Geological Survey, recently studied the fiscal impacts of the proposed Pronghorn mine upon Campbell County, Campbell County School District No. 2, and the City of Gillette.¹ The introduction of large-scale resource developments into relatively isolated communities frequently has dramatic impacts, both positive and negative, on local finance. Over the long run, coal mines and

¹Copies of this report are available upon written request to the U.S. Geological Survey, 760 National Center, Reston, Va. 22092.

similar developments may generate ample new revenues for counties, school districts and cities. However, serious near-term financial problems may occur in the county, including:

- o Cash flow difficulties, where needs for new capital and operating expenditures arrive far more rapidly than new revenue receipts;
- o Mismatches between those jurisdictions receiving new revenues and those that need to increase expenditures to accommodate new residents; and
- o difficulty in borrowing, due primarily to either uncertainty concerning the timing or duration of the new development or to statutory limitations.

The Denver Research Institute provided relatively detailed projections of financial variables through 1990. A computer model was used to project revenues by source, and expenditures by function for the City of Gillette, Campbell County (including special districts within the county), and the Campbell County School District. It should be noted that fiscal impacts of a new mine are at least as dependent on the aggregate profile of all new development and on the local revenue structure as they are on the economic characteristics of the proposed mine being analyzed.

Because of the complexity of this type of public finance analysis, the results are only "indicators" and are presented to illustrate potential areas of fiscal impact--both adverse and beneficial. In particular, the results illustrate Campbell County's unique financial position arising from the substantial increase in mining activity that will add to the

county tax base. The City of Gillette will not share directly in increased tax revenues except for local sales and property taxes, but it will incur most of the cost of providing public services for the resultant population increase.

The increase in tax revenues will come mainly from three mineral taxes:

- o Mineral leasing royalties. The State will receive 50 percent of the Federal mineral royalties from the project, or roughly \$1.3 million per year after the mine enters full production. A 7.5 percent share of these funds (3.75 percent of the total lease royalties) goes to municipalities, and a 2.25 percent share goes to counties. Other distributions include State highway work in counties affected by resource development--2.25 percent, the school foundation program 37.5 percent, the State highway fund 26.25 percent, capital outlays for higher education 6.75 percent, and public schools capital construction 4 percent.
- o Severance taxes. The State will receive 8.5 percent of the value of gross products extracted from the mine, or an estimated \$210,000 per year after the mine enters full production in 1981. This figure could be higher if the additional coal privilege tax (1.6 percent for 1978) is still in effect. This 8.5 percent is allocated for the state general fund (2 percent), the permanent trust fund (2.5 percent), the water development account (1.5 percent), a capital facilities and roads fund (1.5 percent), and the state highway fund (1 percent).

- o Ad valorem revenues to the school equalization fund. Three and one quarter mills of property taxes are presently collected in Campbell County for the state school equalization fund. Because of its high assessed valuation per pupil, Campbell County School District No. 1 is not able to receive state school equalization funds. The equalization levy is determined annually by the state and can vary from zero to six mills. By fiscal year 1982, the proposed mine will generate roughly \$90,000 per year for the equalization fund.

In the public-finance analysis the assessed value of mined coal is assumed to be the valuation of present production at \$5.25 per ton. Another assumption is the timing of the mine startups. The schedule used in the analysis is based on best current information. The precise magnitude of the impacts of each new proposed mine is sensitive to the timing of new employment increases relative to the timing of the overall population growth in the area.

Table 8 summarizes the projected financial positions of public entities in Campbell County with and without the proposed mine. The Pronghorn mine's impact is slightly beneficial for the City of Gillette, largely neutral for the county, and slightly adverse for the school district.

Of more significance are the aggregate impacts of all likely new resource developments in the county. These impacts are very beneficial for the county and the school district but very adverse between now and 1983 for the city.

Table 8.--Net fiscal impacts of the proposed Pronghorn mine

(Data are in thousands of dollars. Parenthesis indicate negative value. Assumptions and methodology used are given in Appendix C. Table and appendix are from Moore and others, 1977.)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<u>City of Gillette</u>														
Total surplus or deficit with the proposed mine	1,070	(30,760)	(2,730)	(130)	830	(720)	6,350	6,920	6,660	5,800	9,900	11,050	12,270	12,790
Total surplus or deficit without the proposed mine	1,070	(10,270)	(22,930)	120	1,500	(2,130)	490	6,240	6,020	8,890	6,260	9,900	11,610	12,160
Net impact	0	(20,490)	20,200	(250)	(2,330)	1,410	4,860	680	640	(3,090)	3,640	1,150	660	620
<u>Campbell County</u>														
Total surplus or deficit with the proposed mine	1,870	1,130	1,650	4,390	6,730	7,600	9,490	12,030	12,510	14,510	16,000	17,970	18,920	23,210
Total surplus or deficit without the proposed mine	1,870	1,150	3,480	2,880	6,910	8,560	8,030	12,060	11,870	14,890	15,190	17,960	18,390	22,910
Net impact	0	(20)	1,830	1,510	(180)	(960)	1,460	(30)	640	(380)	810	10	530	300
<u>Campbell County School District No. 1</u>														
Total surplus or deficit with the proposed mine	4,190	640	1,480	6,220	13,310	12,510	17,410	20,050	24,550	28,900	32,400	32,170	37,930	46,980
Total surplus or deficit without the proposed mine	4,190	650	3,860	7,720	13,920	13,720	17,310	20,880	25,030	29,110	32,850	32,820	38,530	47,610
Net impact	0	(10)	(2,380)	(1,500)	(610)	(1,210)	100	(830)	(480)	(210)	(450)	(650)	(600)	(630)

Note: The net impact figure is the extent to which the proposed mine would improve or worsen the fiscal balance. Net impact is determined by subtracting the total surplus or deficit without the proposed mine from the total surplus or deficit with the proposed mine. For example: the City of Gillette's 1980 fiscal status would be a \$130,000 deficit with the proposed mine. Therefore, the net impact with the mine would be a loss of \$250,000.

Impacts on Campbell County and its special districts

By far the largest revenue source for Campbell County is ad valorem taxes¹. The county presently benefits from over \$300 million in oil- and gas-related assessed valuation. It is just beginning to receive what should become an even larger coal-related valuation. In addition to its traditional services, this countywide valuation is used to support two major special districts--a hospital district and a recreation district.

Table 9 provides projections of revenues and expenditure needs for the county without the proposed mine. Neither the county nor its districts should have any difficulty in accommodating the anticipated population growth if the Pronghorn mine is not developed. Assuming the county does not lower its mill levy (it appears the commissioners will have the opportunity to lower the levy), total ad valorem revenues including special districts could grow from \$4 million in 1977 to \$9 million by 1980 and \$28 million by 1990. Should the commissioners wish to do so, they could pay for all required capital improvements in the years they are needed without incurring any bonded indebtedness and without increasing the mill levy.

Table 10 provides comparable projections with the proposed mine. The projections show little change in the county's financial position. The major difference is that some new capital outlays are required a year earlier to accommodate the more rapid population growth.

¹ A tax levied as a fixed percentage of the value of property, goods, or services.

Table 9.--Projections of revenues and expenditure needs without the proposed Pronghorn mine, Campbell County

(All data except population are in thousands of dollars. Assumptions and methodology used are given in Appendix C. Table and appendix are from Moore and others, 1977.)

Campbell County	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Population	20,811	25,223	25,885	30,193	32,466	33,399	38,078	41,074	46,669	48,016	52,206	54,681	59,553	61,040
Operating revenues														
Ad valorem--general fund	1,510	1,970	2,550	3,130	3,730	4,210	4,670	5,680	5,910	6,780	7,210	7,620	8,130	9,370
Ad valorem--special funds	1,760	2,300	2,990	3,670	4,360	4,930	5,470	6,650	6,930	7,940	8,440	8,920	9,520	10,980
Sales, cigarettes and gas	870	1,110	1,190	1,390	1,490	1,540	1,750	1,890	2,150	2,210	2,400	2,520	2,740	2,810
Royalties	150	210	360	550	720	870	1,000	1,300	1,360	1,620	1,740	1,860	2,000	2,380
Federal revenue sharing	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Fees and miscellaneous	220	250	260	300	320	330	380	410	470	480	520	550	600	610
Interest--general fund	110	110	110	110	110	110	110	110	110	110	110	110	110	110
Total--operating revenue	4,680	6,010	7,520	9,210	10,790	12,050	13,440	16,100	16,990	19,200	20,480	21,640	23,160	26,320
Operating expenditures														
General administrative	930	1,050	1,070	1,190	1,250	1,280	1,400	1,470	1,610	1,640	1,740	1,800	1,910	1,940
Sheriff	310	370	380	440	480	500	560	610	680	700	770	790	870	890
Fire	150	190	200	230	250	260	570	620	700	720	780	820	890	920
Health and hospital	1,110	1,390	1,420	1,660	1,790	1,840	2,090	2,260	2,570	2,640	2,870	3,010	3,280	3,360
Roads and bridges	1,070	1,240	1,260	1,420	1,530	1,590	1,740	1,870	2,070	2,130	2,290	2,380	2,570	2,630
Welfare	230	250	250	270	280	280	300	310	330	340	360	370	380	390
Recreation	320	400	410	480	520	530	610	660	750	770	840	870	950	980
Miscellaneous and library	300	340	350	390	420	430	470	500	560	570	610	640	690	700
Total--operating expenditures	4,420	5,230	5,340	6,080	6,520	6,710	7,740	8,300	9,270	9,510	10,260	10,680	11,540	11,810
Surplus/deficit	260	780	2,180	3,130	4,270	5,340	5,700	7,800	7,720	9,690	10,220	10,960	11,620	14,510
Capital revenues														
Ad valorem--capital	1,210	1,580	2,050	2,520	3,000	3,390	3,760	4,570	4,760	5,450	5,800	6,130	6,540	7,540
Federal revenue sharing and miscellaneous	400	400	400	400	940	940	940	940	940	940	940	940	940	940
Total--capital revenues	1,610	1,980	2,450	2,920	3,940	4,330	4,700	5,510	5,700	6,390	6,740	7,070	7,480	8,480
Capital expenditures														
Administration	130	0	0	100	0	0	0	0	0	0	110	0	0	0
Sheriff and fire	110	10	10	180	0	10	190	10	10	0	90	10	90	10
Health and welfare	1,180	20	0	800	0	0	0	0	0	0	0	0	220	0
Roads and bridges	610	0	0	50	0	0	400	0	400	0	400	0	400	0
Library and recreation	110	270	0	930	0	0	680	0	0	0	50	0	0	0
Total--capital expenditures	2,140	300	10	2,060	0	10	1,270	10	410	0	650	10	710	10
Capital debt service	0	1,310	1,140	1,110	1,300	1,100	1,100	1,240	1,140	1,190	1,120	60	0	70
Capital cash outlays	0	300	10	2,060	0	10	1,270	10	410	0	650	10	710	10
Total--capital outlays	0	1,610	1,150	3,170	1,300	1,110	2,370	1,250	1,550	1,190	1,770	70	710	80
Surplus/deficit	-530	370	1,300	-250	2,640	3,220	2,330	4,260	4,150	5,200	4,970	7,000	6,770	8,400
Total surplus/deficit	1,870	1,150	3,480	2,880	6,910	8,560	8,030	12,060	11,870	14,890	15,190	17,960	18,390	22,910

Table 10.--Projections of revenues and expenditure needs with the proposed Pronghorn mine, Campbell County

(All data except population are in thousands of dollars. Assumptions and methodology used are given in Appendix C. Table and appendix are from Moore and others, 1977.)

Campbell County	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Population	20,811	25,322	26,233	31,676	34,347	35,435	40,270	43,482	48,947	50,726	54,653	57,178	62,166	63,694
Operating revenues														
Ad valorem--general fund	1,510	1,970	2,550	3,150	3,790	4,320	4,810	5,830	6,060	6,930	7,350	7,770	8,280	9,520
Ad valorem--special funds	1,760	2,300	2,990	3,680	4,440	5,060	5,640	6,830	7,100	8,120	8,610	9,090	9,700	11,150
Sales, cigarettes and gas	870	1,110	1,210	1,460	1,580	1,630	1,850	2,000	2,250	2,330	2,510	2,630	2,860	2,930
Royalties	150	210	370	550	740	900	1,040	1,340	1,400	1,660	1,780	1,900	2,040	2,420
Federal revenue sharing	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Fees and miscellaneous	220	250	260	320	340	350	400	430	490	510	550	570	620	640
Interest--general fund	110	110	110	110	110	110	110	110	110	110	110	110	110	110
Total--operating revenue	4,680	6,010	7,550	9,330	11,060	12,430	13,910	16,600	17,470	19,720	20,970	22,130	23,670	26,830
Operating expenditures														
General administrative	930	1,050	1,080	1,230	1,300	1,330	1,450	1,530	1,670	1,710	1,800	1,860	1,970	2,000
Sheriff	310	370	380	450	500	520	580	640	700	730	790	820	890	910
Fire	150	190	200	250	270	530	600	650	730	760	820	860	930	960
Health and hospital	1,110	1,390	1,440	1,740	1,890	1,950	2,210	2,390	2,690	2,790	3,010	3,140	3,420	3,500
Roads and bridges	1,070	1,240	1,270	1,470	1,590	1,640	1,800	1,950	2,130	2,210	2,370	2,450	2,640	2,780
Welfare	230	250	250	270	280	290	310	320	340	350	370	380	400	400
Recreation	320	410	420	510	550	570	640	700	780	810	870	910	990	1,020
Miscellaneous and library	300	350	350	410	440	450	490	530	580	600	640	660	710	730
Total--operating expenditures	4,420	5,250	5,390	6,330	6,820	7,280	8,080	8,710	9,620	9,960	10,670	11,080	11,950	12,220
Surplus/deficit	260	760	2,160	3,000	4,240	5,150	5,830	7,890	7,850	9,760	10,300	11,050	11,720	14,610
Capital revenues														
Ad valorem--capital	1,210	1,580	2,050	2,530	3,050	3,470	3,870	4,690	4,870	5,570	5,910	6,250	6,660	7,660
Federal revenue sharing and miscellaneous	400	400	400	400	980	980	980	980	980	980	980	980	980	980
Total--capital revenues	1,610	1,980	2,450	2,930	4,030	4,450	4,850	5,670	5,850	6,550	6,890	7,230	7,640	8,640
Capital expenditures														
Administration	130	0	0	100	0	0	0	0	0	110	0	0	0	0
Sheriff and fire	110	10	180	10	10	180	10	10	10	90	10	90	10	0
Health and welfare	1,180	20	800	0	0	0	0	0	0	0	0	220	0	0
Roads and bridges	610	0	0	50	400	0	0	400	0	400	0	0	400	0
Library and recreation	110	270	840	90	0	680	0	0	0	50	0	0	0	0
Total--capital expenditures	2,140	300	1,820	250	410	860	10	410	10	650	10	310	410	0
Capital debt service	0	1,310	1,140	1,290	1,130	1,140	1,180	1,120	1,180	1,150	1,180	0	30	40
Capital cash outlays	0	300	1,820	250	410	860	10	410	10	650	10	310	410	0
Total--capital outlays	0	1,610	2,960	1,540	1,540	2,000	1,190	1,530	1,190	1,800	1,190	310	440	40
Surplus/deficit	-530	370	-510	1,390	2,490	2,450	3,660	4,140	4,660	4,750	5,700	6,920	7,200	8,600
Total surplus/deficit	1,870	1,130	1,650	4,390	6,730	7,600	9,490	12,030	12,510	14,510	16,000	17,970	18,920	23,210

Impacts on Campbell County School District No. 1

Like the county, School District No. 1 relies almost exclusively on ad valorem taxes and is in an excellent financial position. Since 1970, the district has been able to finance approximately 30 percent of its needed capital construction internally without resorting to bond issues.

