RESOURCE DEVELOPMENT: DEALING WITH CHANGE

WESTPO
Western Governors' Policy Office

WESTPO is an independent, non-partisan organization
of thirteen intermountain-high plains states.
Established in 1977, its purpose is to strengthen the policymaking
and management capacity of member states
and their role in the federal system.
It serves the interests of the governors across a range of
functional concerns, including energy, agriculture,
water, natural resources, international trade,
human services, and related issues.

RESOURCE DEVELOPMENT: DEALING WITH CHANGE

An Assessment of States' Ability to
Manage Impacts from Resource
Development During the Boom-bust
Cycle of 1979-1982

WESTERN GOVERNORS' POLICY OFFICE
(WESTPO)

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PREFACE

This report is the outcome of a grant from the U.S. Department of Energy Region VIII office to the Western Governors' Policy Office (WESTPO). The purpose of the grant was to reassess energy trends in the region and mechanisms to deal with them, to distill lessons learned from the boom-bust cycle of 1979-1982, and to identify changes needed to allow states to mitigate impacts from both growth and decline. It is hoped that through the reassessment, DOE, WESTPO states, and others will gain a better understanding of the kind of planning, mechanisms, and considerations which provide flexibility and foresight to federal, state, local, and public/private resource-related impact management programs.

Accordingly, WESTPO compiled information on the status of energy projects within the region. That information was then sent to the states for review, along with a survey of impacts which are of concern to the states. The survey was followed by a one-day workshop in Denver of representatives from state energy and economic development offices and from other entities concerned with impact mitigation.

This report is offered as a thoughtful assessment of where we have been and how we could improve in our impact management capability.

EXECUTIVE SUMMARY

The WESTPO region comprised of Alaska, Arizona, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Utah, Washington and Wyoming has experienced a brief but pronounced boom-bust cycle in the three years between 1979 and 1982.

States had to switch from coping with rapid growth to mitigating rapid decline. In an effort to assess the changing situation and learn from the various states' experiences, WESTPO convened a one-day workshop on July 27, 1982 in Denver. The workshop was attended by state energy and economic development officials and representatives from organizations established to deal with energy growth impacts.

Growth-Related Impacts

Existing mechanisms which have worked well in managing growth-related impacts include:

Planning

1. Wyoming Industrial Siting Administration
2. Colorado Joint Review Process
3. The Alaska Land Use Council
4. Montana Natural Resource Council
5. Tristate Consortium
6. Coal and oil shale leasing teams

Financing

In general, considerable progress has been made in working out financing arrangements to relieve the demands on local government. Through such mechanisms as up-front payments by industry, pre-payment of taxes, underwriting of debt, purchase of local government bond issues, state loans, payments from leasing or severance tax revenues, and other means, it has been possible to provide up-front capital and protect the financial liability of local taxpayers. Two examples are worthy of note:

1. The Western Fuels Agreement

2. Colorado's Cumulative Impact Task Force (CITF)

Local Government Assistance

Although almost all the mechanisms discussed so far have strengthening local government as an important goal, two pioneering programs were established with that as its major goal:

1. Overthrust Industrial Associaton (OIA)
2. North Dakota's Mercer County Energy Development Board
3. North Dakota's Inter-Industry Technical Assistance Team

Despite the numerous successes in managing growth-related impacts, states reported a number of areas where improvements are needed:

1. Air quality increments

   Under present legislation, the lack of pollution increments may block projects. That is especially a problem where the used-up increments are in a downwind state rather than the state of project origination. Another problem could occur when a project has been legally permitted, but then deferred. That project's "rights" to the increment could block later economically feasible projects.

2. Water

   A number of unanswered questions occur related to water, including:

   - Quality — What will be the effect of use for energy development on the quality of downstream flows?
   - Quantity — What is the best way to handle the competition between projects and with other users for limited water resources?
   - Compacts — Will increased use cause a need for compacts when there currently are none or cause a need to reassess existing compacts?
   - Diversions — How will energy diversions affect downstream users?

3. Multi-state planning

   Processes for multi-state planning need to be strengthened, especially for projects or resources located near state lines and for new multi-state developments such as pipelines or powerlines.

4. Fiscal mismatches

Although good solutions have been developed for temporal mismatches (where capital needs are largest at the start of a project while revenues don't begin till a later time), jurisdictional mismatches are still a serious problem, especially when jurisdictions are in different states. Revenue sharing, the most cited solution to the jurisdictional problem, has proven difficult between jurisdictions in the same state and impossible thus far between states.

Decline-Related Impacts

Managing impacts related to slow-down or decline in an industry is more difficult than managing growth-related impacts. Generally, if a large company is in trouble, the community dependent on it is reluctant to ask anything of the company which could add to its problems. The company itself, with its financial problems, wants to avoid further costs. When it lays off employees or shuts down, it doesn't need to apply for any permits or meet other requirements which would give a state or community some leverage over it. Once shut down, the drop in revenues makes it difficult for states, local governments, or individuals to pay for remedial programs.

If a company or an industry is suffering from a cyclical decline, that poses one set of problems for states and other affected entities. Most problems involve bridging — maintaining momentum, staff, funding, and other capacity until it is needed again. Human service expenses — unemployment, medical care, welfare, and others — can be expected to increase. Community morale could suffer, and part of the work force may leave.

Structural decline in an industry — decline that is likely to be permanent rather than cyclical — poses a difficult dilemma to state government, depending on the natural assets of the affected communities. When a large development shuts down, a state theoretically could decide that the town has a number of assets and provide assistance to attract new business; it could decide that the town's original reason to be — as a farm community, a crossroads center, etc. — will still sustain it and allow it to revert to its former size; or it could acknowledge that the town has few assets and help the residents move elsewhere. In practice, virtually all affected towns ask the state for assistance to support the unfortunate and to maintain the town's existence.

State representatives agreed that handling shut-down problems related to energy development is usually easier than managing mineral shut-downs — partly because more was asked of the energy company to begin with and partly because energy development was more recent and residents had fewer roots.

