

WORKING PAPER (*April 15*)

"Energy Development and Public Service Delivery  
in the Western States."

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April 15, 1977

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## Overview

In the past several decades, the energy demands of the United States have increased dramatically. However, many of the raw materials necessary to meet this increased demand have come from foreign sources. Since the onset of the energy crisis in 1973, the U.S. has embarked upon an energy self-sufficiency program, ostensibly to protect the U.S. from vulnerability stemming from dependence upon foreign energy sources. One of the major components of this program is the increased exploitation of coal resource in the western U.S., especially in the Rocky Mountain-Northern Great Plains region. Many communities in this region are anticipating the development of large-scale coal mining (underground and strip), construction of plants to transform the coal into electricity or synthetic natural gas, and other related projects.

In some areas, residents have been very favorably predisposed toward the developmental prospects for their stagnant or declining economies. This is often based upon the anticipation of enhanced employment opportunities and other economic benefits. Recent evidence suggests that in anticipation, local citizens tend to overemphasize the benefits of development, while de-emphasizing or ignoring the costs of development.<sup>1</sup> As local citizens and leaders became cognizant of the actual costs and benefits of development, many may use the political process to erect barriers to the development of energy resources. If the actual costs and benefits are similar, few communities can be expected voluntarily to undergo the

experiences of current boom towns like Rock Springs<sup>2</sup> or Gillette, Wyoming. In fact, a recent NSF funded study indicates that political barriers are already being erected to block the development of energy resources.

" . . . potentially significant contributions to domestic energy supplies have been delayed because potential energy-producing states have perceived federal regulations as placing immediate costs and risks . . . on the states while reserving possible benefits for the longer-term, indefinite future."<sup>3</sup>

Yet it is clear that for the short and medium runs the U.S. is locked into an energy intensive economy and culture. Our citizens and their machines, buildings and life styles are, aside from the occasional dropout or remnant Old Order Amish, predicated upon the availability of high volumes of low to moderately priced energy. The costs and dislocations of adjusting to relatively scarce energy are generally considered to be excessive in the short or medium runs. More succinctly, short-run demand is relatively inelastic. Hence, the pressures for developing western energy resources are extremely high.

Energy will be developed in the Rocky Mountain-Northern Great Plains region. The question is under what terms? Kash notes that, "Only when ways are found to accommodate the varied interests that will be participating in decision-making will the energy crisis be resolved."<sup>5</sup> This accomodation may be enhanced by indicating ways in which the costs of development may be reduced to acceptable levels.

Energy related development costs may be categorized under four basic headings: (1) opportunity costs of capital devoted to various types of energy development, (2) environmental-ecological costs of developmental change, (3) social-cultural costs generated by changing life styles and intrusion of an "alien" work force, and (4) public service delivery costs including the social welfare losses associated with inadequate or poor levels of delivery and the inefficiencies of using suboptimal delivery systems to provide a given level of service. Our focus will be upon the last of these problems.

#### Historical Setting

The energy relationship between the Coastal and Rocky Mountain regions of the United States is predominantly one of development financed from the east. Historically and to a large extent presently, the western states—Montana, Utah, Arizona, New Mexico, Colorado, Wyoming, and the Dakotas—represent energy colonies of the eastern states, and of California. The high potential energy availability and low population of the western states provide an energy "export" situation. Historical evidence of a "colonial" orientation seems readily apparent to many who have seriously considered the implications of Western energy policy. Energy policy has always been intended to expedite development.

#### Demographics

An understanding of the physical nature of the communities experiencing intensified energy development, and of the character of these communities' citizens, provides insight into problems resulting from boom town development. These communities are small to very small. They are isolated from large urban

centers and lack many of the services available in such urban areas. The communities are located in arid areas and their productivity is primarily land based: mining, agriculture, and to a limited extent tourism.

The traditions of recent history dominate many of these people. The basis for this powerful tradition lies in the relative youth of the communities which these people inhabit; many children of the founders are still living. A further reinforcement of recent tradition is that these communities are only lightly touched by immigration and the cultural diversifications which result. These people, with their strong orientation of resentment towards intrusions upon personal freedoms and lifestyles, are the individuals expected to host the imported labor and new technologies of energy development.