Table 11 presents projections of revenues and expenditure needs for the school district without the proposed development, and shows that the district will receive far more in revenues than it will need for expenditures to accommodate new students if the Pronghorn mine is not developed.

Table 12 presents comparable projections for the school district with the proposed Pronghorn mine. The projections show the district's position will remain essentially the same with or without the Pronghorn mine. The net impact of the mine on the school district will be slightly adverse in each year because the anticipated higher-than-average number of employees per ton of coal mined results in a slightly lower-than-average increase in assessed valuation per new student.

Impacts on the City of Gillette

The City of Gillette significantly improved its financial position during 1977. It has increased its local tax base by passing a 1 percent sales tax option and by increasing utilities tap fees to a combined total of \$2,031 per new residential unit. The city received external assistance from the State's mineral trust fund. Since 1977, it also receives a share of the State's increased royalty payments from Federal leases. The Federal Government increased States' shares of royalties payments from

Table 11.--Projections of revenues and expenditure needs without the proposed Pronghorn mine, Campbell County School District No. 1.

(All data except population are in thousands of dollars. Assumptions and methodology used are given in Appendix C. Table and appendix are from Moore and others, 1977.)

Campbell County School Dist.	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Population	4,200	5,733	5,933	7,272	7,749	7,863	9,523	10,298	12,046	12,416	13,617	14,470	15,878	16,319
Operating revenues														
Ad valorem taxes	11,280	14,370	19,110	23,480	27,920	31,580	35,000	42,600	43,430	50,830	54,030	57,110	60,960	70,270
State equalization fund	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other State funds	300	450	470	610	650	670	830	910	1,080	1,120	1,240	1,330	1,470	1,510
Grants	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P.L.: 81-874	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Federal funds	50	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	850	1,150	1,190	1,450	1,550	1,570	1,900	2,060	2,410	2,480	2,720	2,890	3,180	3,260
Total operating revenues	12,480	16,330	20,770	24,540	30,120	33,820	37,730	45,570	47,830	54,430	57,990	61,330	65,610	75,040
Operating expenditures														
Instruction--operating	6,230	8,510	8,810	10,800	11,510	11,680	14,140	15,290	17,890	18,440	20,220	21,490	23,580	24,230
Transportation	630	830	860	1,030	1,090	1,110	1,320	1,420	1,650	1,700	1,850	1,970	2,150	2,210
Administration and miscellaneous	2,820	3,280	3,340	3,740	3,880	3,920	4,420	4,650	5,170	5,280	5,650	5,900	6,320	6,460
Total operating expenditures	9,680	12,620	13,010	15,570	16,480	16,710	19,880	21,360	24,710	25,420	27,720	29,360	32,050	32,900
Surplus/deficit	2,800	3,710	7,760	9,970	13,640	17,110	17,850	24,210	23,120	29,010	30,270	31,970	33,560	42,140
Capital revenues														
Ad valorem--capital	1,340	1,750	2,270	2,780	3,310	3,740	4,150	5,050	5,260	6,030	6,400	6,770	7,230	8,330
Other capital revenues	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Total capital revenues	1,390	1,800	2,320	2,830	3,360	3,790	4,200	5,100	5,310	6,080	6,450	6,820	7,280	8,380
Capital expenditures														
Capital--school	5,370	5,730	4,560	3,510	1,600	5,500	3,100	6,990	1,600	4,680	3,410	5,630	1,760	2,720
Capital--other	1,320	20	20	20	20	20	20	20	20	20	20	20	20	20
Total capital expenditures	6,690	5,750	4,580	3,530	1,620	5,520	3,120	7,010	1,620	4,700	3,430	5,650	1,780	2,740
Capital debt service	840	1,220	1,640	1,550	1,460	1,660	1,620	1,420	1,780	1,280	440	320	530	170
Capital cash outlays	0	3,640	4,580	3,530	1,620	5,520	3,120	7,010	1,620	4,700	3,430	5,650	1,780	2,740
Total capital outlays	0	4,860	6,220	5,080	3,080	7,180	4,740	8,430	3,400	5,980	3,870	5,970	2,310	2,910
Surplus/deficit	-5,300	-3,060	-3,900	-2,250	280	-3,390	-540	-3,330	1,910	100	2,580	850	4,970	5,470
Total surplus/deficit	4,190	650	3,860	7,720	13,920	13,720	17,310	20,880	25,030	29,110	32,850	32,820	38,530	47,610

Table 12.--Projections of revenues and expenditure needs with the proposed Pronghorn mine, Campbell County School District No. 1

(All data except population are in thousands of dollars. Assumptions and methodology used are given in Appendix C. Table and appendix are from Moore and others, 1977.)

Campbell County School District	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Population	4,200	5,789	6,115	7,851	8,445	8,730	10,400	11,069	12,029	13,440	14,563	15,456	16,934	17,397
Operating revenues														
Ad valorem taxes	11,280	14,740	19,140	23,570	28,410	32,370	36,090	43,700	45,430	51,950	55,130	58,210	62,070	71,380
State equalization fund	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other State funds	300	460	490	670	720	750	920	990	1,180	1,220	1,340	1,430	1,570	1,620
Grants	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P.L. 81-874	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Federal funds	50	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	850	1,160	1,220	1,570	1,690	1,750	2,080	2,210	2,610	2,690	2,910	3,090	3,390	3,480
Total operating revenues	12,480	16,360	20,850	25,810	30,820	34,870	39,090	46,900	49,220	55,860	59,380	62,730	67,030	76,480
Operating expenditures														
Instruction--operating	6,230	8,600	9,080	11,660	12,540	12,960	15,440	16,440	9,350	19,960	21,630	22,950	25,150	25,830
Transportation	630	840	880	1,100	1,180	1,220	1,440	1,520	1,780	1,830	1,980	2,090	2,290	2,350
Administration and miscellaneous	2,820	3,300	3,390	3,920	4,090	4,180	4,680	4,880	5,470	5,590	5,930	6,200	6,640	6,780
Total operating expenditures	9,680	12,740	13,350	16,680	17,810	18,360	21,560	22,840	26,600	27,380	29,540	31,240	34,080	34,960
Surplus/deficit	2,800	-3,620	7,500	9,130	13,010	16,510	17,530	24,060	22,620	28,480	29,840	31,490	32,950	41,520
Capital revenues														
Ad valorem--capital	1,340	1,750	2,270	2,790	3,370	3,840	4,280	5,180	5,390	6,160	6,530	6,900	7,360	8,460
Other capital revenues	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Total capital revenues	1,390	1,800	2,320	2,840	3,420	3,890	4,330	5,230	5,440	6,210	6,580	6,950	7,410	8,510
Capital expenditures														
Capital--school	5,370	5,960	6,650	3,980	1,600	6,220	2,680	7,840	1,640	4,490	3,570	5,910	1,850	2,850
Capital--other	1,320	20	20	20	20	20	20	20	20	20	20	20	20	20
Total capital expenditures	6,690	5,980	6,670	4,000	1,620	6,240	2,700	7,860	1,660	4,510	3,590	5,930	1,870	2,870
Capital debt service	840	1,250	1,670	1,750	1,500	1,650	1,690	1,380	1,850	1,280	430	340	560	180
Capital cash outlays	0	3,530	6,670	4,000	1,620	6,240	2,700	7,860	1,660	4,510	3,590	5,930	1,870	2,370
Total capital outlays	0	4,780	8,340	5,750	3,120	7,890	4,390	9,240	3,510	5,790	4,020	6,270	2,430	3,050
Surplus/deficit	-5,300	-2,980	-6,020	-2,910	300	-4,000	-60	-4,010	1,930	420	2,560	680	4,980	5,460
Total surplus/deficit	4,190	640	1,480	6,220	13,310	12,510	17,470	20,050	24,550	28,900	32,400	32,170	37,930	46,980

37.5 percent to 50 percent in 1976 (amendments (PL 94-579) to the Bureau of Land Management Organic Act). The State of Wyoming has determined that 7.5 percent of its share (3.25 percent of the total) will be allocated to municipalities. The funds are allocated first by giving \$10,000 to every community in Wyoming and then by prorating the remainder based on increases in energy-related school enrollment found by the annual school census (Wyoming Enrolled Act, No. 120, signed March 4, 1977).

In spite of these improvements, the city still faces serious financial difficulties. A detailed study of the city's bonding capacity implies an existing capability for no more than \$3 million in revenue bonds and virtually no general obligation bonds between now and 1985 (Lankford, 1977). (Without restructuring existing debt and creating a new data base to allow evaluation of future issues, Moore and others (1977) imply that the city is limited to much less than \$3 million in loans from the private capital market.) The city may receive, but cannot be assured of, further assistance from the State Farm Loan Board and the city-county Joint Powers Board. The future ability of the State Farm Loan Board to provide bonding depends upon the outcome of the future bond election in 1978. This is due to the Supreme Court's ruling that bonds cannot be issued that would be repaid by future State excise tax revenues unless a statewide election is held.

Table 13 projects annual city revenues from presently assured sources using present tax rates, and compares them with needs for operating and capital expenditures. The projections are made without the proposed Pronghorn mine. Assuming that once the city has used up its borrowing

capacity and must pay for the entire cost of new capital facilities in the year the facilities are needed, the city will be unable to pay for \$35 million of a needed \$58 million in new capital facilities between now and 1983.

As table 13 indicates, the critical financial period for the city is from the present to 1982. After 1982, the city's position could improve considerably. A major reason for the improvement is the city's projected share of mineral lease royalties. This improvement, however, will rely on several factors that are still somewhat uncertain. These include (1) continuation of the present formula for allocating royalties receipts, (2) lease payments of 12.5 percent of gross value on new coal leases, (3) coal values of \$5.25 per ton or higher, (4) city voters' continuing willingness to repass the optional 1 percent sales tax, and (5) the ability of the city--through Joint Powers bonds, Wyoming Community Development Authority bond pooling, or some other mechanism--to gain increased access to the public bond market.

Table 14 projects and compares available revenues and needed expenditures with the proposed Pronghorn mine. The most noticeable impact of the proposed mine on the city's needs is to move some of them forward in time. The city will be unable to pay for \$35 million of the total of \$60 million in needed capital expenditures by 1983. The magnitude of the city's problems will not change significantly. However, the problems will be made more imminent.

Table 13.--Projections of revenues and expenditure needs without the proposed Pronghorn mine, City of Gillette

(All data except population are in thousands of dollars. Assumptions and methodology used are given in Appendix C. Table and appendix are from Moore and others, 1977.)

City of Gillette	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Population	11,200	14,719	15,248	18,781	20,042	20,341	24,722	26,768	31,382	32,359	35,531	37,781	41,498	42,600
Operating revenues														
Ad valorem taxes	100	230	160	190	210	210	260	280	330	340	370	400	440	440
Sales and gas tax	840	1,060	1,160	1,360	1,460	1,500	1,710	1,850	2,100	2,160	2,350	2,460	2,680	2,700
Cigarette tax	180	190	200	230	250	260	310	330	380	390	430	450	500	500
Royalties	0	160	230	400	560	700	820	1,100	1,160	1,400	1,510	1,620	1,760	2,100
Utility services charges	1,730	2,290	2,380	2,940	3,140	3,190	3,890	4,220	4,960	5,120	5,620	5,980	6,580	6,700
Other user charges	260	340	350	430	460	470	570	620	720	740	820	870	950	950
Other ingovernment transfer	150	150	300	300	300	300	300	300	300	300	300	300	300	300
Miscellaneous	320	390	410	490	510	520	610	650	750	770	840	880	960	960
Total operating revenues	3,580	4,810	5,190	6,340	6,890	7,150	8,470	9,350	10,700	11,220	12,240	12,960	14,170	14,800
Operating expenditures														
General administration	400	420	420	440	440	450	470	480	500	510	520	530	550	550
Police	530	680	700	850	920	940	1,120	1,210	1,410	1,450	1,590	1,680	1,840	1,800
Streets	380	540	560	690	740	750	910	990	1,160	1,200	1,310	1,400	1,540	1,500
Health, welfare and recreation	180	370	380	470	500	510	620	670	780	810	890	940	1,040	1,000
Utilities	2,030	2,200	2,220	2,780	2,980	3,030	3,730	80	80	80	80	80	80	80
Miscellaneous	50	60	60	70	70	70	80	80	90	90	100	100	110	110
Total operating expenditures	3,570	4,270	4,340	5,300	5,650	5,750	6,930	3,510	4,020	4,140	4,490	4,730	5,160	5,200
Surplus/deficit	10	540	850	1,040	1,240	1,400	1,540	5,840	6,680	7,080	7,750	8,230	9,010	9,600
Capital revenues														
1 percent sales tax	340	430	490	570	620	630	720	780	890	910	990	1,040	1,130	1,100
Utilities tap fees	190	2,130	320	2,660	950	230	3,300	1,540	3,480	740	2,390	1,700	2,800	2,800
Other capital revenue	530	670	730	850	1,010	1,030	1,160	1,230	1,380	1,410	1,520	1,590	1,710	1,700
Total capital revenues	1,060	3,230	1,540	4,080	2,580	1,890	5,180	3,550	5,750	3,060	4,900	4,330	5,640	5,600
Capital expenditures														
Administration	10	0	0	1,500	0	0	0	0	0	0	0	0	0	0
Police	40	30	10	10	10	0	10	10	10	10	10	10	10	10
Streets	130	2,050	3,000	180	340	1,000	3,200	1,000	1,000	0	3,190	0	0	0
Health, welfare, and recreation	20	70	0	10	360	10	10	210	410	10	10	10	50	50
Utilities	1,170	14,280	21,700	2,700	1,010	3,820	2,430	1,350	4,390	660	2,560	2,090	2,450	2,450
Miscellaneous	20	0	0	0	0	0	0	0	20	0	0	0	0	0
Total capital expenditures	1,390	16,430	24,710	4,400	1,720	4,830	5,650	2,570	5,830	680	5,820	2,110	2,510	2,510
Capital debt service	0	610	610	600	600	590	580	580	580	570	570	550	530	530
Capital cash outlays	0	13,430	24,710	4,400	1,720	4,830	5,650	2,570	5,380	680	5,820	2,110	2,510	2,510
Total capital outlays	0	14,040	25,320	5,000	2,320	5,420	5,230	3,150	6,410	1,250	6,390	2,660	3,040	3,040
Surplus/deficit	-330	-10,810	-23,780	-920	260	-3,530	-1,050	400	-660	1,810	-1,490	1,670	2,600	2,600
Total surplus/deficit	1,070	-10,270	-22,930	120	1,500	-2,130	490	6,240	6,020	8,890	6,260	9,900	11,610	12,100

Table 14.--Projections of revenues and expenditure needs with the proposed Pronghorn mine, City of Gillette

(All data except population are in thousands of dollars. Assumptions and methodology used are given in Appendix C. Table and appendix are from Moore and others, 1977.)