Problems common to shut-downs in mining and energy development include the following:

1. Provision of human services
2. Economic adjustment
3. Infrastructure problems
4. Environmental problems
5. State response

Recommendations for Growth-Related Impacts

1. Establish state siting administrations.
2. Expand the use of binding legal agreements, such as the Western Fuels Agreement.
3. Extend impact requirements developed for the energy industry to the hard-rock mining industry.
4. Expand the use of multi-state and multi-jurisdiction planning teams.
5. Implement revenue sharing.

Recommendations for Impacts from Cyclical Decline

1. Review and implement ways to maintain existing mechanisms.
2. Assist communities to inventory their assets and diversify their economy.
3. Develop marketing mechanisms for depressed products.
4. Develop measures to dampen or flatten boom-bust cycles.
5. Provide essential assistance.
6. Use the decline in activity as an opportunity to build capacity.

Recommendations for Impacts from Structural Decline

Several of the recommendations for cyclical decline could be used in cases of structural decline.

1. Build consideration of eventual decline into early permitting and growth planning.
2. Give careful consideration to the future prospects of the affected community.
3. Pass plant closure legislation.
4. Establish a state-level Economic Adjustment Task Force.

CHAPTER 1

REVIEW OF REGIONAL RESOURCE DEVELOPMENT, 1979-1982.

The WESTPO region comprised of Alaska, Arizona, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Utah, Washington and Wyoming has experienced a brief but pronounced boom-bust cycle in the three years between 1979 and 1982. Factors driving the cycle were largely outside the region's control, but the states developed a number of approaches to respond to and smooth out the changes. This report recaps the lessons learned in order to assist the region in better managing impacts during future growth cycles.

In 1979, the West was faced with:

- a worldwide energy shortage and resulting increase in western exploration and production;
- the creation of an $88 billion Synthetic Fuels Corporation (SFC) to encourage oil and gas production from oil shale , tar sands, and coal;
- an attempt to establish an Energy Mobilization Board which could override state and local law by fast tracking energy projects; and
- a proposal to deploy MX missiles in Nevada and Utah at an estimated cost ranging from $30 - $100 billion.

The West responded to its challenges. By the end of 1981, coal production in the WESTPO region had increased from 173 million tons in 1979 to 224 million tons/year. Oil production reversed its decline and increased from 900 to 931 million barrels/year. Natural gas production increased from 2 trillion cubic feet in 1979 to 2.3 trillion in 1981. In addition to the increase in production, exploration increased by 58%, with the number of exploratory wells rising from 1,967 to 2,944. Growth also occurred in service industries such as seismic exploration companies, drillers, and pipe suppliers. States initiated a variety of approaches and mechanisms to cope with the impacts resulting from the boom. To protect their ability to manage growth, WESTPO states joined with others around the nation to defeat the Energy Mobilization Board. After determining that the cumulative impacts from accelerated energy development and deployment of the MX missile would place an intolerable strain on the West's capacity to provide manpower, capital, materials, water, and other scarce resources, the WESTPO states

supported Utah and Nevada in their successful campaign to have the MX deployment reconsidered.

In 1982, the scene changed dramatically. Worldwide recession and increased conservation led to an unforeseen world oil glut. This glut, along with high interest rates, sharply curtailed energy exploration and caused a leveling-off or decline in oil, gas, and coal production and a halt in most synfuel plans. Recession and world-wide competition were responsible for a steep decline in most hard rock mining. States had to switch from coping with rapid growth to mitigating rapid decline. In an effort to assess the changing situation and learn from the various states' experiences, WESTPO convened a one-day workshop on July 27, 1982, in Denver. The workshop was attended by state energy and economic development officials and representatives from organizations established to deal with energy growth impacts.

Summary of State Resource Development

Based on surveys and interviews preparatory to the workshop, presentations at the workshop, and information from WESTPO's data base, the following is a brief overview of each state's energy and mineral resource activity:

Alaska

Alaska's North Slope oil production continues, and new lease areas are being readied. The Alaskan Natural Gas Pipeline is currently on hold, and officials are exploring the option of piping the gas to the Seward area and liquefying it there. Options for increasing coal production are being explored.

Arizona

Arizona, the nation's single largest producer of copper, is being severely impacted by declines in prices and sales in the copper industry. In 1981, Arizona's copper industries employed 20,000 people, had an annual payroll of $708 million, and paid state and local taxes of $124 million. By mid 1982, almost half the employees were laid off, with an additional third being on a reduced work week. The current price of copper is below mining and production costs. Copper has been hurt in the short-term by lowered auto and housing sales. Although a recovery in the economy may improve copper sales, foreign competition and the need for large capital expenditures to upgrade U.S. smelting facilities clouds the long-term outlook.

Colorado

Colorado has been most visibly affected by the rise and fall of the oil shale industry. Following the 1978 energy shortage and establishment of the Synthetic Fuels Corporation, five oil shale projects were actually "moving dirt" with another group in various stages of the permitting process. When Exxon bought Atlantic Richfield's share of the Colony Project, most state residents thought oil shale development was finally going to happen. In May of 1982, less than two years later, Exxon shut down the Colony Project virtually overnight, leaving 2,100 employees out of work. Only the Union Oil shale project is still under construction. Union is about half way through construction of a 10,000 barrel a day facility. Most other shale projects are suspended or on a slow permitting path.

Colorado's other energy production has slowed down. Coal production, principally from underground mines, has been relatively flat since 1980. Oil and gas production have reflected the slow national economy, and are expected to pick up when the economy improves or when oil prices rise.

Other resource development faces a more uncertain future. Uranium has declined steeply and, because of the drop in nuclear plant construction and foreign competition, is not expected to recover in the foreseeable future. Gold, silver, copper, and molybdenum are also experiencing shut-downs, severe unemployment, and uncertain future prospects.

Like other states, Colorado has found that shut-downs in the non-energy mineral industry are having more serious impacts than declines in energy production. Not only are the mining declines less likely to be reversed than the energy ones, but mining closures tend to occur in one industry towns that have been in existence for years. Employees are less mobile, the economy is less diversified, the companies have few legal obligations to the communities, and the impact is severe.

