

IMPACTS OF OIL SHALE: BOOM OR BOON

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This paper is generally addressed to the threats and opportunities facing much of the Rocky Mountain area if and as our mineral fuels are *hastily* developed. It is more specifically addressed to some of the threats and opportunities facing us in Colorado if oil shale and coal are intensively developed in Colorado.*

In one commonly used scenario for oil shale development that we prepared for the Oil Shale Regional Planning Commission, we used the following assumptions:

Oil shale development, now thought to be imminent in western Colorado, is expected to use technology found within the present state-of-the-art of mining and processing for several years to come. The following circumstances and impacts would vary a great deal if in-situ processing should be widely undertaken in the near future.

Assuming present state-of-the-art technology, it may be postulated that the construction and operation of eight oil shale plants in Colorado on both public and private land will occur by the 14th year after the first announcement of construction intentions. This statement suggests that if the 1973 announcement by Colony Development Operation to build a plant holds up, by 1987 eight plants might be in operation in Colorado with a combined capacity of 850,000 barrels a day. Additional plans might be in operation in Utah just across the Colorado line from Rangely, generating further impacts on northwest Colorado.

We have estimated that each 50,000 to 60,000 barrels per day mining and processing unit would involve a major construction effort over 2 to 3 years, with a peak construction force of 1,300 to 1,600. Each such plant

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would then employ an estimated 900 mining and operating personnel.

Bob Giltner's paper, "Western Colorado: Choices for Growth," in the next session, will detail the variety of public sector problems (and their costs) that may be anticipated.

Suffice to say here, there also are many policy and operating decisions that must be made by local government from 2 to 5 years ahead of the time when the people or the requirement for services will actually be present in the three-county region.* These services cover decision-making in matters of water supply; planning and zoning; transportation; recreation and education facilities; new communities policy; air pollution control; hospitals, public safety, and mental health facilities; and determining both ends and means of maintaining a diversified community similar to that in which the residents of this region now live.

More specifically, three major categories of growth management problems are readily identifiable with an oil shale (or other construction and mining) boom:

- (1) the quality of life of present residents is degraded;
- (2) industrial productivity and profitability suffer;
- (3) local government's fiscal viability is impaired.

Since many of these problems are best described qualitatively, it is difficult to quantize or allocate their costs. Difficult or not, it is bad economics to ignore the costs. It is poor management and unresponsive government neither to ameliorate the problems and their costs nor to compensate for them. Some examples follow.

The quality of life is degraded. The cost of living goes up, particularly the cost of rental housing. The supply of available housing quickly dwindles. The availability and quality of services suffer; recreation facilities are crowded, telephone service degenerates.

Looking to 1987, we forecast a population of the three-county region of Garfield, Mesa, and Rio Blanco to be about 147,000 people without oil shale development. This is a generally prosperous regional economy, well-diversified at this time, with comfortable growth over the next several years unless there is a collapse of tourism and recreation. The oil shale development we have described, if it takes place, would add an additional

**Working Paper #3, op. cit.*, offers an example of a decision-making agenda and suggests that regional planning and decision-making groups prepare and continually revise a 10- or 15-year problem identification and decision-making agenda, specifying assumptions as to what will be going on over each of the next 10 to 15 years and identifying the leading year in which decisions must be made to cope with a given later year's housing, schoolroom, public and private service, and decision-making requirements.

160,000 people to this three-county region. This development covers population supported directly by oil shale construction and operation, basic employment, plus the related local service employment. The additional 160,000 people would create a total 1987 population of about 310,000 people. This growth rate (10 to 12 percent, which may be conservative) is a doubling of the forecasted rate (5 percent) without oil shale, and a tripling of the present rate (3 percent); the growth rate in western Garfield County, or in Rio Blanco County, might go to 25 or 30 percent.

We estimate that just this additional oil shale related population would require about 20,000 units of permanent housing and probably another 10,000 to 11,000 mobile homes during this period, *if* permanent housing were available at the time it was needed (one type of lead-time problem). If the housing were not available when incoming workers and their families were first making their decisions on where to live, the proportion of mobile homes would be far higher. Servicing the housing needs would involve the construction of up to 5,000 homes per year during some years of the 14-year period.

This new population resulting from oil shale would have total income of over \$800 million, creating massive demand for retail goods and services.

The demand for public facilities and public services too would grow rapidly with this sudden influx of people. For example, this new population would include an estimated 44,000 additional school children, requiring an additional 1,500 schoolrooms (and related school facilities).