City of Gillette	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Population	11,200	14,868	15,728	20,309	21,879	22,630	27,039	28,803	33,977	35,061	38,026	40,383	44,284	45,506
Operating revenues														
Ad valorem taxes	100	230	160	210	230	240	280	300	360	370	400	430	470	480
Sales and gas tax	840	1,060	1,180	1,430	1,550	1,590	1,810	1,960	2,200	2,280	2,460	2,570	2,800	2,870
Cigarette tax	180	190	200	250	270	280	330	350	400	420	450	480	520	540
Royalties	0	160	230	400	580	730	860	1,140	1,190	1,440	1,550	1,660	1,800	2,150
Utility service charges	1,730	2,320	2,450	3,190	3,440	3,560	4,260	4,550	5,370	5,550	6,020	6,400	7,020	7,220
Other user charges	260	340	360	470	500	520	620	660	780	810	870	930	1,020	1,050
Other ingovernment transfers	150	150	300	300	300	300	300	300	300	300	300	300	300	300
Miscellaneous	320	400	420	520	550	570	660	700	800	830	890	940	1,020	1,050
Total operating revenues	3,580	4,850	5,300	6,770	7,420	7,790	9,120	9,960	11,400	12,000	12,940	13,710	14,950	15,660
Operating expenditures														
General administration	400	420	420	450	450	460	480	490	510	520	530	550	570	570
Police	530	690	720	920	990	1,030	1,210	1,290	1,510	1,560	1,690	1,780	1,950	2,010
Streets	380	550	580	750	810	840	1,000	1,070	1,260	1,300	1,410	1,490	1,640	1,680
Health, welfare and recreation	180	370	390	510	550	570	680	720	850	880	950	1,010	1,110	1,140
Utilities	2,030	2,200	2,290	3,030	3,280	3,400	80	80	80	80	80	80	80	80
Miscellaneous	50	60	60	70	70	70	80	90	100	100	100	110	120	120
Total operating expenditures	3,570	4,290	4,460	5,730	6,150	6,370	3,530	3,740	4,310	4,440	4,760	5,020	5,470	5,600
Surplus/deficit	10	560	840	1,040	1,270	1,420	5,590	6,220	7,090	7,560	8,180	8,690	9,480	10,060
Capital revenues														
1 percent sales tax	340	430	500	600	650	670	770	830	930	960	1,040	1,090	1,180	1,210
Utilities tap fees	190	2,220	520	3,450	1,180	570	3,320	1,330	3,900	820	2,240	1,780	2,940	920
Other capital revenues	530	670	740	880	1,070	1,090	1,220	1,300	1,450	1,490	1,590	1,660	1,790	1,830
Total capital revenues	1,060	3,320	1,760	4,930	2,900	2,330	5,310	3,460	6,280	3,270	4,870	4,530	5,910	3,960
Capital expenditures														
Administration	10	0	0	1,500	0	0	0	0	0	0	0	0	0	0
Police	40	30	10	10	10	10	10	10	10	60	10	10	10	10
Streets	130	2,050	3,000	520	0	3,200	1,000	1,000	1,000	3,190	0	0	0	0
Health, welfare, and recreation	20	70	10	360	10	10	210	10	410	10	10	50	10	10
Utilities	1,170	34,880	1,700	3,110	4,380	660	2,750	1,160	4,750	1,200	2,560	1,560	2,570	810
Miscellaneous	20	0	0	0	0	0	0	0	20	0	0	0	0	0
Total capital expenditures	1,390	37,030	4,720	5,500	4,400	3,880	3,970	2,180	6,190	4,460	2,580	1,620	2,590	830
Capital debt service	0	610	610	600	600	590	580	580	580	570	570	550	530	400
Cash cash outlays	0	34,030	4,720	5,500	4,400	3,880	3,970	2,180	6,190	4,460	2,580	1,620	2,590	830
Total capital outlays	0	34,640	5,330	6,100	5,000	4,470	4,550	2,760	6,770	5,030	3,150	2,170	3,120	1,230
Surplus/deficit	-300	-31,320	-3,570	-1,170	-2,100	-2,140	760	700	-490	-1,760	1,720	2,360	2,790	2,730
Total surplus/deficit	1,070	-30,760	-2,730	-130	-830	-720	6,350	6,920	6,600	5,800	9,900	11,050	12,270	12,790

SELECTED IMPACTS ON LOCAL GOVERNMENT

In 1968, Gillette's annual budget was \$812,000. The 1977-78 budget is \$7,348,000, more than nine times the size of the 1968 budget. The current city budget is 28 percent greater than the previous year's budget. A city administrator was hired during 1977 to help the mayor govern the city. The city government, in conjunction with the Town of Moorcroft, Wyoming, recently had a \$50,000 management program, funded by the Department of Energy (DOE) and the State, prepared to improve the city's administrative ability to manage its ever-increasing responsibilities. Increased demand for county services caused the Campbell County government to increase its 1977-78 budget to \$4,430,000, an increase of 44 percent over the previous fiscal year.

The following selected impacts on local government illustrate the impact of continued regional coal development upon the resources of local government. Rapid expansion of services and the associated funding is often not easily achieved.

Land use

Rapid urban growth has accompanied rapid population growth in the Gillette urban area as aerial photographs taken in 1969 and 1977 illustrate (figs. 2, 3). The urban sprawl developing around Gillette is not only a symptom of rapid and often poorly controlled growth; it also generates secondary impacts on local government.

The total acreage of the city as of 1977 has tripled from the 1965 amount (table 15). Residential acreage alone has increased 33 percent during 1977. Land demand forecasts made for the Gillette urban area through 1990 estimates that 1,120 to 1,820 acres of private land will



Figure 2.--Aerial photo of Gillette
area in 1970

44a (44b follows)



Figure 3.--Aerial photo of Gillette
area in 1977

44b (45 follows)

Table 15.--Land use--City of Gillette¹

Land Use types	1965		1976		1977	
	Total acres	Percentage of developed	Total acres	Percentage of developed	Total acres	Percentage of developed
Residential	176.8	33.6	480	32	642	33
Commercial	41.9	8	115	7	131	7
Industrial	75.6	14.4	160	11	160	10
Utility	--	--	50	3	50	3
Public-- semi-public	86.7	17	120	7	120	7
Recreational	5.4	1	150	10	150	9
Streets and alleys	136.3	26	405	27	450.85	29 ²
Developed areas	525.7	100	1480	100	1705	100
Undeveloped areas	523.9	--	1090	--	1342	--
Interstate R.O.W.	--	--	280	--	280	--
Total Acres	1049.6		2850		3327	

¹Bucher and Willis, 1965.

²This figure includes major streets. Within single-family developments, 20 percent is a desirable figure according to the Community Builders Handbook published by the Urban Land Institute, 1968, page 130.

be developed (table 16). During 1972 through 1976, total building permit valuations issued by the Gillette/Campbell County Building Department increased ten-fold. Simply responding to this magnitude of growth impacts the city government.

The Gillette urban area contains many areas of mixed land use. This pattern is most obvious in the original part of Gillette where the central business district is expanding into areas that have been primarily residential. The development along Douglas Highway has areas of residential, commercial, recreational, and industrial land use randomly intermixed creating conflicting land use priorities. This pattern of development tends to occur in the Gillette urban area outside of the city limits.

Patchwork or "leap-frog" development resulting in enclaves of undeveloped land left within the urban area as development spreads outward from the city complicates city administration and services. Land speculation and the higher costs of development in the city have accelerated this tendency. The efficiency of potential mass transit service, and police and fire protection are examples of services affected by this pattern of land use.

Numerous mobile home subdivisions have recently been developed in Campbell County outside of the Gillette urban area. Most of them house construction and mine workers. While the Town of Wright is carefully planned and probably will grow into a viable community, many of the mobile home subdivisions offer minimum facilities and services.

Table 16.--Land demand forecasts the Gillette urban area, 1976-90

[Source: Gladstone Associates]

General land-use category	Low range forecast (acres)	High range forecast (acres)
Residential-----	1,120	1,820
Retail-----	29	80
Commercial office, institutional and related-----	9	17
Industrial-----	48	90
Total-----	1,206	2,007

This pattern of land use disperses county services, such as police and fire protection, over a wide area. Mobile home subdivisions were previously described in the psychological impacts portion of this analysis.

Planning

The Gillette Planning Commission was formed in 1963 and a city master plan was adopted that year. In 1968, a joint Gillette/Campbell County Planning Department was formed. The city's master plan was updated in 1973. Planning for the impact of new coal mining has had high priority in the city administration since January 1975. The Gillette/Campbell County Planning Department employs three planners and has developed a land use plan for the Gillette Urban Area--the 6-mile by 5-mile area defined by the Gillette zoning ordinance.

The 1977 Citizens Policy Survey (Appendix A) reflects local concerns about zoning and building codes, and their enforcement. Of those surveyed, 75 percent either "agreed" or "strongly agreed" with the statement: "Zoning ordinances should be strictly and consistently enforced." Similarly, 79 percent felt that: "Zoning can protect property values and properly guide community development if enforced." Concerning building codes, 71 percent "agreed" or "strongly agreed" with the statement: "Uniform building codes should be adopted and enforced in platted subdivisions in unincorporated areas of Campbell County." Thus, local citizens appear to be aware of the implications of the land use patterns and construction practices that are occurring, and they feel that zoning and building codes should be used to shape future growth. As an example, 71 percent of those surveyed would like uniform building codes adopted

and enforced in platted subdivisions in unincorporated areas of Campbell County. While Gillette has both zoning and building codes, the county has no zoning requirements and only has a plumbing code. The adequacy of zoning and building code enforcement is unknown.

The first draft of the comprehensive plan for Campbell County, as required in part by the 1975 Wyoming Land Use Planning Act, was completed by the Gillette/Campbell County Department of Planning and Development on June 30, 1977, and submitted to the State of Wyoming for review. Approval is required by June 30, 1978. After review, revision, and adoption by the county during 1978, the comprehensive plan is to be: (1) the official statement of policy regarding the future development of the county, (2) a summary of a broad range of available information, and (3) a long range planning program. The draft proposes an unusual form of growth control, within the context of energy-related development pressure, that is to accommodate rather than stimulate or limit future growth.

Sections of the draft land use plan recommending that local government oppose surface mining within 2 miles of the city limits of Gillette granting any new coal leases within 3 miles of the Gillette urban area, and that coal mining and residential development be separated have been controversial. However, 73 percent of those responding to the 1977 Citizen's Policy Survey (appendix A) felt that coal mining should be at least 3 miles from the Gillette city limits. Until the city and county adopt some form of a comprehensive plan, local government will continue to have no publicly stated general policy intended to cope with continue growth.

There is no stated Federal policy for future development of federally owned coal in Campbell County. In the past, local government has had no significant input into the Federal decisionmaking process that granted the existing Federal leases in the county, and approved mining and reclamation plans for the seven operating coal mines utilizing Federal coal leases. Of those surveyed in the 1977 Citizens Policy Survey, 57 percent felt that local citizens had no real opportunity to participate in the decisions made at the State and Federal level regarding energy development while 22 percent felt they did.

Traffic and streets

Both the city and county have been unable to maintain local streets and roads to acceptable standards as regional energy development and the resulting rapid population growth has occurred. Of those responding to the 1977 Citizens Policy Survey (appendix A), 88 percent of those residing in unincorporated portions of the county and 98 percent of those residing in Gillette felt that road and street maintenance needed to be improved. Similarly 79 and 82 percent, respectively, of city and county residents felt that traffic control needed improvement.

Campbell County residents voted in favor of an optional one percent increase in the county sales tax on November 2, 1976. This increase must be renewed every two years. The tax is expected to generate about \$2.5 million annually, with 55 percent going to Gillette and 45 percent to Campbell County. A consultant completed a street inventory for the city during April 1977 in July, 1977, selected \$3 million of priority improvements to be done by the city. The city spent \$582,000

on street repairs during 1977. The city will spend approximately \$2.5 million, plus an additional \$1.5 million of a matching funds grant from the Wyoming State Farm Loan Board, for street improvements during 1978 amounting to about \$430 per household.

Traffic flow is also a problem. A plan for one-way streets in the downtown area is being considered to relieve congestion. Several overpasses across the railroad tracks are also being considered. However, the cost as of April 1978 is estimated at \$4 to 7 million per overpass.

County road maintenance has been affected by population growth and increased industrial usage. The county appropriated \$2.2 million for county road work during fiscal 1977-78, up 57 percent from the previous fiscal year. The county is planning on reserving 100-foot rights-of-way along county roads instead of the usual 60- to 70-foot ones to ensure adequate room for future improvements.

Airport facilities

The Gillette/Campbell County airport is served by scheduled commercial service; two commuter airlines provide flights to Denver; another provides intrastate service. The airport is also used by several charter airlines, and corporate and private aircraft. Of those responding to the 1977 Citizens Policy Survey (appendix A), 79 percent felt that improved airport facilities were needed.

In March 1978, the Wyoming Public Service Commission selected an airline that will provide much needed intrastate scheduled air service to Gillette. Deficiencies in the runways limit the size of aircraft that may land to 12,000 pounds precluding service by many types of commercial aircraft. The current location of the airport may preclude expansion

of current facilities. Airport facilities need to be upgraded to meet current use. The airport operating costs have been equally shared by the city and county; by July 1978 the airport will be turned over to the county in order to get \$1 million in funding for operation and improvement costs.

A Department of Transportation grant is being used to study airport deficiencies and determine options for improvements to the facilities. Depending on the eventual findings of the study, the airport may have to be relocated. Until existing facilities are upgraded, they will continue to limit air service to the region. Additional regional energy development will further adversely impact facilities that are currently inadequate. The first phase of the study reported that the airport has experienced tremendous growth over the past few years and rapid growth will continue. The study predicts that by the year 2000 146,000 single-engine aircraft are expected to land at or takeoff from the airport (compared to 13,600 takeoffs and landings in 1977). And the number of emplaned passengers on scheduled flights will increase 15 percent annually through 1985 and 10 percent annually between 1985 and 1990. This means that the number of emplaned passengers on commuter aircraft will increase from 19,900 in 1977 to 30,300 by 1980. Total number of all types of takeoffs and landings will increase from 55,500 in 1977, to 76,900 in 1980, 128,000 in 1985, and 175,500 in 1990.

Fire protection

Fire protection is provided by the Gillette/Campbell County Fire Department under direction of a Fire Board and a County Fire Warden. The Department consists of a full-time fire chief and four firemen, supplemented by approximately 19 active volunteer firemen.

The city and county each fund the department through a one-half mill levy on personal property. The 1977-78 budget is \$178,000. Of those responding to the 1977 Citizens Policy Survey (appendix A), 39 percent felt fire protection was adequate, while 32 percent felt that it needed improvement.

The proliferation of subdivisions in the county outside of the Gillette city limits has affected fire protection. As the Gillette urban area rapidly expands, new equipment is needed to expand service. In addition, two new county substations will probably be required to relieve pressure on the Gillette fire station. Fire protection for the urban area north of the Burlington-Northern railroad tracks is hampered by the absence of any railroad under- or overpasses, and by excessive travel-time from the fire station. Total funding for fire protection may have to be increased from 1 to 2 mills to finance new capital expenses.

The fire station is manned by full-time firemen, 12 hours per day and by volunteers at other times. Volunteers supplement the full-time firemen at all fires. While apparently effective in Gillette, the volunteer system has been inadequate in the county on occasion due to a deficiency of volunteers. Volunteers have organized a fire station at one subdivision north of Gillette and the Fire Board and a mining company are supplying equipment to the group. If the proposed substations are authorized, a skeleton staff of two full-time fire fighters per substation will have to be hired. The volunteer fire fighting system will eventually become inadequate when the population of the Gillette urban area reaches 20,000 to 30,000 (Flip McConnaughey, oral communication, November 10, 1977).

Police protection

Police protection is provided in Gillette by a 28 person force. The Sheriff's Department provides protection for the entire county, including the city. The 1977-78 budget for the Gillette Police Department is \$614,000; that of the Sheriff's Department budget was \$404,000, up by 23 percent from the previous year's budget. Of those responding to the 1977 Citizens Policy Survey (appendix A), 70 percent of county residents residing outside of Gillette felt that county police protection needed improvement, and 79 percent of city residents felt that traffic control needed to be improved.