Idaho

Idaho has been strongly affected by the hardships in the mining industry, especially the shut-down of the Bunker Hill silver mine which laid off 2,100 miners. Phosphate production is also down. However, a large molybdenum mine is just starting, oil and gas exploration continues in the Overthrust area (but no producing wells yet), and exploration for gold continues unabated.

Montana

Like Arizona, Montana has been hurt by the decline in the copper industry. Shut-downs in the Butte and Anaconda areas have led to severe unemployment. The underground mines and ore processers have been closed; some mining continues in the Berkeley Pit, but ore is shipped to Japan for processing.

Montana is still experiencing substantial exploration for platinum and paladium, especially in the Stillwater complex north and east of Yellowstone.

Montana is a major coal-producer, having experienced a five-fold increase in production over the last 10 years from recoverable reserves of 75 billion tons. Most coal is being delivered under long term contracts, but some layoffs have occurred and one small mine closed down. Coal companies are also stockpiling coal and are not producing at full capacity. Two coal fired generating plants are under construction.

Some oil and gas activity has occurred in the Williston Basin area of Montana, but that activity is leveling off. Montana's Overthrust area has had a few exploratory wells drilled but no finds as yet. The major synfuels development in Montana is the planned Tenneco coal gasification plant near the North Dakota border.

Nebraska

Nebraska did not take part in the workshop.

Nevada

Nevada has little energy development, and has been affected by the slow down in the mining industry, but has been more affected by the slow down in the gaming industry and withdrawal of MX activity.

New Mexico

New Mexico has a diversified, large-producing energy base. The sector with the most severe recession is uranium. In 1981, 38 mines reported production totaling 6,210 tons of U308 concentrate; in 1982 the number of active mines dropped to 11. Northwestern New Mexico is the area hardest hit, with Grants, New Mexico having an unemployment rate of 30-35%.

Coal production was 18.7 million tons in 1981 and is expected to remain around that level for several years before continuing to increase. New Mexico's coal industry is suffering from transportation problems — about eight mines are waiting for completion of the Star Lake railroad line, which has had problems obtaining rights-of-way from Indian allottees. New Mexico's principal coal markets are minemouth generating stations and electric utilities in Arizona; potential markets include California and Pacific Rim countries.

New Mexico also has a number of coal-fired power plants; however, a new generating station in San Juan County is being assessed at this time. Also, a nuclear power plant proposed by the U.S. Department of Energy to provide service to several national laboratories is receiving strong opposition.

Oil and gas production is continuing, but at a slower rate. Development of a large CO_2 field near Clayton, however, has almost halted because of lack of demand from oil producers.

The Santa Rosa tar sands project in easter New Mexico is the only synfuel facility which is currently under development. New Mexico is also experiencing a severe decline in its copper industry.

North Dakota

North Dakota appears to be the WESTPO state most insulated from the national recession. It has the lowest unemployment rate in the nation. The Williston Basin is still experiencing new drilling and finds. Although down, the level of production is just off its peak production level. Despite relatively steady oil and gas production, North Dakota's revenues depend on a production tax which has declined with the drop in the price of oil.

Its coal industry, which mines low quality, high moisture lignite, supplies mine-mouth generating plants which are a stable source of demand. In addition, Tenneco is planning a large coal gasification plant in Montana near the Montana-North Dakota border. Most of the impacts are expected to be felt in North Dakota.

South Dakota

South Dakota has little energy production and did not participate in the workshop. South Dakota has become an energy accessory state, however, by agreeing to sell water for the ETSI coal slurry pipeline.

Utah

Utah is another broadly diversified energy producing state. Oil and gas development in the Overthrust Belt, although it has leveled off and exploration is down, remains relatively strong. Exploration continues at a reduced level in other parts of the state as well.

Of Utah's 20 coal fields, only three are in production. However, new mines are on the drawing boards, and Utah is concerned that it may not be able to train skilled workers fast enough. Utah's coal is primarily from underground mines — expensive to produce but high in quality. Utah, through WESTPO's Coal Export Task Force and other avenues, is actively seeking to increase its exports to Pacific Rim countries from its current level of 22%.

Utah is experiencing a decline in demand for electric power — industrial demand is down and residential demand is flat. The Intermountain Power Plant is reassessing whether its planned four units will be necessary.

A number of synfuels projects have been considered for Utah. Three coal gasification projects are on hold. Several oil shale projects are being pursued to tap the estimated 50 billion barrels of recoverable reserves as well as tar sands projects to tap the almost 30 billion barrels of reserves. A related project is the construction of the White River Dam to provide water for synfuels development. The dam will be delayed until the water is required so that the reservoir doesn't silt up needlessly.

Utah's uranium industry is severely depressed. A new mill will probably never go into production. Kennecott, Utah's largest private employer, has cut back from 7,000 to 5,000 workers at its copper mine and may shut down. U.S. Steel is also cutting down, although Getty is opening a new gold mine.

The former, potentially huge impact on Utah's economy and energy development, the MX missile, is still causing concern. Utah has continued to receive requests for geological information from the Department of Defense. A similar kind of project is the proposal to locate a high-level nuclear waste dump just outside of Canyonlands National Park. Although Utah contains only one of a number of sites under consideration, selection would involve a workforce of 5,000 located in a remote, low population area of the state.

Washington

Washington has little in natural energy resources, other than hydropower, but has several related large-scale projects. The Northern Tier Pipeline, if built, would involve a workforce of 5,000 to build 1,500 miles of pipeline and 21 pumping stations to carry Alaskan oil from the Washington coast across five states to Minnesota. The company has indicated that it will file a new application with the State Energy Facility Site Evaluation Council in early 1983.

The Washington Public Power Supply System initiated construction of five nuclear power plants. Two of the plants have been terminated, and a third is now on a deferred construction schedule which may last up to five years. Washington is also involved in the Pacific Northwest Electric Power Planning Council, a four-state council to plan, develop, and manage electrical energy resources, and the Northwest Interstate Compact on Low-Level Radioactive Waste Management, an eight-state compact to dispose of low-level waste.