#### Factors Influencing Development

The factors which influence energy development are largely beyond the control of the communities affected. Primarily, these factors are the same factors which influence any economic development: product demand, extraction cost, capital availability, raw material availability, and the labor situation. In the case of energy development, there is also the important external factor of government policy.

#### National Policy

Traditionally, the role of our government has been to foster economic development, regulate and protect private industry, provide national security, and own and be custodian of specified resources.

Most recently, complications stemming from energy dependence have led to the establishment of a new emphasis in energy policy: increased independence through increased domestic development. "Independence 1985" was initiated through the enactment of the Energy Independence Act of 1975. The specific objectives of the law were to reverse the trend of energy dependence, eliminate vulnerability to disruptive embargoes, and to fulfill internally the needs of inadequately supplied markets. In an effort related to the latter, the Interior Department, in an environmental impact statement, revealed plans to expand federal coal leases.<sup>0</sup>

The intensive development of energy and material resources in the Intermountain West will result in rapid and significant increases in employment. Workers will be needed to construct and operate mines, pipelines, railroads and conversion plants. In addition, a substantial labor force will be required to provide the mining families with the private and public services demanded.

Currently the region for which most of the resource development plans are being formulated is very sparsely populated. The existing economies are primarily based on farming and ranching. Most of the towns are quite small with stable or declining populations. There are no large cities within commuting distances, so most of the work force will emigrate from outside the surrounding areas.

A recent Rand Corporation study<sup>7</sup> on coal development looked at five counties in Montana and Wyoming where definite to moderate firm development plans have been proposed. They projected increases in population by 1985 of 100 percent to 250 percent above 1970 levels.

In investigating growth resulting from energy development, it is seen that the duration and pattern of change are as significant as the absolute magnitude. Growth in mining towns is not likely to be a gradual process with eventual leveling off. Rather, some version of the boom-bust cycle is probable, especially if energy conversion facilities are also involved. Employment at any single surface coal mine will increase gradually as mining facilities are constructed and production rises to capacity. After that it will level off, stabilizing for the 20 to 60 year operating life of the mine, and then decline. Employment at a synthetic natural gas conversion plant will rise sharply then decline after a few years of peak construction activity. At operating levels it will remain stable for the 25 to 40 years operating life of the plant.

Public Services: The Prospects for Public Provision

With the increase in employment, population and disposable income, there will be a corresponding increase in demand for goods and services. Housing, roads, water, sewage and power provisions will need to expand rapidly. There will be an increased need for police and fire protection, schools, libraries, medical services and indoor and outdoor recreational facilities.

In the past, boom towns have failed miserably to provide the inhabitants with the desired goods and services. Most communities can probably absorb an annual growth rate of five percent, but they cannot absorb without a great many problems, a growth rate of ten percent or more which is typical of boom towns? Therefore, roads are not maintained to past standards. Schools and recreational facilities are over-crowded and debilitated. Aggravating

this situation, the immigrants (many from larger urban areas) may have significantly greater expectations about the level of public services provided. In general, the quality of life (for both indigents and immigrants) deteriorates as the service sector fails to meet the growing needs of the community.

To compensate for the lowered quality of life due to the poor provision of goods and services, mining and energy conversion industries will be forced to pay higher wages to attract employees. To the extent that worker turn-over is inversely related to the level and quality of public service delivery, they will also face high training costs. In addition, some researchers estimate that employee productivity in boom towns is generally lower.<sup>9</sup>

If such costs are viewed as significant by the development companies, it may be advantageous for these companies to provide services and facilities for their employees that would ordinarily have been provided by the public sector. However, company outlays for public services for employees will cover only part of the costs of development which the entire community must bear. Insofar as company benefits are less than social benefits, private incentives for investment in public services will be insufficient. Hence, private provision of public services will be sub-optimal. In most cases **the** bulk of the responsibility for public service provision will still lie with the local government.