In 1973, the Gillette Police Department had 2.22 policemen per 1,000 city residents. The 1977 figure was 0.75 per 1,000, while the national average is 1.9 per 1,000--emphasizing the lag between rapid population growth and expanded city services. In addition, the turnover rate at the Gillette Police Department is very high and is partially attributable to the cost of living in Gillette.

Larceny, alcohol-related problems, aggravated assault, and traffic violations appear to be major local law enforcement problems. A relationship between crime and boom-town conditions can be surmised, but has not been proven. Continued rapid population growth will require both police departments to increase in size and to reorient their protection to respond to crime related to an urban population.

Water supply

Gillette obtains its water supply from wells tapping the Wasatch or Fort Union Formations. Surface water is not readily available in Campbell County, and it is not used as a domestic water

source. Historically, the city's water supply has been inadequate for summer needs and has been either very hard or very soft and smelling of hydrogen sulfide. Of those residents of Gillette responding to the 1977 Citizens Policy Survey, 80 percent felt that the water supply needed improvement and 95 percent felt that the quality of the water needed improvement.

In order to reduce the impact of new subdivision approvals on the City's water supply system, Gillette began requiring that all new subdivisions provide well sites. To assure adequate financing to provide sufficient water in each new subdivision, the city increased tap fees.

During 1977, Gillette markedly improved its water supply system by (1) renovating its pretreatment water plant, (2) drilling two new soft water wells (costing \$163,000) and renovating several abandoned water wells, and (3) tripling the city's water storage capacity for summer needs to 6 million gallons (costing \$1.5 million). The city's water now undergoes lime softening, electro dialysis, and degasifying before it is supplied to city residents.

Gillette's well capacity in September 1977 was 3.6 million gallons per day (mgd). However, the city will not be able to obtain this quantity of water from its wells as some wells will have to be abandoned because of the lowering of water levels or poor quality water. The city has concluded the maximum supply that could be developed locally for the future would be 3.34 mgd. A population of about 14,000, an increase of about 2,000 over the city's July 1977 population, could be served by this amount of water. Thus, approval of the proposed Pronghorn mining and reclamation

plan and a population increase of 1,900 would eventually place the city's water supply system at capacity--regardless of future population growth.

Continuing rapid population growth in Campbell County, independent of the proposed Pronghorn mine, will cause the Gillette to outgrow the limits of its water supply system in the near future. The Chairman of the Gillette/Campbell County Joint Powers Board has stated that Gillette will require a water supply of 5.3 to 6.3 mgd by 1980 (Gillette News-Record, Jan. 7, 1977).

A feasibility study has been made to determine if a well field for Gillette can be developed in the Madison limestone near Moorcroft, Wyo. (located about 43 miles east of Gillette) that could furnish 10 mgd. The Pacific Power and Light Company performed the study, which cost \$300,000, for the city at its own expense. The newly completed well at Moorcroft yields 0.72 mgd. Development of the new well field near Moorcroft and construction of the pipeline to Gillette and other facilities are feasible but will cost \$20 million. The water is needed for Gillette's projected 35,000 population by 1990. Financing the new well field will not be easily accomplished. The Wyoming Farm Loan Board gave a \$5 million loan to Gillette in September 1977 for water development, but \$1.5 million of this loan was used to pay for the new water storage tanks. The Wyoming Interdepartmental Water Conference has concluded that Wyoming should provide "front-end" financing for the new well field based on a study it made. The Farmers' Home Administration has agreed to provide \$7.5 million in loan to Gillette if the State agrees to participate in the funding of the new well field. The Governor and the Wyoming Legislature authorized a \$15 million loan for front-end financing taken

from the coal severance tax monies, but the Wyoming Supreme Court ruled it unconstitutional to pledge future coal excise tax revenues for current projects unless it is approved by the voters. Thus the well field is not securely funded as of April 1978. Because city water is not delivered to county residents, and county areas cannot be annexed by the city until water service is provided, completion of the new well field is essential to Gillette if future population growth is to occur in the city.

Waste disposal

Gillette constructed a \$4.19 million sewage treatment plant in 1974 that has a capacity of 1.2 million gallons of sewage per day. Funding was supplied by the Environmental Protection Agency (EPA), distributed by the State of Wyoming. The Wyoming Department of Environmental quality (DEQ) granted the city a discharge permit for the new plant in April 1974.

The plant is currently processing an average of 0.76 million gallons per day with peak loads approaching 1.2 million gallons per day. The city government has stated that the plant has been operating at capacity since 1975.

Of those residents of Gillette responding to the 1977 Citizens Policy Survey, 63 percent felt that the city's sewage treatment needed improvement; however, 40 percent of the residents of mobil home parks and residential subdivisions in Campbell County felt that there was a critical need for improvement of sewage treatment facilities. To provide facilities to support continued rapid population growth, the city increased its sewer tap fee to \$1,081 per residential tap during the summer of 1976. This action has also tended to retard subdivision

development within the city limits, forcing development into the county within the Gillette Urban Area. Campbell County has experienced periodic health problems arising from the operation of mobile home parks, and the county administration is apparently developing county-wide regulations to govern sanitation practices.

During the summer of 1976, DEQ, Water Quality Division, considered restricting future subdivision approvals in Gillette until the city improved their water supply and sewage treatment facilities. When a clarifier at the sewage treatment plant failed, the city by-passed the plant from March 4 to May 3, 1977, without receiving formal approval of their action from DEQ or EPA. Raw sewage was discharged into Donkey Creek. The plant was repaired during the summer of 1977, and it apparently meets EPA effluent standards and the conditions of the Wyoming discharge permit.

Gillette has a water treatment plan that includes construction of a \$6 million water treatment plant that would accommodate a population of 40,000. However, during 1977 the city was unable to obtain necessary funding to construct the plant. The State of Wyoming allocates EPA funds to communities in Wyoming based upon the date that each community last received EPA funds. Because Gillette received funds in 1974, it is near the bottom of the State's list, and the city can not expect aid from EPA to construct their proposed plant in the near future.

The EPA-administered Water Pollution Abatement Program required that municipalities were to institute secondary treatment of sewage effluent by July 1, 1977. Gillette was unable to meet this deadline and received final notice to from EPA on November 8, 1977 to comply. The city has notified EPA that they intend to comply with their require-

ments, but the city has yet to develop a schedule for implementation of their water treatment plan.

Solid waste from Gillette is placed in an 80-acre landfill project that is located on the southwestern margin of the city. The site can be utilized for another 5 or 6 years. The city has been unable to secure a future landfill site that meets Federal and State regulations. Disposal of industrial oil and raw sewage in pits at the landfill site ended July 30, 1977, based on the recommendation of DEQ. Raw sewage, some of which presumably comes from outside the city limits, can currently be disposed of at the city's sewage treatment plant, further impacting the plant's limited capacity. When a truck dumps a large amount of sewage into the system at one time, it strains the system with a "shock load." The city is considering drastically increasing the rates charged for disposal of the raw sewage in order to increase revenue and discourage use of the disposal service. Industrial oil apparently is being illegally dumped into the city's sewer system, adversely affecting the biological treatment system used at the sewage treatment plant. Neither the city nor the county currently provide facilities for disposal of industrial oil.

Campbell County's rapid population growth that is partially related to federally approved energy development, has contributed to the inadequacy of Gillette's sewage treatment facilities. The city will have to construct a new sewage treatment plant in the near future or face enforcement action by EPA. Gillette has been unable to secure aid to construct the plant from both the Federal and State governments. Federal approval of the proposed Pronghorn mine will acerbate the problem.

Recreation services

Demand for recreation activities and opportunities increases as the population of Campbell County grows. This increase occurs not only for outdoor, away-from-home activities, but also for in-town and indoor activities.

A general increase of 143 percent in outdoor recreation participation is projected for Campbell County by 1990, and it can be attributed primarily to the anticipated population growth resulting from energy development. If approved, the proposed Pronghorn mine will add approximately 1,900 more people to the area, especially Gillette, and this increase will account for approximately 7 percent of the projected increase in recreation participation.

Increased participation in dispersed-type activities, such as hunting, fishing, and camping, will result in overcrowding and a general lessening of the quality of the traditional Wyoming recreation experience. The available public lands and facilities in and near the area will receive much of this increased use, especially the surrounding national forests. Maintenance costs will increase, as will costs of visitor safety measures and resource protection.

In 1974, the Campbell County Parks and Recreation Department constructed a \$750,000 recreation center, which included an indoor swimming pool. To help meet the increased recreation demand, the Campbell County Parks and Recreation Department receives one mill from the county's mill levy to operate its programs and maintain its facilities. As the county's tax base expands, the Department will receive more revenue. Unfortunately, the recreation center is already at capacity and facilities

need to be expanded before the necessary revenue will be available. In April 1978, a special bond election approved construction of a \$1.2 million addition to the recreation center consisting of a multi-use gym and two handball courts. A coal company has pledged \$50,000 to equip it over the next 10 years.

Recreation programs sponsored by the Campbell County Parks and Recreation Department in 1977 are also experiencing a rapid increase in participation in organized adult activities as compared with 1976: (1) softball--59 percent more teams, (2) volleyball--100 percent more teams, and (3) basketball--33 percent more teams. The Department is expecting that it will have to begin limiting the number of teams and participants in various activities due to a lack of facilities during 1978.

There are several programs and methods available to the county to aid in meeting recreation needs. These include: (1) The Wyoming Recreation Commission has adopted a policy of giving special consideration to energy impacted communities in matters concerning the Federal Land and Water Conservation Fund Program. (2) Campbell County has subdivision regulations requiring dedication of parkland in new subdivisions. (3) The Bureau of Land Management (BLM) in its Management Framework Plan for the county has notified local government that certain public lands are available for transfer under the Recreation and Public Purposes Act. Campbell County has made application to BLM for two tracts of public land near Gillette. BLM will review the applications and, if appropriate, transfer the lands to the County for use as public parks. However, in the short-term, approval of the proposed Pronghorn mine will cumulatively impact facilities already impacted by continued energy development in Campbell County.

Medical facilities

The Campbell County Memorial Hospital, with a capacity of approximately 40 beds and newly improved emergency room facilities, is located in Gillette, as is the Northeast Wyoming Regional Medical Center and the Medical Center of Campbell County. Medical service in Campbell County is provided by 14 doctors. Although there are twice as many doctors practicing in the county in 1978 as there were in 1972, the August, 1977 and 1972 ratios of doctors to patients are 1 to 1,700, and 1 to 1,851, respectively; reflecting the effect of recent rapid population growth in the county.

Of those Campbell County residents responding to the 1977 Citizens Policy Survey (appendix A), only 6 percent indicated that local medical service is adequate while 60 percent felt that there was a critical need for improved service. Until recently, local medical service was critically understaffed with 9 doctors practicing in the county during the summer of 1977. Some overworked doctors left the county, and service was often difficult to obtain. Many dissatisfied residents apparently obtained medical service outside the county. The Campbell County Hospital Board successfully recruited 5 doctors during the fall and winter of 1977 reducing the doctor shortage, but the county hospital is apparently still just operating at the financial break even point. The goal of the Hospital Board is to eventually have one doctor per 1,000 residents.

The residents of Campbell County passed an \$8.5 million bond issue June 23, 1976, for construction of a new county hospital. Construction of the 55 bed facility began during the fall of 1977.

Although existing medical facilities and service have been impacted by rapid population growth, improvement of both the facilities and service did occur during 1977. Impact upon the local medical facilities and service that would result from approval of the proposed Pronghorn mining and reclamation plan should be mitigated by completion of the new county hospital.

TOWN OF WRIGHT

The new town of Wright is designed to accommodate eventually up to 6,000 people. The population as of November 1, 1977, is 850, up from zero in 1976. Wright is located about 40 miles south of Gillette just off State Highway 59 on State Highway 387 (fig. 4). Wright is largely a product of efforts by the Atlantic-Richfield Co. (A.R. Co.), which has spent \$6 to \$8 million to provide sewers, streets, lighting, and other services for the town to reduce the impact caused by the mine and construction workers who will work at A.R. Co.'s nearby Black Thunder and Coal Creek coal mines. "We're not running a company town," states Black Thunder mine manager Charles Smith. "Anyone--not only A.R. Co. people--is welcome to live in Wright."

Wright is presently a 311-unit mobile home park with 75 percent occupancy as of July, 1977 (fig. 4). As of November 1, 1977, seventeen permanent homes were under construction in the Latigo Hills subdivision with the first expected to be ready for occupancy by January 1, 1978. Housing Services, Inc. a wholly-owned subsidiary of A.R. Co., has also received County approval of a 215-acre subdivision that will accommodate 700 housing units. Land has been platted for apartments and town houses

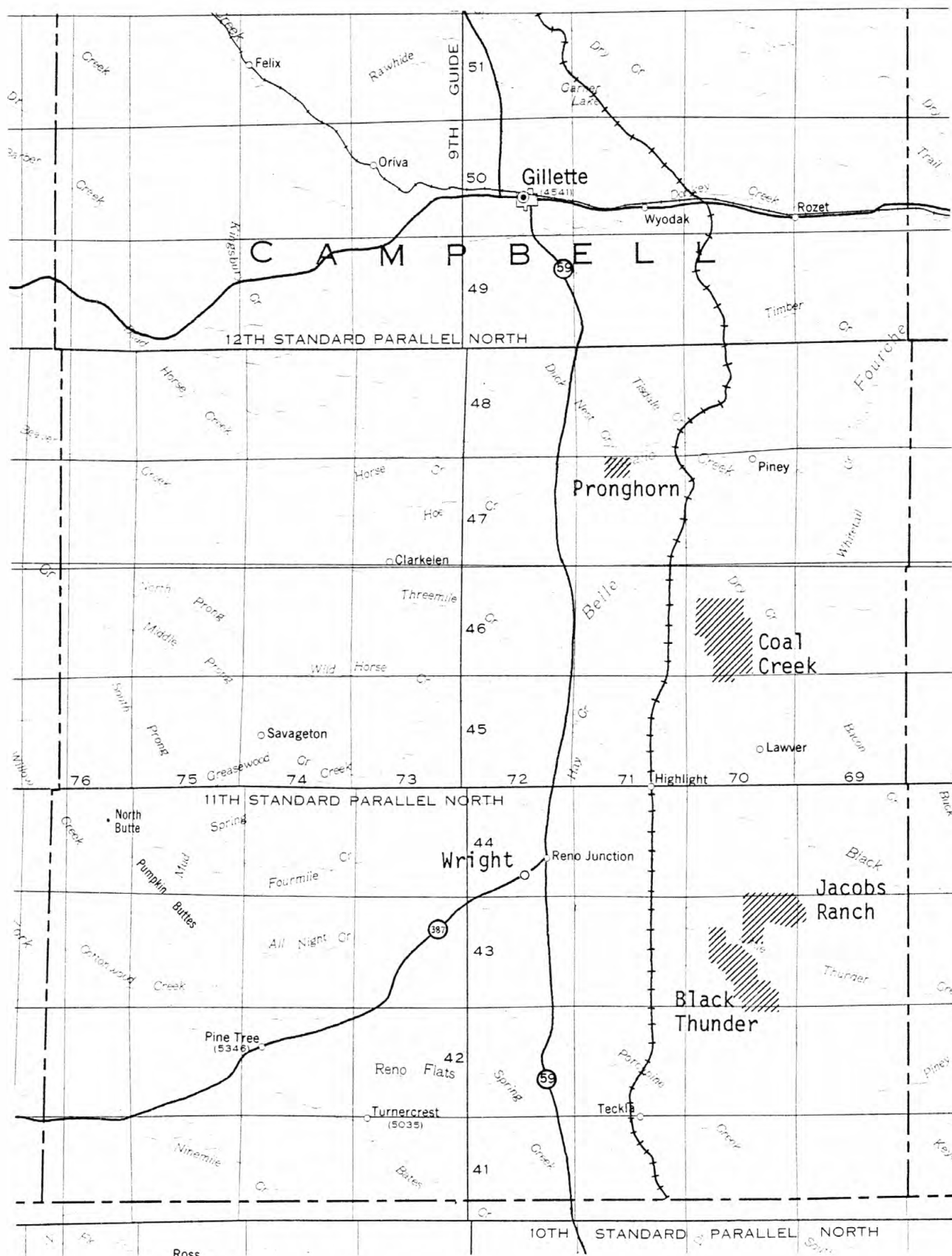


Figure 4.--Location of the town of Wright and the Pronghorn, Coal Creek, Jacobs Ranch, and Black Thunder mines.

with construction to begin in the summer of 1978. Wright has paved streets, greenbelts (recently 40,000 trees were planted and 200 acres seeded in grass), and underground utilities--cable TV, electricity, telephone, water, and sewer. A.R. Co. recently signed a contract to have a temporary lead-in antenna built to provide better TV reception. A permanent relay tower will be built at a later date on nearby Pumpkin Butte. The ultimate capacity of Wright's water and sewer system will be 6,500 people. Presently, the system can handle 500 housing units with an anticipated doubling of that capacity by the end of the year. A.R. Co. also deeded 13 acres to the Campbell county school district and put in a temporary modular elementary school building. Campbell County will expand \$2.2 million to construct the Cottonwood Elementary School in Wright by early 1979. High school students are bused to Gillette. Other features that are provided or will be provided are: 60-acre town center, small light-industry park, 125 acres of open space, water and sewage plant, branch library, sheriff substation, emergency medical station--emergency technicians on duty 24 hours a day, ambulance service, a fire district, laundromat, 56,000-square foot shopping mall, post office, community center building, grocery store, daily bus service to A.R. Co.'s mining operations, and a \$400,000 recreation center (oral communication, A.R. Co., Jerry Rupp, November 1977).