Increased oil and gas leasing and drilling activities have been underway in central Washington during the last two years.

Wyoming

Wyoming is a low population state with high levels of energy production. Oil production is steady at 120 million barrels a year, even though drilling is down. Gas is experiencing reduced exploration, but increased production. In addition, two gas sweetening plants will be opening up at Whitney Canyon and Carter Creek, and new pipelines are either planned or underway.

Wyoming's coal production, though down from a 30% increase in 1981, is still increasing at 9% annually and heading towards 140 million tons. The ETSI coal slurry pipeline will use South Dakota water to carry Wyoming coal to Arkansas. The pipeline could be under construction by next year. A new rail line will connect the Chicago-Northwestern and Union Pacific railroads to the Powder River Basin coal fields. A number of synfuels plants are under consideration, with the Hampshire Energy Project a finalist for SFC financing.

Wyoming's uranium industry is in severe decline, with Jeffrey City especially hard hit. Its trona industry is also down due to national economic factors affecting the U.S. housing and automobile industries.

Wyoming could also be in the running for MX deployment if a dense-pack system is built.

CHAPTER 2

IMPLEMENTATION OF MECHANISMS TO MANAGE GROWTH FROM RAPID RESOURCE DEVELOPMENT

The West has a history of boom-bust cycles. The ghost towns scattered throughout its mountains and deserts provide a constant reminder of what happens when a resource-dependent town loses its market or its resources play out. When the energy crisis of 1979 occurred and the nation turned to rapid development of its own energy resources, western states had learned that it is essential to manage resource development — to plan adequately, to capture revenues from the "bubble" of wealth in order to smooth the build up and the decline, and to provide local governments with support and expertise to allow them to cope with rapid change.

A great deal has been written describing boom town problems and possible mechanisms to cope with them. The intent of this chapter is to summarize those which are generally recognized by state officials as most valuable and to review those areas which would still benefit from better solutions. Approaches or organizations which are reviewed have been selected as representative and are not in any prioritized order.

Existing Mechanisms

Planning

Most states have planning mechanisms. Some of the better known ones include:

1. Wyoming Industrial Siting Administration

   Wyoming's Siting Act established a siting administration to review and approve major new development projects. Through the administration's legal authority, it can require companies to provide impact mitigation measures. Because all major projects are referred to the administration, it can also monitor and plan for cumulative impacts.

2. Colorado Joint Review Process

   The Joint Review Process is a voluntary process for major projects to streamline their permitting procedures and to convene all major stakeholders to agree on what is expected of each. Careful planning and provision of impact mitigation measures are important components of the process.

3. The Alaska Land Use Council

Because of the extent of federal land holdings in Alaska, the Council was established to advise the federal government on planning and management of public lands.

4. Montana Natural Resource Council

The council brings together representatives from the state, the Bureau of Land Management (BLM), and the Forest Service to meet informally to review plans and corrdinate activities.

In addition to these intrastate mechanisms, two interstate approaches are considered highly effective:

5. Tristate Consortium

The Tristate Consortium is a DOE-funded cooperative program for Colorado, Utah, and Wyoming. The Consortium monitors energy-related manpower needs, shares information based on a common computer model, and plans training programs to respond to manpower needs.

The Consortium is currently planning to use unemployment records to track workers laid off at the Colony Project to gain a better understanding of workforce mobility.

6. Coal and oil shale leasing teams

Coal and oil shale leasing teams are comprised of representatives from state and local governments and the U.S. Department of the Interior. Their purpose is to recommend which federal lands should be leased, based on local conditions, mining needs, sensible land use planning, and other considerations.

States generally regard the leasing teams as one of the most effective planning and coordinatng tools available. The Department of the Interior has recommended elimination of the teams — a step strongly opposed by WESTPO states.

Financing

In general, considerable progress has been made in working out financing arrangements to relieve the demands on local government. The basic problem has been that local governments, with little extra tax capacity or record of credit-worthiness, have faced enormous growth in capital demands to pay for water, sewers, streets, schools, and other needed infrastructure. Through such mechanisms as up-front payments by industry, pre-payment of taxes, corporate underwriting of local government debt, corporate purchase of local government bond issues, state loans, or grants to local governments from leasing or severance tax revenues, and other means, it has been possible to provide up-front capital and protect the financial liability of local taxpayers. Two examples are worthy of note:

1. The Western Fuels Agreement

In this agreement signed by Western Fuels and Colorado's Rio Blanco County officials, Western Fuels committed to paying all local government costs — municipal, county, and school district — directly attributable to the coal mine it was seeking. The agreement also specifies periodic stages to reassess payment levels.

2. Colorado's Cumulative Impact Task Force (CITF)

Facing a resource with as many ups and downs as oil shale has had, Colorado's attitude towards its miscellaneous shale projects has been skeptical and demanding. Colorado required that 80% of anticipated housing needs be met by the companies; that companies build or pay for schools, roads, water systems, and sewer systems; that they help finance hospitals, jails, and court houses; and that they pay for the hiring of additional police, firemen, and other emergency service workers.

After companies charged that they were being "blackmailed" and made to pay for all community needs, whether project related or not, and as Colorado became increasingly concerned about cumulative effects from multiple projects, Colorado established the Cumulative Impacts Task Force, comprised of industry, state, and local officials, to assess community needs and develop a method for fairly allocating costs to individual companies. One of the major accomplishments of the CITF was the development of a computerized model of energy development in northwestern Colorado.

Local Government Assistance

Although most of the mechanisms discussed above have considered the strengthening of local government as an important goal, three pioneering programs were established with that as their major goal:

1. Overthrust Industrial Associaton (OIA)

The Overthrust Belt area running through Utah, Wyoming and Idaho posed a unique set of problems — rapid growth occurring in very small towns in three states resulting from a range of oil and gas related activities of approximately 120 independent companies. The solution was an association of the 40 largest companies and local government officials. The companies retained consultants to survey and work with local communities to identify and prioritize impact needs. The public and private members then designed financial and other kinds of support programs to meet the highest priority needs. The OIA also collected information to monitor growth trends and served as a focus to coordinate both industry and public-private communications and planning.