Unfortunately, the local government's expansion of public goods and services, to meet the demands of rapid population growth, is hampered by a lack of time and money for planning and developing adequate facilities. Time is a particularly binding constraint to the boom town government due

to local managers' inexperience with rapid rates of growth. A trial-and-error method of service expansion may contribute significantly to the problems of boom town life as public needs go unmet.

Separate from the problem of inexperienced management, the local government is time constrained in a revenue context as well. Local governments depend primarily on property taxes and revenue sharing for funds. Both sources are likely to lag several years behind increases in demand for public services as new developments are generally not taxed until construction is completed. In addition, tax revenue is limited by other factors unique to boom towns. Mobile home residents demand similar amounts of services as do residents in permanent homes, but their property taxes are much lower. The operating costs of local governments are likely to be further increased since higher wages will be necessary to attract and retain employees in a boom town situation.<sup>10</sup>

The ultimate concern of this analysis is the relationship between local government structure and the welfare of those governed. The current case of energy development offers the opportunity to examine this relationship and to devise solutions to the unique problems inherent in any rapid development. Basis for concern lies not only in the problems of the present and future residents of energy communities, but solutions to their problems may also reduce the obstacles to energy development and thereby increase the welfare of the national community.

In the next section we outline the rationale for government production of goods and services and present a market alternative to pure government production. Finally, we discuss the applicability of this solution to energy boom town problems.

Public Services: Requisites for Efficient Production

To this point, an overview has been presented of the problems faced by energy communities in their attempts to expand public services. We have used the terra "public services" to mean any service provided by government, especially local government. This definition is useful in that there is a class of goods and services that has traditionally been government supplied. The reader will immediately identify elementary and secondary education, police and fire protection, public parks, and others as being members of this class. However, the definition is more descriptive than analytical and will not serve our purposes in an examination of the justification for public production of goods and services. It should be worthwhile to review some additional definitions and classifications.

Goods and services can be classified by their position on a continuum between pure private goods and pure public goods. (The terms "goods" and "services" may be used interchangeably with little harm done.) Pure private goods are primarily characterized by the quality of excludability in consumption. If one person consumes a private good others are automatically excluded from consumption of that same good. A gallon of gasoline consumed by me is not available for consumption by others. The majority of goods purchased and consumed lie near this end of the continuum.

The polar opposite of a private good is a public good. The pure public good is characterized by non-excludability in consumption: once the good is made available to one it is made available to all. National defense probably comes the closest to being a pure public good. I cannot prevent others from consuming national defense and once a level of provision is established we all consume the identical quantity.

It should be emphasized that the private-public goods continuum is indeed a continuum; almost all goods exhibit some degrees of excludability and non-excludability. In fact, examples of pure (or almost pure) public goods are difficult to come by without a great deal of abstraction from real world situations.

The private-public goods distinction becomes important when examining private versus public provision. The farther a good lies toward the private end of the continuum, the more likely that the good will be provided by the private sector. This flows from the excludability characteristic. If a private firm can exclude non-payers from consumption, it can capture the benefits from production of the good and will have incentives to produce it. Similarly, a firm has little incentive to produce a good which is, by nature, freely available to all once it is produced. Such a good might better be provided by an authority with the power to tax.

There are other characteristics of certain goods which argue for government provision. Broken into two broad classes, they are: externalities and natural monopolies.

Negative externalities (or neighborhood effects) arise when consumption or production of a good imposes costs on persons external to the decision-making process which led to the cost-producing activity. Air pollution from energy development is an example. When private market transactions impose externalities on third parties who had no part in the transaction, the information costs involved in determining the source and costs of the external damages may be prohibitively high. This would imply that compensation through the courts would not be feasible and public production (or

public regulation of private production) may be required to increase social efficiency and equity.

The other broad class of private market imperfections is that of natural monopolies. A natural monopoly exists when a good or service can be produced at least cost by a single producer. In such cases, the private market will tend towards a monopoly situation with too little output at too high a price. Again, government production or regulation may increase social efficiency and equity.