Although one of the purposes of Wright is to help reduce the impacts of energy development on Gillette, some Gillette officials feel that the additional growth should occur in Gillette due to economies of scale. All other factors being equal, this would be true because adding on to an existing infrastructure usually is more efficient than beginning a new infrastructure. However, there are two factors that make the economies of scale issue less than clear. One, Wright has been partially

subsidized by A.R. Co. and although a new town is generally more expensive than expanding an existing town, in this case it may not be less expensive to the taxpayers in the short-term. A.R. Co can justify its expenses in terms of worker morale, efficiency, and public relations. Secondly, economic conditions are not "normal" in Gillette. Rapid population growth has placed constraints on capital, labor, and time. These factors may offset some or all of Gillette's normal advantages. The merits of new towns in Campbell County requires further analysis and study. Understanding the issue could help in planning future energy development.

Based on personal communication with area mining representatives (Caballo, Belle Ayr South, Jacobs Ranch, Cordero, 1977), it is estimated that no more than 10 percent, or 30 Pronghorn construction and mining employees, will live in Wright.

FISCAL IMPACT OUTSIDE OF CAMPBELL COUNTY

To the extent that mine employees and/or service employees indirectly resulting from the mine live outside of Campbell County, public expenditure increases will be required by other nearby local governments. The most likely municipalities to be affected appear to be Moorcroft in Crook County and Douglas in Converse County, both about a 1-hour drive from the site. Like Gillette, these towns will not receive any direct increases in ad valorem tax receipts as a result of the mine. The towns' major sources of increased revenues will be sales taxes and utilities tap fees. Some indirect increases in ad valorem revenues will come as a result of new residential and/or commercial development. The towns will be eligible for a prorated share of the mine's lease royalty payments.

Both counties and their school districts could also experience some increases in expenditure needs as a consequence of population growth near Moorcroft and Douglas. The only direct revenue increase available to offset these costs would be the county's prorated share of the mine's lease royalty payments.

Based upon table 7 and personal communications with representatives of the two operating mines closest to the leasehold, it is estimated that no more than 2 percent of Pronghorn employees (approximately six) will reside outside of Campbell County. Given the small share of mine-related population that is projected to live outside Campbell County, fiscal impacts on these entities should be negligible. However, should actual increases greatly exceed the projections, the mine could have adverse fiscal impacts on these local entities.

PRIVATE SECTOR IMPACTS

Boom-town conditions also affect the private sector of the local community. Services, such as motels, restaurants, and retail stores, often are overwhelmed by rapid local population growth. Local lending institutions often are hard pressed to finance some of the less attractive proposals that would cause needed expansion of the local private sector. In Gillette, housing is critically impacted. The University of Denver Research Institute (Moore and Loomis, 1977), under contract to the Geological Survey, recently investigated the impacts of the proposed Pronghorn mine upon the local housing market.¹ The local housing demand also was evaluated by a consultant for the mining company.

¹ Copies of this report are available upon written request to the U.S. Geological Survey, 760 National Center, Reston, Va. 22002.

Campbell County is one of the fastest growing housing markets in the nation. Normally, increases in economic activity and population growth are signs of opportunity to the housing industry. Increased housing demand is expected to stimulate increased housing production in roughly the quantity of units, the mix of unit types, and the price ranges demanded. However, this rapid rate of growth in the need for housing has come in difficult-to-predict waves to a geographically isolated community that did not have a well developed housing industry as a base. The result has been a series of mutually reinforcing problems that have cumulatively affected each of the major local housing submarkets--single family, mobile home, and multifamily--in a different manner. Overall, the result has been (1) production of a housing mix which does not meet the long-term desires of local residents, (2) inflated housing prices, (3) unavailability of some housing options, and (4) mobile homes that have a much shorter lifespan than standard housing.

SINGLE FAMILY HOMES

Most newcomers to the Gillette area, including construction workers, would prefer to own a single family home. Table 17 shows the housing preferences and actual housing choices for a cross-sectional sample of western communities similar to Gillette which are experiencing increases in housing demand due to large scale construction projects. While only 45 percent of the respondents have achieved this goal, 67 percent indicate a preference for a single family unit, and 56 percent of the respondents indicate both the willingness and ability to purchase a single family unit. There is evidence that, as the mining work force in Campbell County shifts from construction workers to permanent workers, and as more construction

Table 17--Housing preferences for five communities affected by large-scale construction projects, 1978

Type of unit	Actual ¹		Preferred ²		Demanded ³	
	Number	Percent	Number	Percent	Number	Percent
Single family	476	45.2	699	66.7	587	55.8
Duplex, townhouse	26	2.5	18	1.7	23	2.2
Apartment	104	9.9	61	5.8	89	8.4
Mobile home	371	35.3	233	22.3	305	29.0
Other	75	7.1	37	3.5	49	4.6
Total	1,052	100.0	1,048	100.0	1,053	100.0

¹Unit types in which respondents were currently residing.

²Unit types that respondents indicated they prefer.

³Unit types that respondents indicated they would purchase if available.

Source: Old West Regional Commission, 1975. Communities surveyed included Green River/Rock Springs, Wyoming; Forsyth/Colstrip, Montana; Center, North Dakota; Langdon, North Dakota; and Conrad, Montana.

workers view their stay in Gillette as long term, this preference for single family homes can be expected to increase. The 1977 Citizens Policy Survey found that 85 percent of all respondents in Gillette desired to live in single family homes as of October 1977, local housing delivery system is not able to meet these preferences. Table 18 summarizes the unit mix of the existing housing stock in the county. Less than 30 percent of the available dwellings are single family units. The majority of these units are several years old, and located within the City of Gillette. Fifty-five percent of the housing stock is mobile homes, mostly fairly recent additions located just outside the city limits. Table 19 shows the changes in the housing stock since 1970. Only 31 percent of the new housing is single family dwellings.

The overall cost of housing in Gillette is presently estimated as 22 percent higher than in nearby Sheridan, 23 percent higher than in Wyoming communities in general, and 23 percent higher than the Denver, Colorado metropolitan area, which serves as the regional financial center (State of Wyoming, November 9, 1977). This, however, may be understating the difference in price for new dwellings of common size and quality of construction. As of October 1977, developers who market similar houses in both Gillette and the Denver metropolitan area indicated that costs of production are 30 percent higher in Gillette than Denver. New single family units in Gillette, whether modular or conventionally constructed, were seldom priced at less than \$46 per square foot. For most builders, the "bottom of the line" was a 1,100 square foot home for roughly \$51,000.

Table 18--Existing housing stock in Campbell County, July 1977

Type of dwelling unit	City of Gillette		Remainder of Campbell County		Total	
	Number	Percent	Number	Percent	Number	Percent
Single family	1,547	40.9	515	15.9	2,062	29.3
Rural dwellings	5	0.1	396	12.2	401	5.7
Duplexes (no. of units)	174	4.6	8	0.2	182	2.6
Multifamily (no. of units)	492	13.0	28	0.9	520	7.4
Mobile homes, in parks	1,172	30.9	1,805	55.6	2,977	42.3
Mobile homes, not in parks	397	10.5	494	15.2	891	12.7
Totals	3,787	100.0	3,246	100.0	7,033	100.0

Source: Gillette/Campbell County Department of Planning and Development, 1977, and Moore and Loomis, 1977.

Table 19--Changes in the housing stock, 1970-77

Housing	<u>Total units</u> 1970-77		<u>Net change</u> 1970-77	<u>Percent</u> <u>increase of new</u> <u>housing stock</u> 1970-77
Gillette				
Single family	1,074	1,552	478	31
Duplexes (no. of units)	164	174	10	--
Multifamily (no. of units)	277	492	215	14
Mobile homes	713	1,564	851	55
Total	2,228	3,782	1,554	100
Campbell County				
Single family	1,782	2,463	681	31
Duplexes (no. of units)	172	182	10	--
Multifamily (No. of units)	318	520	202	9
Mobile homes	1,664	2,977	1,313	60
Total	3,936	6,142	2,206	100

Source: U.S. Department of Commerce, 1971; Gillette/Campbell County Planning Department, 1977, and Moore and Loomis, 1977.

The reasons for this price differential are found in the developer's factors of production. As a result of prior years' land speculation, finished lots may cost \$7,500 to \$14,000 before tap fees (25 percent to 40 percent higher than the Denver area). Facing financial difficulties of its own, the City of Gillette is charging approximately \$2,100 for water and sewer tap fees (considerably higher than the Denver area). Plumbing subcontracts may cost \$2,000, or more, per unit (50 to 100 percent higher than the Denver area). Carpentry labor may cost \$7.00 to \$12.00 an hour (8 to 85 percent more than the Denver area where the union wage is \$6.50 an hour).

Thus far, with single family units comprising such a small portion of the available housing stock it has been a sellers' market. Houses priced below \$60,000 are usually sold before construction is completed.

Inflated housing production costs have placed the goal of a single family dwelling beyond the reach of many newcomers. At prevailing conventional mortgage terms, a household would require almost \$7,000 in cash and a \$22,000 annual income in order to purchase a \$55,000 home.¹

¹The most common terms are 9-1/4 to 9-1/2 percent (including 1/4 percent for private mortgage insurance), 30 years, 10 percent down payment. In addition to the down payment, closing costs average \$1,300. Most lending institutions require that principal and interest payments not exceed 25 percent of a household's gross monthly income or that its total debt liabilities not exceed 30 percent. Using a 9-1/2 percent interest rate and the 25 percent rule, for a \$55,000 home:

Mortgage amount (90 percent of \$55,000) = \$49,500
Annual principal + interest (.101 times mortgage) = \$5,445
Annual household income requirement (4 times annual principal + interest) = \$21,780

By regional standards, wages in Campbell County are excellent. Mining wages average \$19,700 per year; all other occupations combined average \$14,400 per year (in 1977 dollars). Nevertheless, most households will probably be unable to afford a single family house unless they have more than one full-time wage earner.

MOBILE HOMES

As Tables 18 and 19 indicate, mobile homes are the most prevalent and the fastest growing housing alternative in Campbell County. Sixty percent of the increase in housing since 1970 has been in mobile homes. Presently, 67 percent of the housing in the county outside the Gillette city limits is mobile homes. Although the total number of mobile home dwellings did not increase rapidly during the winter of 1977 (Bell, Dec. 1977), demand for mobile homes should again increase in the spring and when construction begins on other pending energy facilities.

Mobile homes, including campers, have been the most common housing alternative for those who would have preferred single family dwellings. This is a function of both availability and price of the single family and mobile homes. As previously indicated, the mobile home market initially offered the greatest incentive to private investors because of its low risk. In addition, this is the submarket where energy companies have played the greatest role.

While they are by no means inexpensive, mobile homes are priced at a level within reach of most local households. The typical purchase requires a \$1,800 down payment and an annual income of \$7,200.¹ Many households presently living in mobile homes hope to use them as "starter homes." They hope eventually to sell their mobile home and use the equity as a down payment on a single family unit.

¹ Typical terms from private mortgage corporations are 10 percent down and 9 percent add-on interest, which is equivalent to 13.8 percent simple interest, for 12 to 15 years. (Terms at commercial banks are less favorable.) The average loan is \$14,000 to \$15,000. Therefore, typical principal and interest payments are \$150 per month.

Thus far, mobile homes have worked well as starter homes. Rapid increases in housing demand and inflation in the cost of new mobile homes have resulted in high resale value for existing units. Units have tended to appreciate in value which is contrary to the national pattern. However, planners are concerned that over the next decade the large existing stock of mobile homes will deteriorate in physical condition since their life span is so much shorter than traditionally constructed dwelling units.

Conditions have changed since the initial phase of Gillette's housing boom when mobile home parks were such an attractive investment. While banks and private mortgage companies have been successful in packaging and selling home mortgages to the secondary mortgage market, there is still an acute shortage of local commercial credit. As a consequence, local loans for all but the most favorable new business ventures, which presently excludes new mobile home parks, are difficult to obtain.

There is already a shortage of mobile home spaces in and around Gillette. Barring further housing development initiatives by the coal companies, it is likely to get worse. Anti-mobile home sentiment already exists among bankers and community leaders; consequently, their support of plans to increase the number of mobile home lots probably will be minimal (Moore and others, 1977).

MULTI-FAMILY UNITS

As table 19 indicates, less than 10 percent of the new dwelling units in the county have been duplexes or multi-family units. For the most part, new buildings have been rental units.

While local households may resist buying multi-family units, there is a great need for more rental units. In 1977, the local Chamber of Commerce began a rental referral service to assist newcomers in finding apartments. It has far more requests for referrals to rental units than it can fill. As with mobile home parks, the main reasons for this shortage are the relatively high level of risk associated with new apartment developments and the shortage of local commercial credit. Another factor discouraging multi-family units is the City Council's denial of rezoning requests. Several proposals for multi-family units have been denied R-4 zoning because the Council felt that the proposed locations would create an overabundance of multi-family units in some neighborhoods. However, the Council is seeking proposals from developers that would be eligible to use \$300,000 in available Federal grant money for low income housing. The risks to commercial lenders for apartments are seen as particularly high since both initial capital investment is high and apartment vacancy rates are dependent on such a large number of variables. Many actions by coal companies to improve housing conditions, such as subsidies of single family units or additional transient quarters, could have the side effect of decreasing the demand for apartments. These risks may also be important in discouraging the entrance of experienced apartment developers from elsewhere into the region.