2. North Dakota's Mercer County Energy Development Board.

In the late 1970's, the U.S. Department of Energy funded a pilot economic development program to be implemented in a western boom town, patterned after a French public-private sector model. DOE selected Mercer County as a prototype because it was facing the construction of a coal gasification plant (Great Plains Gasification Associates), four power plants, and five coal mines. Its six cities

ranged in size from a few hunderd people to less than 2,000 in the largest city. City governments consisted of part-time officials. The model calls for the establishment of four entities — a siting authority, impact-information entity, technical assistance entity, and a financing entity or entities. After identifying existing state or sub-state bodies to assume these roles, the program was directed by the Energy Development Board, an organization of the county's major elected officials — county commissioners, mayors and school board pzesidents.

Although fairly expensive to implement (a $600,000 three year grant), it resulted in greatly increased information, planning, coordinaton and cooperation, financing, and overall good management. The program has now been completed.

3. North Dakota's Inter-industry Technical Assistance Team.

   The Technical Assistance Team is comprised of representatives from North Dakota industry. They provide assistance to local government officials for impact mitigation.

Further Needs

Despite the numerous successes in managing growth-related impacts, states reported a number of areas where improvements are needed:

1. Air quality increments

   Under present legislation, the unavailability of air quality increments to absorb additional pollution may block the permitting of new projects. The problem becomes more complicated when the used-up increments occur in downwind states rather than the state of project origination. Processes are not well-developed for coordinating planning, permitting, and environmental control across state lines. Another problem could occur when a project has been legally permitted, but then deferred. That project's "rights" to the increment could block future economically feasible projects.

2. Water

   A number of unresolved issues occur related to water, including:

   - o Quality — The effect of use for energy development on the quality of downstream flows.
   - o Quantity — Managing competition between projects and with other users for limited water resources.
   - o Compacts — The possible need for compacts where there currently are none or a reassessment of existing compacts.
   - o Diversions — The effect of energy diversions on downstream users.

3. Multi-state planning

Processes for multi-state planning need to be strengthened, especially for projects or resources located near state lines and for new multi-state developments such as pipelines or powerlines.

4. Fiscal mismatches

Although good solutions have been developed for temporal mismatches (where capital needs are largest at the start of a project while revenues don't begin till a later time) through up-front contributions, loans, prepayment of taxes, and guaranteeing a community's debt, jurisdictional mismatches are still a serious problem, especially when jurisdictions are in different states. Montana and North Dakota face that problem with the Tenneco coal gasification plant. The plant, and its revenues, will be located in Montana but most impacts will be felt in North Dakota. An existing example of the problem occurs in the Bonanza power plant. The plant will be built in Utah but the Deserado coal mine will be located in Colorado. Rio Blanco County signed the Western Fuels Agreement to protect Colorado, but nothing equivalent was agreed to in Utah.

Revenue sharing, the most cited solution to the jurisdictional problem, has proven difficult between jurisdictions in the same state and impossible thus far between states.

CHAPTER 3
IMPACTS FROM DECLINE

Managing impacts related to slow-down or decline in an industry is more difficult than managing growth-related impacts. Generally, if a large company is in trouble, the community dependent on it is reluctant to ask anything of the company which could add to its problems. The company itself, with its financial problems, wants to avoid further costs. When it lays off employees or shuts down, it doesn't need to apply for any permits or meet other requirements which would give a state or community some leverage over it. Once shut down, the drop in revenues makes it difficult for states, local governments, or individuals to pay for remedial programs.

Cyclical Decline

If a company or an industry is suffering from a cyclical decline, that poses one set of problems for states and other affected entities. Most problems involve bridging — maintaining momentum, staff, funding, and other capacity until it is needed again. Human service expenses — unemployment assistance, medical care, welfare, and others — can be expected to increase. Community morale could suffer, and part of the work force may leave.

That is the situation facing most energy producing areas in the West, and it is posing serious problems. Maintaining programs such as the Cumulative Impact Task Force and the Overthrust Industrial Association — programs which require appreciable amounts of staff and financing — becomes difficult when the pressing problems are no longer there and participating entities are tightening their belt. The preservation of the OIA is of particular concern to the states. A private sector organization, the OIA has found that a number of its participating companies are closing down activities in the area. The remaining companies are reluctant to have to shoulder new requests from local governments — for financing, downside mitigation, or anything else — by themselves and have suggested disbanding the organization. Yet state and local governments want OIA to continue, if only to continue its communication and coordination role.

Maintaining programs such as the Colorado Joint Review Process, programs which are embedded within one government or entity, are less a problem as staff and funds can be temporarily reassigned with their capability protected. Similarly, programs such as the

Tristate Consortium which are tied to ongoing state functions — employment and training — may see funding reduced but are in a good position to carry over.

A number of the small communities which were struggling with rapid energy growth are finding now that revenues are down, human service demands are up, operating and maintenance costs for new infrastructure are up, and meeting the salaries of expanded staffs is difficult. At the same time, the slow-down is providing a breather, a chance for communities to assess what has happened to them, to decide how they want to develop in the future, and to encourage other businesses to locate in the community and diversify the economy.

Structural Decline

Structural decline in an industry — decline that is likely to be permanent rather than cyclical — poses a difficult dilemma to state government, depending on the natural assets of the affected communities. When a large development shuts down, a state theoretically could decide that the town has a number of assets and provide assistance to attract new business; it could decide that the town's original reason to be — as a farm community, a crossroads center, etc. — will still sustain it and allow it to revert to its former size; or it could acknowledge that the town has few assets and help the residents move elsewhere. In practice, virtually all affected towns ask the state for assistance to support the unfortunate and to maintain the town's existence. Yet evidence from other parts of the country suggests that when a community has no bright prospects for recovery that a differential exodus occurs, leaving the town even worse off. Generally, many of the educated, the ambitious, and the fit leave for jobs elsewhere. The towns are left with large proportions of elderly, untrained, and others who are unable to secure or accept jobs. The town then has even less likelihood of attracting new business.