The above qualities only provide general guidelines for assignment of authority or responsibility in the production of goods or services to the public sector. A determination based upon the qualities exhibited by the good or service in each case is necessary.

As was pointed out in earlier sections, energy impacted communities will have great difficulty in efficiently expanding publicly provided services if they rely upon traditional means of provision. At the same time, it is clear that the private market will inadequately provide many goods and services. We have just advanced several arguments for public provision of such goods and services. But these arguments imply nothing about public production. That is to say: goods may be publicly provided and privately produced. By contracting out to private firms for the goods and services which are publicly provided to local residents, local governments need not forego the advantages of private market production. No local government, for example, would try to build its own police cars. That market production does indeed offer advantages will be demonstrated.

With a structure of private ownership of production facilities both the rewards and costs of providing goods and services are concentrated with the managers responsible for decisions. A private manager who sees inefficient production in the marketplace has a direct incentive to enter the market, underbid and displace the existing firms, and thereby increase his welfare while reducing prices to consumers.

The contrast with public agencies is striking. Governmental managers have little (if any) of their own wealth at stake. A decision by a governmental manager which increases the efficiency of his agency will not result in a direct increase in his welfare. While consumers of his service (voters) can register their preferences at the ballot box, they vote for a large bundle of publicly provided services and have no way of directly rewarding or reprimanding the manager. The consumer directives which he receives are indirect and diffuse.

A hypothetical example should make clear the differences in incentive structures. Consider the case of a business operations expert for a private garbage collection firm who comes up with a brilliant new strategy **for** collecting garbage, with only half the men and equipment previously employed. The owner of the firm who now sees himself able to provide the same service at half the cost or twice the service at the same cost is **likely** to be extremely happy, and very anxious to reward the expert and **keep** him with the firm. The owner is able to gain personal income from **such** costs savings. Consider the same expert, working for Rich Springs **or** Two Pots who comes up with the same idea. The head of the garbage collection bureaucracy is liable to be very unhappy indeed about this

situation. He sees the new potential for efficiency as a real problem for he must bear all the personal costs of laying people off, being unable to promote good employees, operating on a reduced budget, etc. Yet he can personally obtain little or none of the social benefits produced by the reduction in cost. The outcomes in the two situations should be obvious.

Public Services: The Private Contracting Alternative

Recent research<sup>11</sup> in local government policy has examined the problem of incentives for efficiency in public services. In this section we initially borrow from the work of two of those researchers, Vincent and Elinor Ostrom,<sup>12</sup> in order to establish a model from which to analyze private contracting.

Governments (think of local governments) as they exist can be conceptually broken into a collective consumption unit and a collective production unit. -The collective consumption unit is the government as it "consumes" already produced goods and services by parceling them out to residents. Viewed this way, government is merely a means for articulating the demand of its citizens. The collective production unit is conceptually distinct. It is the actual production machinery, e.g., the police department, the schools, the TVA, which are collectively owned.

The private contracting proposition offers the collective consumption unit a choice between public production and private production and among all possible private producers. The advantages offered by private contracting flow from this increased set of choices. We have listed four such advantages.

First is the incentive for entrepreneurial efficiency. The private producer is directly rewarded for efficient production by increases in

personal wealth. The garbage collection example illustrates the difference in incentives between private and public managers.

Second, local governments can take advantage of economies of specialization and scale. An existent small-town government is unlikely to have the resources to devote to becoming expert in all the production processes it requires. This becomes particularly troublesome when rapid expansion is necessary. Private firms (e.g., Pinkerton's in the case of police protection) have already made the necessary investments in expertise and could step in immediately.

Coupled with economies of specialization are economies realized (in some production processes) from larger scales of production. If the service exhibits scale economies, a private firm with contracts from several communities would have lower unit costs than would single local governments.

Third, separation of the collective consumption and production units would reduce the information costs of local governments in determining minimum costs of production.