Partially because of increased business activity and the shortage of longer term rental units, there is also a shortage of transient

quarters. Many newcomers must live in motel rooms for long periods of time while searching for other housing. Unfortunately, motel space is also in extremely short supply.

THE IMPACT OF FURTHER COAL DEVELOPMENT

If continued coal-related population growth occurs in Campbell County as anticipated, the demand for new housing will continue to grow at a rapid rate. Based on anticipated increases in coal-related employment other than the proposed Pronghorn Mine, the county population is projected to reach 61,000 by 1990. With the Pronghorn Mine, the 1990 population is projected to reach 63,000. Table 20 summarizes estimates of needs for new units between now and 1990, with and without the proposed mine. An estimated 830 new housing units will be required to accommodate the mine-related population growth. Ideally, over 50 percent of this new housing should be single family homes.

Even at the inflated cost of housing in Campbell County, a consultant for the mining company estimates that 83 percent of the mining employees at the Pronghorn mine will be able to afford at least \$345 per month for housing payments assuming that an employee can afford to spend 25 percent of his gross annual income on housing. Table 21 contains calculations that indicate affordable single family, multi-family, and mobile homes. These calculations represent the low end of the local market for each housing category. Because most available new single family housing costs more than \$60,000 in Gillette, it is estimated that the majority of Pronghorn mining employees will not be able to purchase new single family homes if they are available. The recent entrance of

Table 20--Requirements for new housing
in Campbell County, with and without the proposed Pronghorn mine, 1976-90

	1977-80	1980-85	1985-90	Total
Without the proposed mine:				
Net increase in households ¹	2,760	4,850	4,230	11,840
Allowance for replacement of existing units ²	50	50	50	150
Desirable fractional vacancy rate (3 percent)	50	150	130	330
Total requirements	2,860	5,050	4,410	12,320
78 With the proposed mine:				
Net increase in households ¹	3,200	5,080	4,340	12,620
Allowance for replacement of existing units ²	50	50	50	150
Desirable fractional vacancy rate (3 percent)	100	150	130	380
Total requirements	3,350	5,280	4,520	13,150

¹Assumes 3.4 persons per household based on a county average as established in "Land Use Inventory" prepared by the Gillette/Campbell County Department of Planning and Development for 1976 and 1977.

²Assumes 50 units per year, mostly mobile homes, require replacement.

Source: Moore and Loomis, 1977

Table 21--Housing availability for Pronghorn mining employees
that can afford \$345 per month for housing

[Data supplied by the mining company]

	Single family	Multifamily unit	Mobile home
Principle and interest	\$ 300	\$ 260	\$ 215
Tax	30	30	20
Insurance	15	15	10
Management fee		40	
Space rent			100
Total monthly payment	\$ 345	\$ 345	\$ 345
Loan			
90% for 30 years @ 9-1/2%	\$36,000	\$31,000	
80% for 10 years @ 12%			\$15,000
Down payment	4,000	3,400	3,800
Home price	\$40,000	\$34,400	\$18,800

national housing developers into the Campbell County housing market should make more new single family homes available for purchase during 1978. Most of the new employees in the service sector jobs indirectly resulting from the mine will be able to afford single family units only if there are two or more full-time wage earners in the household and/or the cost of new housing is reduced.

The population growth directly and indirectly resulting from the mines will also increase demand for, and thus the likelihood of shortages in rental apartments, transient accommodations, and mobile home spaces.

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Appendix A
Selected discussion of important issues of local concern

[Source: Gillette/Campbell County Department of Planning and Development, 1977 Citizen Policy Survey, p. 10-12.]

o Seventy-two percent of the respondents indicated that coal mines should be three miles or more than three miles from the City of Gillette. The vast majority of Campbell County residents thus think that the activities involved in mining coal and urban activities are not compatible when in close proximity to each other.

o The overwhelming majority of the local residents would prefer to live in single family housing if it was available to them, 7.2% indicated that they prefer to live in mobile homes, and a few responded that they like living in apartments and duplexes.

o About 43% responded that they disagreed or strongly disagreed with a statement saying that residential subdivisions should be allowed to develop in the vicinity of coal mines. This compares with about 32% who indicated that they agree or strongly agree with the statement. Although there is not strong opposition as was found concerning coal mining within three miles of Gillette, a substantial portion of the respondents do not think that residential subdivisions should be approved in the vicinity of coal mines.

o Two-thirds of the sample population said that railroad traffic through Gillette poses a traffic hazard to vehicles and pedestrians. When asked who should pay the cost for constructing any needed overpasses or underpasses to separate railroad from automobile traffic, a majority of the people (57.1%) responded that the railroad should bear most of the cost.

o When asked to forecast Campbell County's population in 1980, most local residents responded in the 20,000 to 25,000 or the 25,000 to 30,000 categories. Population projections are for larger increases in population than indicated by the respondents. Furthermore, the actual rate of growth has exceeded the rate predicted by the projections in the last year. Many residents may therefore be underestimating the rate of Campbell County's growth at this time.

o Most of the people responding to the survey disagreed with the statement that rapid population growth is good for Campbell County (56.1%). On the other hand, 75.1% agreed with the statement that industrial development is good for the County. Apparently, population impact is perceived as a negative aspect of industrialization, which will result in net positive effects.

o Seventy-three point five percent of those responding to the survey agreed or strongly agreed that basic Mobile Home Park Regulations

should be adopted and enforced throughout Campbell County. It is also important to examine the responses from people affected by the Regulations - those who live in mobile homes. 72.1% who reside in mobile homes agreed or strongly agreed with this statement. Only 18.8% of the mobile home dwellers indicated that they disagreed or strongly disagreed with the establishment of these regulations. Since the statement refers to regulations affecting unincorporated areas of Campbell County, another breakdown of the results was conducted to see how people outside the City responded to the statement. 71.2% of the respondents from unincorporated parts of the County indicated that they agree or strongly agree with the statement.

o A statement was made that City government is doing a good job in solving problems associated with rapid growth, to which 22% of the respondents said that they either agree or strongly agree. 56.7% indicated that they disagreed or strongly disagreed. A similar statement saying that County government is doing a good job in solving problems associated with rapid growth yielded a 27.9% rate of response agreeing and 43.5% disagreeing.

o Forty-five point three percent agreed that all residents have a reasonable opportunity to provide input into the local governmental process, while 33.6% disagreed. For another statement, that the citizens of Gillette and Campbell County have a real opportunity to participate in the decisions made at the State and Federal level regarding energy development, only 21.9% of those responding said that they agreed and 57.2% disagreed.

o The statement that energy companies are doing their share to help solve the problems of energy impact on the community received a response of 45.7% in agreement and 33.9% in disagreement.

o Concerning agriculture, most people in the County (64.8%) disagreed with the statement that there is enough water to satisfy the needs of the coal industry and for agriculture as well. However, 73.8% of the ranchers in Campbell County who responded to the survey either disagreed or strongly disagreed with this statement.

o Another statement involving agriculture was that new housing subdivisions scattered throughout the County are a threat to agriculture. Only 25.7% of all respondents agreed with this statement; 55% of the ranchers, however, agreed or strongly agreed with that statement. On this specific issue, there is quite a divergence in opinion between the rancher and non-rancher in Campbell County.

o Almost 80% of Campbell County's residents agreed that the County needs improved airport facilities. Only 4.1% disagreed with this need.

o Twenty-two point seven percent of the respondents agreed that coal should be burned or otherwise converted in Wyoming instead of being converted in plants closer to the consumer, while 48.1% disagreed.

Twenty point three percent were neutral on this issue and 8.9% did not indicated any opinion. A large number of people did not give a definite opinion on this issue.

o Almost half (45.3%) of the respondents aid that they do most of their shopping for major items (such as furniture, appliances, and clothing) in Gillette. Gillette was followed by Rapid City (7.5%), Billings (3.3%), Sheridan (2.9%), Casper (2.9%), and Denver (1.9%).

o A majority of residents of Gillette and Campbell County indicated a need for improvement in most of the services provided by local governments (table 1).

Appendix A, Table 1. -- Selected responses of the 1977 Citizen Policy Survey for Gillette/Campbell County

[Source: Pernula, D., 1977 Citizen Policy Survey, Gillette/Campbell County Department of Planning and Development. Residents were asked to rate the need for improvement in public services. Data are in percent.]

Rating	Type of public service	Law enforcement	Traffic control	County road/street maintenance	Recreation	Building code enforcement	Sewage treatment	Supply of water	Water quality	Cultural opportunities	Downtown parking

Gillette residents

Presently adequate-----	(a)	17.2	0.4	38.3	16.4	22.7	16.4	2.7	27.3	15.6
Some need for improvement-	(a)	44.5	12.9	41.8	41.8	40.6	34.0	21.5	35.2	35.9
Critical need for improvement-----	(a)	34.4	84.8	15.6	21.1	16.4	46.5	73.8	20.3	46.5
No opinion-----	(a)	3.9	2.0	4.3	20.7	20.3	3.1	2.0	17.2	2.0

County residents^c

Presently adequate-----	26.0	14.5	10.6	36.6	(a)	^d 41.5	^d 30.6	^d 35.9	25.6	(a)
Some need for improvement-	55.5	43.6	33.9	41.9	(a)	^d 18.7	^d 22.4	^d 19.4	37.0	(a)
Critical need for improvement-----	15.0	38.8	54.6	16.3	(a)	^d 39.8	^d 47.0	^d 44.8	17.2	(a)
No opinion-----	3.5	3.1	0.9	5.3	(a)	--	--	--	20.3	(a)

Rating	Type of public service	Medical services	Mental health services	Schools	Fire protection	Community planning

City and county residents^e

Presently adequate-----	5.8	39.1	49.9	44.5	18.2
Some need for improvement-	31.5	25.9	35.0	38.7	35.6
Critical need for improvement-----	59.6	6.2	6.6	8.5	34.2
No opinion-----	3.1	28.8	8.5	8.3	12.0

^aNot asked.

^bGillette residents were asked to rate street maintenance; county residents were asked to rate road maintenance.

^cResidents of unincorporated Campbell County.

^dAnswered by residents of mobile home parks and residential subdivisions only.

^eAnswers are combined; services provided are identical for all respondents.

APPENDIX B

ASSUMPTIONS CONCERNING THE BASELINE DEVELOPMENT PROFILE AND THE PROPOSED DEVELOPMENT

Campbell County hosted a sizable buildup of oil and gas activity in the previous decade (1960-70), during which its population increased 121 percent. The county is now experiencing (and expects to continue to experience) rapid growth in economic activity and population as a result of the development of its coal reserves.*

Table C-1 provides projections of employment in the county over the next 14 years. With the exception of the proposed Pronghorn Mine, the table includes all existing and firm proposals for coal-related developments, all moderately firm proposals, with sufficient information for inclusion, and a percentage of all additional contemplated developments.** These projections serve as the context for assessments of the impacts of Mobil-Consol's proposed new mine. The following table, C-2, gives the same employment projections with the proposed Pronghorn Mine.

The coal-related employment, both permanent and construction, in Tables C-1 and C-2 are total "at place" employment figures. Only a portion of those employed in Campbell County are expected to reside within its boundaries. That portion of new workers for each development who will choose to live in the county is estimated based on past trends, on travel times and the availability of housing and public services, and on the "best estimates" of knowledgeable local observers. Table C-3 presents these assumed residential choices for employees at mines within the baseline development profile.

*U.S. Department of the Interior, Proposed Development of Coal Resources in the Eastern Powder River Basin of Wyoming, Part 1. Washington, D.C.: 1974 (FES 74-55).

**See footnotes 2-4 of Table C-1 for further explanation.

BASIC ECONOMIC ACTIVITY SITES WITHIN CAMPBELL COUNTY

	<u>% Living in Gillette</u>	<u>% Living in Campbell County and Campbell County School District #1</u>	<u>% Living in Other Counties*</u>
<u>Existing Mines or Firm Proposals</u>			
AMAX Belle Ayre	80	95	5
AMAX Eagle Butte	90	95	5
ARCO Black Thunder	50	90	10
ARCO Coal Creek	80	100	0
Black Hills P&L--Wyodak	90	95	5
Carter Caballo	85	95	5
Carter North Rawhide	90	95	5
El Paso & Western Fuels Thunderbird	45	50	50
Gulf Wildcat Creek	85	95	5
Kerr McGee E. Gillette	90	98	2
Kerr McGee E. Gillette #16	90	98	2
Kerr McGee Jacobs Ranch	50	90	10
Peabody North Antelope	40	75	25
Peabody Rochelle	45	80	20
Shell Buckskin	90	95	5
Sun Oil Cordero	80	95	5
<u>Other Firm Developments</u>			
Burlington-Northern Railroad	50	60	40
PP&L Wyodak Power Plant	90	95	5
<u>Moderately Firm Mine Proposals</u>			
Gulf Norfolk	85	95	5
NERCO (PP&L) Antelope	40	75	25
<u>Additional Contemplated Developments Throughout the County</u>			
	55	70	30
<u>Proposed Mobil-Consol Pronghorn Mine</u>			
	90	98	2

*This category includes Converse County, Crook County, and Johnson County.

APPENDIX C

METHODOLOGY AND ASSUMPTIONS FOR FORECASTING PUBLIC SERVICES NEEDS AND PUBLIC FINANCE

This appendix describes the methodology and assumptions used in identifying needs for public facilities and services and in forecasting public costs and revenues.

Projections are made using a relatively simple computer-based model which projects public revenues and needs for public expenditures in rapidly growing communities. The model was developed during the course of a study conducted for the Federal Energy Administration of the financial problems confronting communities hosting large-scale coal and/or oil shale developments. During the study, it became apparent that considerable computational detail was required in order to make meaningful projections of local financial needs. The model makes it possible to compare projections made under different sets of assumptions.*

The figure on the following page provides an overview of the data collection and analysis process involved. The model is designed to be adapted to the fiscal structure of a specific community. It relies heavily on data collected in the community to be studied. Information concerning the local economic base and likely energy developments is used to describe a development profile. The profile includes schedules for annual increases in employment, taxable improvements, and production as well as assumptions regarding where the employees will live and what the relationship between the growth in basic and nonbasic employment will be. Assumptions concerning the financial structure of the area and likely future requirements are based on local information sources (budgets, bond prospects, etc.) and are incorporated into the model. Much of the basic information is obtained in interviews with local, state, and federal officials. For this report information from 1976 interviews was used where appropriate.** In many cases the same person was interviewed again in 1977 for additional updated information or new sources were contacted where needed.

The model projects public revenues and expenditures for three local entities--the county, the principal municipality, and the principal school district--over a 15 year period. Each of the steps described below is carried out for each entity in each year.

*Gilmore, Moore, Hammond, and Coddington, 1976.

**Moore, Hammond, Gilmore, and Flory, 1976.

1. Calculate population. Estimates of basic employment (construction and permanent) and of employment multipliers in each year are used to calculate total employment. Multipliers used for this analysis are described in Tables C-2 and C-3 of Appendix C. Employment serves as the basis for household, population and school enrollment estimates. Assumptions used for the Campbell County projections are as follows: (1) a labor participation rate of 44 percent; (2) 3.5 people per dwelling unit; (3) housing distribution: 40 percent single family, 35 percent mobile home, 25 percent multi-family and other.* The proportion of employees and their families assumed to be living within Campbell County, Campbell County School District, and the City of Gillette varies slightly with each mine and its distance from a population center. The percentage of those assumed to be living within the county and the school district ranges from 50 percent to 100 percent and from 40 percent to 90 percent within the city.