Some of the shut-downs in the hard rock mining industry fall into the latter category — towns created to serve nearby mines with little in markets, other resources, diversified work force, transportation networks, tourist attractions, or other assets to allow them to attract new industry. Often, though, the town is 50 to 100 years old and residents have strong emotional attachment to the community.

State representatives agreed that handling shut-down problems related to energy development is usually easier than managing mineral shut-downs — partly because more was asked of the energy company to begin with and partly because energy development was more recent and residents had fewer roots. When Exxon shut down the Colony

Project and laid off 2,100 workers, almost everyone was gone within a few weeks. Most of the workers were immigrants who were living in rented apartments and mobile homes. Exxon had paid for construction of the new town of Battlement Mesa and had provided financial assistance to the existing town of Parachute, the school district, and Garfield County. Local governments were left with little long-term debt. They did have higher operating costs and higher human service costs, and were left with excess capacity and uncompleted infrastructure, but considering the scale of what happened to them, both in growth and shut-down, they fared very well. Many individuals were hurt — small businessmen who had borrowed to enlarge their stores or open at a second location, local bankers who had made housing and business loans, people who had opened up restaurants, motels, and other business ventures, and land speculators, among others. It should be pointed out, however, that few energy developments have been able to shut-down so easily. It was possible in Colony's case because Colony's growth had been such a short-term development.

Problems common to shut-downs in mining and energy development include the following:

1. Provision of human services

   A range of human services are usually needed, starting with unemployment assistance. Other normally routine services will be needed where people will be unable to pay for them — medical, dental, special education, etc. Still others may be needed to combat negative reactions to the shut-down — increased crime, child and spouse abuse, and alchoholism. Others, such as welfare, may be needed for survival.

2. Economic adjustment

   A community's economy can be severely crippled. Loss of payrolls, loss of sales, income, and property tax income, loss of consumer and commerical purchasing, default on mortgages and other loans, withdrawal of capital, decline in service and recreational expenditures — it is just a short time until layoffs ripple through and affect the entire community. Most communities need technical and financial assistance to adjust and plan strategies to respond.

   Colorado reports that the proposed oil shale development created a "bubble" or "hollow" economy. The cost of land, housing, and wages were driven up, causing farmers to sell their land and water and quit farming, while small industry lost their workers to higher paying energy jobs and either closed down or moved out. Now that oil shale projects have almost ceased, the existing economic base is no longer there and new business is scared off by the high price of everything as people try to recoup their losses.

3. Infrastructure problems

This category covers a variety of potentially severe problems. One of them involves excess capacity. Although potentially an asset in attracting new industry, excess capacity can be very expensive to maintain. If a town grew rapidly and was allowed to sprawl, the excess roads have to be repaired, plowed, sanded, and result in city vehicles driving more miles and, in the case of emergency services, taking more time. Or duplicate facilities may be needed. Excess schools, hospitals, and other buildings still need to be maintained, insured, and paid off, even if operations cease. Excess water and sewer systems may require more energy to operate, more personnel to maintain, and more cost to repair.

Another problem involves unfinished infrastructure — whether to abandon it, mothball it, salvage it, or complete it. The Colony Project included construction of a new town, Battlement Mesa, for 25,000 people. Roads were built, mobile home lots were built, houses begun, a shopping center started, school built, water and sewer systems begun, and a golf course laid out, among other activities. Decisions regarding what to complete and who should complete it, what to partially complete, and what to quit were very controversial decisions. Because a company with the resources of Exxon was involved, many of the projects will be finished by Exxon so they are usable, but scaled back in size and scope where possible. Even so, a supermarket chain is suing Exxon for breach of promise because it now has an oversized store in a small residual community.

Unfinished infrastructure becomes a special problem when talking about projects the size of an oil shale plant or nuclear power plant. That infrastructure could represent billions of dollars — an investment which still needs to be paid off. Few companies can absorb that kind of loss or abandon that kind of investment. Salvaging it, however, is problematical at best and could involve costs almost as great as building it in the first place.

A third set of problems exists when the infrastructure itself may be a hazard. The shut-down of the underground mine in Butte, Montana, meant the end of pumping the mines dry. The mines are now filling with water, at a rate twice as fast as predicted. In Butte's past history, the original town was on a hill, surrounded by swamp. Over the years, pumping the mines dried out the swamp and when the hill was mined, people rebuilt on the flats. It is conceivable that if nothing is done, the present town of Butte will revert to swamp. The questions of safety, responsibility, and liability are staggering.

4. Environmental problems

Reclamation is one of the most obvious concerns, both for aesthetics and for safety. Mine leachates, blowing dust, and altered drainage are a only a few of the problems which can occur. Although most companies are required to put up reclamation bonds, they often are inadequate.

Going beyond the safety requirements to reclaim the land aesthetically is unlikely unless such requirements were included in the permitting process, and even then may be difficult to enforce if the company is in financial straits.

5. State response

When new programs were established to manage energy development, they were designed to deal with growth. Many are legally restricted to growth problems and to energy problems. Funds available to mitigate impacts often are unavailable to mitigate decline impacts and rarely can be used for mining-related impacts. Special response agencies may have in their mission statement that they are designed to assist with impacts related to growth.

Another shortcoming of state programs in this most recent boom-bust cycle is that few people included bust mitigation as part of the boom mitigation requirements, and fewer yet anticipated such a rapid forestalling of the boom. One of the purposes of this report is to suggest ways states can improve their responses next time.

CHAPTER 4
RECOMMENDATIONS

The basic attitude of most WESTPO states is that resource development is welcome, that the West will do its share towards supplying the materials to strengthen the nation, but that those who expect to benefit by developing large scale resource projects should assume the risk and bear the responsibility for mitigating the related impacts. At the same time, states recognize their primary responsibility for state economic development and well-being. Most of the recommendations emerging from the project's survey and workshop reflect this perspective.