Here again there would be lead-time problems. One problem would be furnishing the school facilities at the time the children arrived (over 200 new rooms a year in some years). Another involves building and staffing these school facilities to accommodate construction employees' children *before* there is any substantial increase in property tax base resulting from oil shale mining. There are substantial lead-time problems also in adjusting boundaries of school districts and other jurisdictions. Crowding and increased traffic relative to available streets and parking are frustrating.

Health services, particularly, suffer in a boom; it is difficult to rapidly build new facilities; in a rural area, it is particularly difficult to attract physicians and staff even if the facilities were in place on time. In Sweetwater County, Wyoming, the ratio of population to physicians is 3,300 to 1; in the state of Colorado, the ratio is 660 to 1. The caseload in the county mental health clinic increased tenfold while the population went from 18,000 to 30,000 in 3 years. This increase generated a different type

of caseload, i.e., much higher incidence of broken home problems, alcoholism, and down-and-outs.

In Gillette, Wyoming, an earlier boom steeply escalated high school dropout rates, as jobs and wages increased steeply. Massive, unplanned mobile home parks sprung up; sometimes squatters' colonies of trailers lacking normal water and sanitation facilities proliferated.

Fringe settlements, outside established towns, proliferate because of inadequate facilities in the town. These settlements offer little opportunity and no encouragement to newcomers to participate in a community. Social cohesion suffers as alienation and emotional distress feed on each other. Crime rates and alcoholism increase. In Gillette and Rock Springs—typical of the small rural towns in Colorado oil shale country—recreational facilities and educational/cultural opportunities are insufficient; lacking these resources, the stress level for newcomers is increased, leading to increased mental health caseloads.

Industrial productivity and profitability suffer. The prime example of poor profitability is the Jim Bridger power plant project near Rock Springs. It has \$100 million escalation in cost, much of it resulting from personnel and labor market problems inevitable in a boom town. This high cost has led to high employee turnover and lowered productivity in existing employment; a chain reaction of business and industrial problems appears almost inevitable in a construction-and-mining boom.

Municipal viability is threatened. The boom-inflated wage rates particularly hit county and municipal employment. Police and road maintenance personnel, at \$500 to \$700 a month, may be particularly tempted by \$1,000 to \$1,200 a month construction jobs.

Tax base for property taxation (and for bonding) in municipalities is slow to increase, while demands for facilities and services mushroom. (See following table.)

Population Versus Assessed Valuation

		Population	Assessed Valuation	Valuation Per Capita
Green River	1970	4,196	\$ 5.1 million	\$1,215
	1973	7,000	5.6 "	800
Rock Springs	1970	11,657	\$15.7 million	\$1,347
	1973	18,000	16.8 "	933

The greatest threat to local government, however, may be the uncertainty tied to a single-industry boom. An oil shale boom, particularly if

it damaged (by preempting resources) the diversified economy of north-west Colorado, could turn a relatively stable long-term growth trend into a boom with a bust tied on at the end. The bust is not inevitable, but it certainly is a possibility, born of resource depletion, technological change, change in fuel markets, or changes in social structure and values.

Boom or boon? So the threats implicit in a boom are considerable. The challenges to growth management are tremendous.

An even greater challenge to growth policy-making comes out of the two strategic dilemmas posed by attempts at growth management:

- (1) Should the oil shale boom regional economy be a specialized oil shale economy? Or should it be deliberately maintained as a diversified economy, at the risk of programming even more growth into the area to maintain diversity?
- (2) Should a substantial part of the population growth be accommodated in throwaway boom settlements—boarding houses and mobile homes? Or should permanent free-standing communities with expected lives into the next century be developed?

These strategic questions must be considered in light of national and local concerns.

Nationally, another 50 million people must be accommodated in the United States over the next 30 or 40 years. Nationally, continentally contained energy sources should be developed. Nationally, areas of unique environmental quality should be preserved.

Locally, the welfare (including the desired way of life) of people in the region should be defended. Locally, environmental and social standards should be maintained. Locally, the fruits of the booms should be shared equitably.

Oil shale development (and mineral fuels development in general) will require intensive planning. The planning should include land-use and growth management with careful selection of growth strategies.

Oil shale development (and mineral fuels development in general) will generate immense cash flows in both the public and private sectors. The implementation of effective growth management, based on carefully selected growth strategies should be economically and socially self-sustaining so that the affected regions and their citizens find the development beneficial—a 20th century boon to all of us.