2. Calculate assessed valuation. Separate estimates are made of the increases in assessed valuation resulting from new industrial improvements, increased leasehold values (or production values) of producing properties, new single family units, new mobile homes, new multi-family units, and new private commercial and services improvements. Assumptions used are as follows. New assessed valuation is estimated based on:

\$6,700 per new single family unit
\$2,500 per new multi-family unit
\$1,600 per new mobile home

New commercial and industrial valuation at 30 percent of new residential valuation. New coal valuation is assumed to be assessed at \$5.25 per ton of output for production and \$330,000 per million tons of output for improvements. Oil valuation is assumed to decrease by \$1.7 million per year.**

3. Calculate public revenues. Separate estimates are made by each revenue source and are grouped into operating revenues and capital revenues. Existing tax rates and fee structures are assumed to continue unless otherwise specified. Most nonproperty tax revenues are calculated on the basis of per capita rates. Resource related revenue sources (i.e., local shares of severance taxes and mineral lease royalties) are based on projected production tonnage. Assumptions used in this paper, including sources, are detailed in Table B-1.

*Gladstone and Associates, 1976.

**Interviews: Bauer, Bronder, Gilstrap and Ainsworth

4. Calculate operating expenditures. Most operating expenditures are also calculated on a per capita basis. The marginal rates of increase on expenditures per capita are estimated based on present rates in the community, state and national average rates and interviews with local officials providing the services. Assumptions used in this paper are detailed in Table B-2.

5. Determine needs, costs, and debt service on new capital facilities. The determination as to when new capital facilities are needed is made on the basis of population thresholds. Both the population-serving capacity of existing facilities and the costs of new ones are estimated based on the best available sources of local information and are specified in the model. Population thresholds are set, and new facilities are assumed to be constructed as the forecasted population crosses these thresholds. The thresholds and cost assumptions used are detailed in Table B-3. Where jurisdictions have planned "catch up" projects for specific years, these expenditures are assumed to occur in those years regardless of the population level. Most new facilities are assumed to be financed through bonded indebtedness. Unless otherwise specified, the terms are 4.75 percent over 15 years for the county and school district and 7 percent over 15 years for the city.*

When a governmental entity has a sufficient cash reserve in any given year, the entity is assumed to pay for capital outlays out of current revenues. Any time an entity can use current revenues to pay for a capital facility without raising taxes or allowing its cash reserves to drop below \$300,000, it is assumed to do so.**

A recent study*** of the City of Gillette's borrowing position has concluded that the probability of the city being able to market utilities revenues bonds (other than electrical bonds) in excess of an additional approximate \$3 million, based on the existing rate structure is questionable. In addition, it is expected that Gillette can sell virtually nothing in general obligation bonds (between now and 1983), therefore the city is assumed to need cash for all new facilities once this limit has been reached.

*Based on recent bond experience. (Source: interviews with Reed, Ostlund, Abrahamson, and McConnaughey.)

**Interviews: Reed, Abrahamson, and Haukaas.

***Duane Lankford, Financial Management Program, City of Gillette, Town of Moorcroft, Denver: Duane Lankford and Company, 1977.

6. Calculate totals, surpluses and deficits. Revenues and expenditures needs are totaled and annual operating, capital, and total surpluses (or deficits) are calculated. Repayments of presently outstanding debt obligations are incorporated based on schedules provided by the city, county, and school district.

7. Compare public debt needs and debt limits. Both the needs for public debt and the statutory debt limits are calculated so that the need for an entity to exceed its debt limits can be identified if it exists. Those entities which are capable of paying for capital outlays in cash are allowed to do so by the model. A cash reserve of \$300,000 is first required of the entity before any cash capital outlays are made.

The purpose of this methodological approach is to compare the public financial impacts of different development scenarios and to provide "order of magnitude" estimates of the amount of assistance needed to mitigate adverse impacts. The expenditure projections attempt to depict those expenditure levels which would be necessary to maintain the present levels of public services.

If assistance is not received, the entities showing deficits can be expected to spend less than the forecasted amounts. In Sweetwater County, Wyoming, where the boom has already occurred and no assistance was immediately received from outside sources, public officials chose to accept some reduction in public services rather than tax local residents the amount required to maintain previous levels of services.

Attempts to develop simpler methods for generating the necessary data for policy analysis proved unsatisfactory. Time lags, facilities thresholds, and the differential impacts on counties, municipalities, and school districts all have significant effects on the results of the analyses. As a consequence, it should be noted that the results reported here are very sensitive to changes in assumptions regarding the phasing of both the proposed new development (mine) and those mines included in the baseline projections. The baseline developments used for this analysis are described in Appendix C.

ASSUMPTIONS USED IN ESTIMATING PUBLIC REVENUES

	Fiscal Year 1977 Total Revenue ^a	Fiscal Year 1977 Rate Basis	Future Rate Basis	Comments/Explanations	Source ^b
<u>City of Gillette</u> (population 11,200) Operating revenues:					
Ad Valorem Taxes (Operating)	\$100,000		7.5 mill levy	New assessed valuation is estimated as follows: \$6,700 per new single family unit \$2,500 per new multi-family unit \$1,600 per new mobile home New commercial and industrial valuation is assessed at 30% of new residential valuation.	Based on interview with Gilstrap
Sales, Gasoline Taxes (Operating) ^c	\$840,000	\$40/county resident	\$42/new county resident in 1978; \$45/new county resident thereafter	New employees expected to have higher disposable incomes. Over the next two years, new Gillette commercial facilities should decrease retail sales leakage to other trade centers.	Based on interviews with McConnaughey, and Racine
Cigarette Tax	\$180,000	\$9/county resident	\$180,000 plus \$9/ new county resident \$19,690 per million tons coal production in county, times the per- cent of miners living in Gillette	Present rate. 1976 Legislation provides for 7 1/2% of lease funds to be returned to towns on prorated basis. (We assume lease royalties of \$525,000/ton.)	DRI Based on interview with Brønder, Brown
Mineral Royalties	\$ 0				
Utilities Service Charges	\$1,730,000	\$154/Gillette resident	\$1,730,000 plus \$150/ new Gillette resident and \$50/new resident in county but not in Gillette	Electric and service systems extend beyond city limits but do not serve all county residents. Formula is intended to roughly approximate present rate structure.	Based on Dunham study and interviews with McConnaughey, Ebertz, Timm, and Taylor
Other User Charges	\$260,000	\$23/capita	\$23/capita	Present rate. The city's intention is to adjust refuse charges to cover refuse collection costs.	Based on interview with McConnaughey
Other Intra- governmental Transfers	\$150,000	\$14/capita	\$300,000 in 1978; constant at \$130,000 thereafter	These sources are not guaranteed--they must be applied for. Gillette is likely to apply for and receive some funds from these sources. The estimates used represent conservative assumptions.	DRI. Based on interview with McConnaughey

^a Revenues are based on the budgets for each governmental entity and on information provided by interviews with local officials. Figures are rounded to nearest \$10,000.

^b A detailed list of names and positions is given in Appendix A.

^c Only that portion of sales and gasoline taxes used in 1976-77 for operating purposes. Sales and gasoline taxes collected were \$1,310,000.

	<u>Fiscal Year 1977 Total Revenue</u>	<u>Fiscal Year 1977 Rate Basis</u>	<u>Future Rate Basis</u>	<u>Comments/Explanations</u>	<u>SOURCE</u>
<u>City of Gillette</u>					
Miscellaneous ^d	\$320,000	\$29/capita	\$320,000 + \$21/new county resident + \$6,000 in 1980	Liquor licenses cannot increase until 1980 census. Parking meter fees will not increase. Franchise tax receipts will increase more slowly than population growth. Other sources should increase proportionally with population growth.	DRI, based on interview with McConnaughey
Capital Revenues: 1% Sales Tax	\$340,000	\$16/county resident	\$17/county resident in 1978; \$19/county resident thereafter	Over the next 2 years, retail sales leakage to other commercial centers should decrease. 1% tax is optional and must be repassed every 2 years.	Based on interview with McConnaughey
Other (capital)	\$530,000 total (\$30,000 revenue \$470,000 sales tax, \$30,000 interest income)	\$47/capita	Revenue sharing: \$30,000 per year until 1980; \$4.50 per 1980 resident thereafter. Sales tax: \$24 per county resident in 1978, \$26/capita thereafter. Interest income: \$30,000 each year	Revenue sharing adjusted for population and income changes based on decennial census. Over the next 2 years, retail sales leakages to other commercial centers should decrease. No change in interest income.	Based on interviews with McConnaughey and Ebertz
Utilities Tap Fees	\$190,000	\$1,081 for sewer and \$950 for water tap fees per residential hookup equivalent (however, \$405 of each sewer hookup is obligated to pay for Donkey Creek A sewer line, \$450 of each water hookup is committed, up to \$1.1 million, for water storage tanks)	Same as present; assume that total new hookups (including commercial and industrial) will equal 120% of new residential hookups. (Donkey Creek payments will stop at 18,000 population)	Present rates. \$405 of each new sewer tap is obligated to repayment of Donkey Creek A sewer extension loan.	Based on interviews with Enzi, McConnaughey and Ostlund
<u>Campbell County</u> (population 20,811)					
Operating revenues: Ad Valorem Taxes (General Fund)	\$1,510,000		4.936 mill levy (valuation for 1978 adjusted downward by \$10,000,000)	New assessed valuation for residential units is estimated as follows: \$6,700 per new single family unit \$2,500 per new multi-family unit \$1,500 per new mobile home	Based on interviews with Gilstrap, Brown, and Munson

^dIncludes auto tax, franchise tax, animal control, licenses and permits, fees and fines.

	<u>Fiscal Year 1977 Total Revenue</u>	<u>Fiscal Year 1977 Rate Basis</u>	<u>Future Rate Basis</u>	<u>Comments/Explanations</u>	<u>Source</u>
<u>Campbell County</u>					
Ad Valorem Taxes (General Fund) (continued)				New commercial and industrial valuation, other than coal, oil, and railroads are estimated at 30% of new residential valuation. New coal valuation is assumed to be assessed at \$5.25 per ton of output for production and \$330,000 per million tons of output for improvements. Oil valuation is assumed to decrease by \$1.7 million per year. (Note: County must absorb \$10 million overvaluation penalty for past assessment error in 1978.)	Also reference, "Taxation of Coal Mining: Review with Recommendations, Western Governor's Regional Energy Policy Office
Ad Valorem Taxes (Special Districts)	\$1,750,000		5.78 mill levy	(See Ad Valorem Taxes--General Fund)	
Sales, Cigarette, and Gasoline Taxes	\$870,000	\$42/capita	\$44/capita in 1978; \$46/capita thereafter	Over the next 2 years, retail sales leakage to other commercial centers should decrease.	Based on interviews with Ebertz, Justesen, McConnaughey, and Racine
Royalties	\$150,000	\$7/capita	\$150,000 + \$6,600 per million tons coal production*	Oil and gas royalties assumed to decrease slowly; receipts from coal severance at \$32,000 per million tons; coal royalties at \$11,800 per million tons.	Based on interviews with Munson, Gilstrap, and Brown
Federal Revenue Sharing	\$60,000	\$3/capita		Higher per capita incomes should reduce revenue sharing allocation per capita.	DRI
Fees and Miscellaneous	\$220,000	\$10/capita	\$10/capita	Present rate.	DRI
Interest on General Fund	\$110,000	\$5/capita	\$110,000/year	Interest from invested operating and contingency funds, continuing at present level.	Based on interviews with Blackford, and Brown

*County royalty receipts are 2 1/4% of total receipts. Royalties are estimated at \$525,000 per million tons of production.

	<u>Fiscal Year 1977 Total Revenue</u>	<u>Fiscal Year 1977 Rate Basis</u>	<u>Future Rate Basis</u>	<u>Comments/Explanations</u>	<u>Source</u>
<u>Campbell County</u>					
Capital Revenues:					
Ad Valorem Taxes	\$1,210,000	\$58/capita	3.971 mill levy	(See Ad Valorem Taxes--General Fund)	
Federal Revenue Sharing and Miscellaneous	\$400,000	\$19/capita	\$400,000 per year through 1980; \$31 per 1980 resident thereafter	Revenue sharing allocation based on decennial census.	Based on interviews with McConnaughey, Ebertz, and Abrahamson
<u>Campbell County School District (4,200 enrollment)</u>					
Operating Revenues:					
Ad Valorem Taxes	\$11,280,000		37 mills applied to assessed valuation (12 mills county wide school levy; 25 mills special district levy)	(See Ad Valorem Taxes--Operating under Campbell County) (Note: School district has already paid \$10 million penalty described under county fund, thus it does not apply).	Based on interviews with Gilstrap, and Reed
State Equalization Funds	\$ 0		\$ 0	District receives nothing from state equaliza- tion funds. Assessed valuation per enrollee will remain too high to receive equalization funds.	Based on interview with Reed
Other State Funds	\$300,000	\$71/student	\$300,000 plus \$60/ new enrollee	State land income will remain relatively constant, however, it is apportioned to school districts based on an annual census. Other state funds (Taylor Grazing Act) will remain constant.	Based on interview with Reed
Grants	\$ 0		\$ 0		
PL 81-874	\$ 0		\$ 0	District receives nothing from Federal PL 81-874.	Based on interview with Reed
Other Federal Funds	\$50,000	\$13/student	\$0	Present rate. No federal participation anticipated.	Based on interview with Reed
Miscellaneous Capital Revenues:	\$850,000	\$200/student	\$200/student	Present rate.	DRI
Ad Valorem Taxes	\$1,340,000		4.386 mill levy	(See Ad Valorem Taxes--General Fund under Campbell County).	
Other Capital Revenue	\$50,000	\$12/student	\$50,000/year	Present level; comes from interest on deposits.	Based on interview with Reed

ASSUMPTIONS USED IN ESTIMATING PUBLIC OPERATING EXPENDITURES

	Fiscal Year 1977 Total Expenditure ^a	Fiscal Year 1977 Rate Basis	Future Rate Basis	Comments/Explanations	Source ^b
<u>City of Gillette</u> (population 11,200)					
General Administration	\$400,000	\$36/capita	\$400,000, plus \$5/ new resident	With exception of planning only minor upgrading of existing positions until population reaches 30,000.	Interview with McConnaughey
Police	\$530,000	\$47/capita	\$530,000 plus \$40/new Gillette resident and \$12/new resident in the county but not in Gillette	Expenditures are presently high relative to other communities. Administrative costs should increase less than proportionally with population growth.	Interviews with Ebertz, Justesen, and McConnaughey
Streets (and drainage)	\$380,000	\$34/capita	\$37/capita	Salaries are increasing to meet competition for labor from coal companies; substantial increases in maintenance levels of existing roads are required. Maintenance costs on equipment will also increase.	Interviews with Haukaas, Abrahamson, Blackford, Addison, McConnaughey Taylor
Health, Welfare, and Recreation	\$180,000	\$16/capita	\$25/capita	Health costs should not increase significantly. Welfare costs will increase (Human Services Project will have to be funded by local government if it is to continue). Park maintenance and other recreation programs will increase sharply beginning in 1978.	Interviews with Haukaas, Ebertz, Reed, Abrahamson, Ostlund, and McConnaughey
Utilities	\$2,030,000	\$181/capita	\$2,200,000 in 1978; \$1,570,000 + \$70/ new residents thereafter	Electric system costs should increase 30% next year and then remain relatively constant; waste-water treatment budget should increase less than proportionally with population; water treatment budget should increase with the Ft. Union and Madison wells.	Based on interview with McConnaughey
Miscellaneous	\$50,000	\$5/capita	\$50,000 + \$2/new resident, but not to exceed \$80,000	Parking control will not increase. Animal control will increase less than proportionally with population growth but will never exceed 3 times its present level.	Based on interview with McConnaughey

^aExpenditures are based on the budgets for each governmental entity and on information provided by interviews with local officials. Figures are rounded to nearest \$10,000.