It is often difficult to establish the minimum cost of a good or service provided by the public sector. This is, in part, due to the nature of public goods (indivisibility and existence of externalities) but is also, in part, the result of bureaucrats concealing the information necessary to establish minimum cost. This is understandable in view of the incentive structure for the bureaucrat. A major incentive for the bureaucrat is to increase his discretionary budget: total budget minus the minimum cost of providing the goods and services. If the minimum cost is unknown by the voters and elected officials, the difficulties of arriving at the

proper budget for any given level of output are often insurmountable.

If, on the other hand, competition were introduced by contracting out the provision of public goods and services to private entrepreneurs, minimum costs could more easily be established via competitive pressures. Any private supplier who was charging a price in excess of minimum cost could be underbid by other potential suppliers, and importantly, other suppliers have the incentive to provide the local government with this type of cost information.

Fourth, there is the potential for gain in government responsiveness to public preferences. As public requirements and preferences change, as will surely be the case in energy boom towns, bureaucratic inertia becomes a significant obstacle to adaptation to those changes. Current employees are likely to resist changes in the bureaucracy which might subject them to increased job competition or retraining costs. Under the private contracting scheme, elected officials (who have little to gain personally from hard decisions being made more efficiently) need only change contract specifications rather than attempt to change an entrenched bureaucracy of civil servants. The former is almost surely easier, hence faster and more certain. The voting pressure on elected officials is more likely to result in service levels commensurate with citizens' desires.

The price contracting concept has been implemented very successfully in many communities. West Yellowstone, Montana, recently contracted with a private entrepreneur for the provision of medical services. It is becoming increasingly common for public services such as garbage collection and police protection to be provided by the private sector. The Rural/Metro Fire

Development Company provides the City of Scottsdale, Arizona with fire protection judged equal in quality but-produced at half the cost of similar services supplied by bureaucratic producers.<sup>13</sup>

Although many established communities are successfully contracting out public services, this system seems especially applicable to boom towns. Public bureaucracies have not already been established, so the painful process of decentralizing would not be necessary. Increased efficiencies of private interests would allow faster responses to rapid increases and decreases in population. Lower costs due to increased efficiencies would allow for a higher quantity and/or a higher quality of the desired services and goods to be delivered.

Problems would certainly be confronted with the private provision of services. For example, it may be difficult to induce private entrepreneurs to invest in capital intensive enterprises such as water and sewage provision.<sup>14</sup> Also, appropriate mechanisms for processing conflicts and monitoring the operation of a private service economy must be assured in order to keep contracting from being used as a form of political corruption.

There are no cost free solutions. We are looking for the most effective way of providing services for the original inhabitants and **the** newcomers to boom towns. If the contracting out of public services **does** provide equal quality and quantity at a lower price then it will improve the quality of life in these towns and should, therefore, be endorsed and adopted.

Addendum: Ideological Opposition To Collective Consumption - Private Production

Although the contracting of public services is being used successfully in various towns and cities, we expect opposition to the proposal that private contractors be encouraged to meet some of the growth demands of boom towns.

When society's state of affairs run smoothly, structural changes tend to evolve slowly. People are accustomed to having tasks performed in a specific manner and inertia sets in. Public goods and services in local communities have traditionally been supplied by public bureaucracies, these bureaucracies are therefore favored to a certain extent over private firms.

Dissatisfaction however, is a powerful erosive force of tradition. Inadequate public services are a major source of discontentment in boom towns. Consequently, the alternative of private contracting of public services might be more readily accepted in such situations. In addition, the political and social structure prevalent in boom towns might be rather conducive towards encouraging the efforts of private entrepreneurs to provide public services. Existing political service structures would not have to be substantially altered since contracting would primarily be delegated to fulfilling the additional demands for services generated by rapid growth. Therefore established local bureaucracies would not have to be dismantled. In regards to social character, western boom towns are typically inhabited by individuals who place a high value on individual liberty. Private enterprise tend to be accepted and endorsed by these people. Therefore, bureaucratically provided services would not likely be more inherently acceptable on a philosophical basis than privately provided services.

Among other groups however, the concept of encouraging private entrepreneurs to provide public services might meet some substantial ideological resistance. Capitalism and its driving force, the profit motive, is currently being

viewed by many intellectual "liberals" with a great deal of suspicion, mistrust and hostility. Mistrusting free enterprise, these individuals tend to promote governmental intervention in the market system, governmental planning, and governmental provision of public services.