Recommendations for Growth-Related Impacts

1. Establish state siting administrations.

   The purpose of the siting administration would be to ensure proper siting of major projects, to establish consistent impact mitigation requirements, to provide a simplified, expedited permitting process, and to ensure that agreed-upon steps are taken. One stipulation should require companies to give certain lead times regarding information needed for planning, including major changes in expected trends.

2. Expand the use of binding legal agreements, such as the Western Fuels Agreement.

   Such agreements would be used to pin down the nature and limits of various parties' responsibilities in boom areas.

3. Extend impact requirements developed for the energy industry to the hard-rock mining industry.

   The mining industry is approximately the same size as the energy industry in the West, involves projects causing the same type of impacts, and should be required to meet similar standards for new projects.

4. Expand the use of multi-state and multi-jurisdiction planning teams.

   A large portion of major energy projects have multi-state ramifications, from being near a state line, drawing on resources (manpower, materials, capital and etc.) from neighboring states, or affecting shared natural resources (clean air and water). States will often benefit from sharing information such as baseline data, trend projections, computer models, and cost information. Joint planning and programs which pool resources — for training programs, specialized facilities, water project development, and monitoring programs — could increase their scope and effectiveness while reducing costs by avoiding duplication.

5. Implement revenue sharing.

   States might consider establishing revenue districts for major projects which would include all impacted jurisdictions. Formulas could be worked out for apportioning revenues in relation to costs incurred.

Recommendations for Impacts from Cyclical Decline

1. Review and implement ways to maintain existing mechanisms.

   One of the most important steps would be to broaden the scope of existing mechanisms to include decline-related impacts from resource projects. That would provide flexibility in the use of impact funds, would allow impact agencies to use their expertise in both the boom and bust portion of the cycle, and would provide badly needed assistance to areas suffering from decline.

   Other steps might include temporary assignment of personnel, maintaining access to funds for when demand grows, and obtaining agreement by all principals to maintain certain mechanisms — even at a very reduced level of activity.

2. Assist communities to inventory their assets and diversify their economy.

   It is difficult for communities to diversify their economies under boom conditions. Competition for land, housing, workers, materials, transportation, and other limited supplies will keep out all but those who can afford the inflated costs. However, as activity levels out, communities should make a concerted effort to diversify, including encouraging agriculture, tourism, manufacturing, educational institutions, federal and state installations or any others which might be attracted to their area. Waiting until the primary company is shutting down will lessen the likelihood of companies moving in, as most businesses want to be sure the basic economy is sound, taxes are evenly spread, essential services are available, and the community projects a good image. States can assist communities in this effort.

3. Develop marketing mechanisms for depressed products.

   It is in the state's best interest, as well as the community and industry's interests, to work together to gain competitive advantages. An example of this kind of entrepreneurial approach is the Western Coal Export Task Force, chaired by Utah Governor Matheson and conducted under the auspices of WESTPO. Coal producers, railroads, port authorities, state government, banks, and foreign buyers — utilities, steel companies, and cement companies — joined in a study of the entire coal chain from mine to user to expand the export of western coal to Pacific Rim countries. The well-analyzed information is available to help planning, upgrading facilities, estimating contracts, and arranging financing. Coal export accounted for 22% of Utah's coal sales in 1981 and should increase substantially for a number of western states by the end of the decade.

4. Develop measures to dampen or flatten boom-bust cycles.

   Careful planning and regulation have been able to mitigate many of the negative impacts from rapid growth. A stand-by strategy to mitigate the down-side is needed as well. Such a strategy could involve use of such counter-cyclical tools as

purchases for federal government stockpiles, implementation of state and federal governmental public works projects (roads, dams, hospitals, etc.) which hire unemployed workers and buy materials at depressed costs, expediting projects in the permitting process which could stimulate the economy, and use of international trade to offset domestic cycles.

5. Provide essential assistance.

   Communities faced with decline, whether cyclical or structural, may require certain essential assistance from state government — basic human services, relief from debt loads, assistance in meeting operating and maintenance costs, additional personnel or equipment for public safety, deposit of state funds in local banks to replace lost deposits, and technical assistance in planning for the future.

6. Use the decline in activity as an opportunity to build capacity.

   Many improvements in public administration and management are not pursued in boom periods because of lack of personnel and/or lack of time. Reduced pressures may allow for developing improved information systems, needed infrastructure, statutory or regulatory changes, training programs, or strengthening local expertise.

Recommendations for Impacts from Structural Decline

Several of the recommendations for cyclical decline could be used in cases of structural decline.

1. Build consideration of eventual decline into early permitting and growth planning.

   Opinions varied as to what is appropriate, including some who advocate a bond similar to a reclamation bond — company money placed in escrow to pay for shut-down impacts. There was broad consensus, however, that communities should plan ahead for taking special steps to preserve their existing economy, rather than having single-industry "bubble" economies develop as Colorado experienced. Closely related, communities should deliberately preserve the assets that make them attractive to other businesses — keep water rights available for agriculture and ranching, maintain scenic areas for tourism and recreation, and the like.

   Communities were advised to negotiate agreements which keep them from getting heavily in debt or overcommitted to operating and maintenance costs and to avoid obnoxious diversification — polluting industries, gambling, or other options which might only leave them worse off.

   Other ideas included getting commitment from companies to provide adequate lead time notice of lay-offs or shut-downs, to transfer workers if possible, to provide financial assistance to the community's economic development campaign, to meet reclamation and infrastructure completion agreements, and to maintain their guarantee of community debt.

   Another aspect of this recommendation is for the state to develop a fund which can be used for shut-down assistance. All resource development projects are by definition temporary — in existence until the resource runs out — and state and local

government should capture revenues while they last, through severance and other taxes, so they are available to mitigate the impacts from a plant closing.