^bA detailed list of names and positions is given in Appendix A.

	<u>Fiscal Year 1977 Total Expenditure</u>	<u>Fiscal Year 1977 Rate Basis</u>	<u>Future Rate Basis</u>	<u>Comments/Explanations</u>	<u>Source</u>
<u>Campbell County (population 20,811)</u>					
General Administration	\$930,000	\$44/capita	<p>Calculated using following formula:</p> $E_{\text{year}} = \text{Pop}_{\text{year}} \times$ $*\$44 \text{ per capita} \times$ $\left(\frac{\text{Pop}_{1977}}{\text{Pop}_{\text{year}}} \right) .3$ <p>E_{year} is the expenditure in a given year, and</p> <p>Pop_{year} is the population in a given year</p>	Present expenditures are \$44/capita. Later terms in formula are intended to reflect economies of scale which exist in county administration.	DRI based on interviews with Haukaas, Abrahamson, Blackford, and Addison
Sheriff	\$310,000	\$15/capita	\$310,000 plus \$30/new resident in county but not in Gillette and \$10/new resident in Gillette	Sheriff's office will be required to provide services (similar to those in Gillette) for new developments not within city limits.	Based on interviews with Racine, Justesen
Fire	\$150,000	\$7/capita	\$150,000 plus \$7/new resident until county pop. exceeds 35,000 or plus \$15/capita if county population greater than 35,000	Above 35,000 county population, it will probably be necessary to move to a full-time fire department.	Based on interviews with Racine, Justesen, McConnaughey, and Abrahamson
Health	\$1,110,000	\$53/capita	\$55/capita	Operating costs are expected to increase in hospital presently under construction.	Based on interviews with Hinzman, and Ostlund
Road and Bridge	\$1,070,000	\$52/capita	\$1,070,000 plus \$30/new Gillette resident and \$70/new resident in county but outside Gillette	County highways will not increase substantially, however, new developments in the county will require urban-type road services.	Based on interviews with Racine, Justesen, and Abrahamson

	<u>Fiscal Year 1977 Total Expenditure</u>	<u>Fiscal Year 1977 Rate Basis</u>	<u>Future Rate Basis</u>	<u>Comments/Explanations</u>	<u>Source</u>
<u>Campbell County</u>					
Welfare	\$230,000	\$11/capita	\$230,000 + \$4/ new resident	Present level of welfare expenditures for day care. Other welfare costs should not increase as rapidly.	Based on interview with Reed
Recreation	\$320,000	\$16/capita	\$16/capita	Present level.	DRI
Library and Miscellaneous	\$300,000	\$14/capita	\$320,000 plus \$10/ new resident	Some expenditure categories such as cemetery, fair, and airport should not increase proportionally to population.	DRI
<u>Campbell County School District (4,200 enrollment)</u>					
Instruction	\$6,230,000	\$1,482/ student	\$1,485/student	Pupils new to an area tend to require more expenditures, however, Campbell County School District already providing this higher level of service.	Based on interview with Reed
Transportation	\$630,000	\$149/ student	\$630,000 plus \$130/ new enrollee	New residential patterns should be more concentrated.	Based on interview with Reed
Administration and Miscellaneous	\$2,820,000	\$670/ student	\$2,820,000 plus \$300/new enrollee	Significant economies of scale should be obtained as district enrollment increases.	Based on interview with Reed

<u>City of Gillette</u>	<u>Thresholds</u>	<u>Capital Outlays^a</u>	<u>Comments/Explanations</u>	<u>Source^b</u>
Administrative Space	The year 1980	\$1,500,000	City center expansion (could be less if the present Central School building can be used).	Based on interview with McConnaughey
	50,000	\$50,000	City center expansion (1,000 sq. ft. @ \$50/sq. ft.).	
Police	NOW	\$20,000	Communication recorder; also 2 police cars (1.5 policemen/1,000 pop.; 1 car/4 policemen).	
	additional increments		[additional police car and miscellaneous equipment/2,000 pop. increase at \$10,000/car].	
	35,000	\$50,000	Police expansion (1,000 sq. ft. @ \$54/sq. ft.).	Threshold-DRI Capital Outlay- <i>FEA</i> Report, Capital Facilities Study (CFS) and Powder River Basin Study (PRB)
	50,000	\$50,000	Police expansion (1,000 sq. ft. @ \$54/sq. ft.).	Threshold-DRI Capital Outlay- <i>FEA</i> Report, Capital Facilities Study (CFS) and Powder River Basin Study (PRB)
Streets	NOW	\$50,000	New equipment.	Based on interview with McConnaughey
	The years 1978 and 1979	\$1,500,000 in each year	Street reconstruction (revenues from 1% optional sales tax earmarked for this purpose).	Based on interview with McConnaughey and Taylor
	13,000	\$500,000	New public works compound (Note: compound will also serve recreation and utilities functions).	Based on interview with McConnaughey
	The years 1982-85	\$1,000,000 each year	Drainage improvements (on the existing system).	Based on interview with McConnaughey, Taylor, and also on CPIP

^aAll capital outlays have been rounded to the nearest \$10,000.

^bA complete list of reference sources is given in Appendix D.

	<u>Thresholds</u>	<u>Capital Outlays</u>	<u>Comments/Explanations</u>	<u>Source</u>
<u>City of Gillette</u> Streets (continued)	18,000	\$180,000	12th Street expansion (\$164,000); 0.2 miles arterial improvements (\$100,000/mile).	Threshold-Streeter Study Capital Outlay-CPIP and DRI
	20,000	\$340,000	Traffic lights (\$250,000 cost--15% paid by city); 3 miles arterial improvements (\$100,000/mile).	Threshold-Streeter Study Capital Outlay-CPIP and DRI
	22,000	\$2,200,000	Overpass (\$2,000,000); 2 miles arterial improvements (\$100,000/mile).	Threshold-Streeter Study, also interview with Taylor Capital Outlay-CPIP
	additional increments		[.2 mile arterial improvements \$100,000/mile per 2,000 pop. after 22,000].	
	35,000	\$3,190,000	Street system plan (state and federal grants planned).	Threshold and Capital Outlay-CPIP
Health, Recreation, and Welfare	NOW	\$20,000	Water system for fishing lake, golf course improvements, park expansion.	Based on interview with McConnaughey
	14,000	\$40,000	Tennis courts.	Threshold and Capital Outlay-DRI
	additional increments		[additional neighborhood park/2,000 pop. after 11,500 pop. @ \$10,000/park].	Threshold and Capital Outlay-CPIP
	20,000	\$350,000	Swimming pool (\$180,000); golf course improvement (75,000-50% paid by city); 80 acre park @ \$3,100/acre (\$250,000-50% paid by city).	Threshold-Streeter Study Capital Outlay-CPIP, CFS, and DRI
	30,000	\$400,000	New golf course.	Threshold-Streeter and DRI Capital Outlay-CPIP
	40,000	\$40,000	Tennis courts.	Threshold and Capital Outlay-DRI
Utilities	NOW	\$6,590,000	Solid waste packer (\$40,000), water meters (\$20,000), sewer sludge truck (\$40,000), electric system transformers (\$580,000), electric line construction (\$910,000), sewer treatment plant through Joint Powers Board (\$5,000,000).	Based on tentative 1977-78 city budget also interviews with McConnaughey, Taylor and Ostlund

<u>City of Gillette Utilities (continued)</u>	<u>Thresholds</u>	<u>Capital Outlays</u>	<u>Comments/Explanations</u>	<u>Source</u>
	The years 1979, 1980, and 1981	\$180,000	"Catch-up" projects: water main replacement (\$100,000 each year), rehabilitation of existing water wells (\$80,000 each year).	Based on interview with McConnaughey and Taylor
	12,000	\$6,160,000	Electric lines extensions for new units (\$660,000).	Based on interview with McConnaughey and Taylor
	additional increments		[\$660,000 for electric connections for each new 1,000 city residents after 12,000 population].	
	13,000	\$1,200,000	Expand water capacity with new Ft. Union wells.	Based on interview with McConnaughey Taylor; also CPIP
	14,000	\$220,000	Electrical circuit improvement.	Threshold-Streeter Study Capital Outlay-CPIP and Dunham
	15,000	\$180,000	Sewer line replacement (\$80,000); water line replacement (\$80,000); additional landfill (\$2,200/acre).	Threshold-Streeter Study Capital Outlay-CPIP
	18,000	\$260,000	Donkey Creek B sewer line for additional 6,000 population (\$150,000); sewer line replacement (\$80,000); additional landfill (\$2,200/acre); sanitation vehicle (\$12,000).	Threshold-Streeter Study Capital Outlay-CPIP and Streeter
	20,000	\$500,000	Electrical transmission and reservoir expansion.	Threshold-Streeter Study Capital Outlays-CPIP and Dunham
	22,000	\$3,160,000	Sewer line replacement (\$80,000); sewer plant expansion of 1.2 million gpd (\$2,000,000); water line replacement (\$80,000); water line expansion (\$1,000,000).	Threshold-Streeter Study Capital Outlays-CPIP and Dunham
	25,000	\$20,500,000	Electrical line expansion; new sanitation equipment (\$50,000), Madison water supply system (\$20,000,000) (Note: Madison water supply needs 5-year development period, thus financing should be available 5 years before threshold is reached).	Electric--Threshold-Streeter and DRI Electric--Capital Outlays-Dunham and DRI Water improvements--based on interview with McConnaughey, Ostlund, and Taylor
	30,000	\$1,290,000	Sewer line replacement (\$160,000); water line replacement (\$80,000); electric substation with loop (\$750,000).	Threshold-Streeter Capital Outlay-CPIP

	<u>Thresholds</u>	<u>Capital Outlays</u>	<u>Comments/Explanations</u>	<u>Source</u>
<u>City of Gillette</u> Utilities (continued)	35,000	\$1,400,000	Sewer line expansion for additional population to NE (\$1,000,000); sewer line replacement (\$160,000); additional water storage of 4 million gal. (\$1,500,000); new sanitary collection system and equipment (\$90,000).	Threshold-Streeter and DRI Capital Outlay-CPIP
	40,000	\$600,000	Electric substation.	Threshold-Dunham and DRI Capital Outlay-Dunham
Miscellaneous	30,000	\$20,000	Animal shelter expansion (present facility was updated last year).	DRI
<u>Campbell County</u> Administration	30,000	\$100,000	Courthouse expansion (new juvenile courtroom, law library, and expanded office space).	DRI-based on interviews with Haukaas, Abrahamson
	50,000	\$110,000	Courthouse expansion.	Threshold-DRI Capital Outlay-DRI Ft. Union
Fire and Sheriff	additional increments	.	[Fire: additional fire truck per population increase of 4,000 at \$60,000/truck Sheriff: additional vehicle/4,000 population increase at \$10,000/vehicle].	
	26,000	\$170,000	Fire: ladder truck (\$70,000); fire substation (2,000 sq. ft. at \$50/sq. ft.) Note: ARCO likely to furnish fire substation at Wright City.	Threshold-DRI Capital Outlay-CFS and DRI
	35,000	\$180,000	Fire: fire station expansion (2,000 sq. ft. @ \$50/sq. ft.) Sheriff: expansion of sheriff's facilities (2,000 sq. ft. @ \$40/sq. ft.) Note: ARCO is providing temporary space at Wright City.	Threshold-DRI Capital Outlay-DRI
	50,000	\$80,000	Fire: expansion or new fire substation (2,000 sq. ft. @ \$50/sq. ft.).	Threshold-DRI Capital Outlay-DRI
	55,000	\$80,000	Sheriff: expansion of sheriff's facilities (2,000 sq. ft. @ \$40/sq. ft.).	Threshold-DRI Capital Outlay-DRI

	<u>Thresholds</u>	<u>Capital Outlays</u>	<u>Comments/Explanations</u>	<u>Source</u>
<u>Campbell County</u> Health and Welfare ^c	NOW	\$20,000	Day care center expansion.	Based on interview with Abrahamson
	26,000	\$800,000	Hospital: additional 20 beds (\$40,000/bed) based on 3 beds/1,000 population.	Threshold-DRI Capital Outlay-DRI
	55,000	\$220,000	Expansion of mental health clinic (1,500 sq. ft. @ \$45/sq. ft.); expansion of county day care facility (\$150,000).	Threshold-DRI Capital Outlay-DRI
Roads and Bridges	additional increments		[4 miles of arterial roads/6,500 new residents (\$100,000/mile). It is assumed that the energy companies will pay costs for roads to mines.]	Threshold-DRI Capital Outlay-DRI
	30,000	\$50,000	Expansion of county maintenance garage.	Threshold and Capital Outlay-DRI
Library and Recreation	NOW	\$270,000	Library expansion (3,500 sq. ft. @ \$50/sq. ft.) and 15,000 volumes at \$9/volume (possibly as library stations).	Threshold and Capital Outlay- <u>The Bowker Annual of Library and Book Trade Information--20th ed., 1975</u>
	26,000	\$840,000	Library expansion (7,000 sq. ft. @ \$50/sq. ft.) and 35,000 volumes @ \$9/volume; neighborhood park (\$50,000); ballfields (\$40,000); playground (\$80,000). ^d	Threshold and Capital Outlay- <u>The Bowker Annual of Library and Book Trade Information--20th ed., 1975</u>
	30,000	\$90,000	Ballfield (\$20,000); tennis courts (\$20,000); playgrounds (\$50,000).	Threshold and Capital Outlay-DRI
	35,000	\$680,000	Library expansion (5,000 sq. ft. @ \$50/sq. ft.) and 20,000 volumes @ \$9/volume; expansion of county day care facility (\$150,000); ballfields (\$60,000); tennis courts (\$30,000); swimming pool (\$20,000).	Threshold-DRI and PRBS Capital Outlay-PRBS
	50,000	\$430,000	Library expansion (5,000 sq. ft. @ \$50/sq. ft.) and 20,000 volumes at \$9/volume.	Threshold and Capital Outlay-DRI

^cNew hospital bond issue passed 1977. Construction underway.

^dCounty needs to pay costs of park improvements but not land. County subdivision ordinance requires subdivision developers to provide land.

	<u>Thresholds</u>	<u>Capital Outlays</u>	<u>Comments/Explanations</u>	<u>Source</u>
<u>Campbell County School District Schools</u>	The years 1978 and 1980	\$1,600,000 in each year	Replacement facilities for present structures.	Based on interview with Reed
	after 5,100 enrollment-- additional increments		[expansion of school facilities for each 400 new enrollees based on 100 sq. ft./new student @ \$40/sq. ft. after 5,100 enrollment]	Threshold-DRI based on interview with Reed Capital Outlay-DRI based on interview with Reed
Administrative Space	additional increments		[expansion of administrative facilities-- \$20,000/1,000 new students.]	Threshold and Capital Outlay-DRI and interview with Reed

<u>Campbell County School District Schools</u>	<u>Thresholds</u>	<u>Capital Outlays</u>	<u>Comments/Explanations</u>	<u>Source</u>
	The years 1978 and 1980	\$1,600,000 in each year	Replacement facilities for present structures.	Based on interview with Reed
	after 5,100 enrollment-- additional increments		[expansion of school facilities for each 400 new enrollees based on 100 sq. ft./new student @ \$40/sq. ft. after 5,100 enrollment.]	Threshold-DRI based on interview with Reed Capital Outlay-DRI based on interview with Reed
Administrative Space	additional increments		[expansion of administrative facilities-- \$20,000/1,000 new students.]	Threshold and Capital Outlay-DRI and interview with Reed

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