As a system, capitalism is certainly not above attack. Perhaps the most serious shortcoming of the market system involves the issue of externalities--the failure of the market to adequately internalize costs and benefits of transactions involving the use of resources.

Capitalism, through rewarding productive behavior, has produced one of the highest standards of living, in terms of material goods, of any political economic system. However, a society will tolerate its social or economic system, no matter how efficient or productive, only if it is perceived as just. Thus even if it can be demonstrated that almost everyone is better off in a market economy, the system would still be resented if it is viewed as inequitable.<sup>15</sup>

In former times, inequality resulting from the market system was morally justified in religious terms. But the libertarian, secularized society created by the market itself eroded its own foundation. As religious influence declined, wealth (or the lack of wealth) lost intrinsic moral value. Thus some income redistribution came to be viewed as socially desirable.<sup>16</sup>

In reacting to these deficiencies of capitalism, a large number of "liberal"<sup>1</sup> intellectuals embrace centralized control of the market. The need for some type of regulation of some aspects of the market system is expanded by many in this group into a generalized purge of the entire capitalist system.

In doing so, these individuals attribute certain mythical qualities to the market alternative--government control. The government is not perceived as generating its own externalities.<sup>17</sup> Bureaucratic efforts at reducing inequalities generated by the market distribution of goods are not seen as causing **only** different inequalities generated by the political distribution of goods.<sup>18</sup>

Efforts to increase general welfare through redistribution of income are confused as being mutually incompatible with the efficient production of goods and services by the market.

This refusal to objectively weigh the relative advantages and disadvantages of free enterprise and government control results in an inability to choose the optimal combination of systems.\* Even if superb theoretical and empirical evidence exists indicating the superiority of the market for enhancing general welfare, strong resistance from "liberal" intellectuals tends to be encountered.

The degree to which this proposal meets ideological resistance is likely to be a function of what group makes the decision of whether services should be contracted to private entrepreneurs. If the choice is made at a national level, hedging is likely to be encountered for the reasons discussed above. If the **decision** is made at a local level, the outcome is more likely to favor contracting.

\*Several eminent scholars have recently written on why a large proportion of intellectuals, as distinct from other groups, have such a strong affinity for governmental control.<sup>19</sup> Many explanations for this attraction are given. An **indignation** against **the** failures of the market is not depicted as the only cause. **These** intellectuals are portrayed as being motivated by their own ambitions, **as** desiring to create a society where they will be in power. They are criticized **as being** elitists, as attempting to project their vision of good and morality **onto the** masses. They are seen as being particularly prone to the feelings of **alienation** which results from **the** secularization of social **structure** by **the market system**.

NOTES

1. see Lovejoy(1976)
2. see Gilmore and Duff(1975)
3. Kash(1976:35)
4. see Baden, Stroup and Anderson(1977)
5. Kash(1976:5)
6. U.S. Bureau of Land Management - Environmental Impact Statement.
7. Nehring,Zycher and Wharton(1976:122)
8. Gilmore and Duff(1975:2)
9. Gilmore and Duff(1975:15)
10. Personal Communication with Lloyd Bender of E.R.S.,U.S.D.A., stationed at Montana State University,Bozeman, Montana.
11. see,e.g.,Niskanen(1971),Ostrom(1974), and Tullock(1965)
12. Ostrom and Ostrom(1976)
13. Ahlbrandt(1973)
14. While this may present a problem,"The private sector is extremely capital intensive in many areas and most of these enterprises(water,sewage,etc.) are not large enough so as to constitute a barrier to private entrepreneurs." (personal communication with Del Gardner,Professor,Agricultural Economics, University of California-Davis). This may depend,in part, upon the price system and pricing policy imposed upon private entrepreneurs.
15. Van Den Haag(1976)
16. IBID
- 17.Tullock(1971)
18. Van Den Haag(1976)
19. Van Den Haag(1976);Berger(1976); Kristol(1977)

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