2. Give careful consideration to the future prospects of the affected community.

   All communities should receive a safety net of human services, job retraining, and public safety. But opinions were strong that in today's world, states cannot afford to prop up a community artificially if its future prospects are dim. If a community has marketable assets, it should receive help in marketing them. If a community had a viable pre-growth economy, it can be encouraged to revert to its previous nature. But if there is little hope of other development occurring, it may be best to put money into job retraining, job placement, relocation payments, and other approaches to urge people to pursue other avenues. Having said that, workshop participants acknowledged that it is politically almost impossible to pursue that route.

3. Pass plant closure legislation.

   At least fifteen legislatures nationwide are contemplating plant closure legislation. Typically such legislation would require:

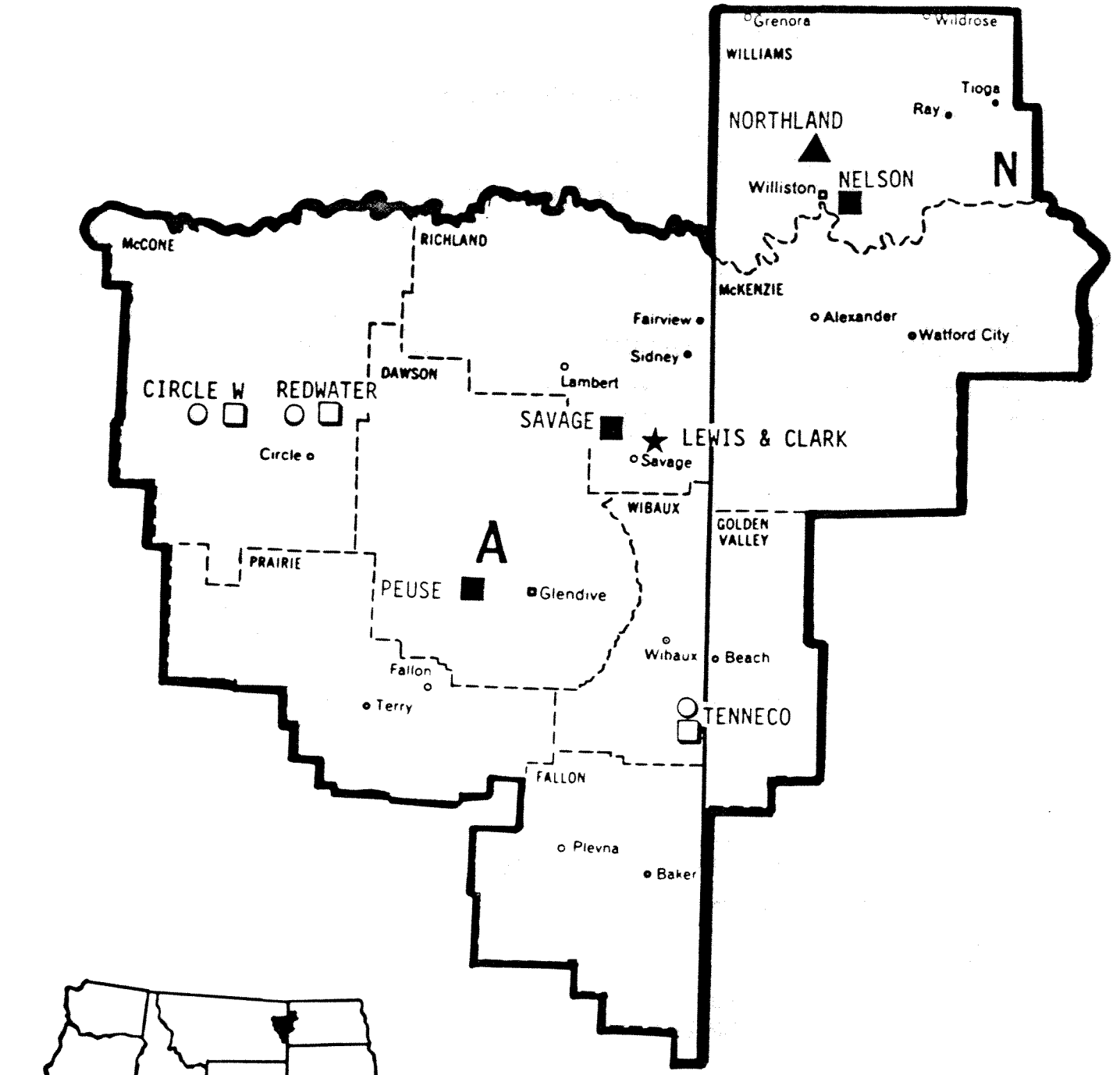
   - one year's notice of plant closing or layoff of over 15% of the plant's employees,
   - payment of 15% of the total annual payroll into a Community Assistance Fund,
   - creation of a Community Services Committee to administer the fund and consider other options.

4. Establish a state-level Economic Adjustment Task Force.

   Such a task force could be charged with providing assistance for both boom and bust. The purpose of the task force would be to focus financial and technical assistance for communities and workers. Such a task force could coordinate job training, job placement, worker counseling, social services, income maintenance, economic development and diversification efforts, housing assistance, and other programs which should work in concert.

APPENDICES

One provision of this grant was to identify areas facing substantial interstate impacts — a condition which exacerbates the difficulties of impact mitigation. The following maps and data were prepared as part of that identification. The U.S. Department of Energy is including them in this report as a service to its readers. WESTPO does an annual assessment of regional resource activity. Readers wanting additional information should contact WESTPO.



WILLISTON REGION ENERGY PROJECTS

- ■ EXISTING COAL MINE
- □ PROJECTED COAL MINE
- ○ PROJECTED SYNFUEL PROJECT
- ▲ EXISTING REFINERY
- ★ EXISTING POWER PLANT

WILLISTON BASIN

COAL PRODUCTION

STATE/COUNTY MINE NAME	OPERATOR	1980 PRODUCTION (1,000 Tons)	STATUS*	TYPE**
MONTANA				
Dawson				
Peuse	G. Peuse	0	EI	U
Richland				
Savage Strip	Knife River Coal Co.	302.0	EA	S
NORTH DAKOTA				
Williams				
Nelson	GeoResources, Inc.	0	P	S

* Status: EA = Existing Active; P = Planned; EI = Existing Idle.

** Type: S = Surface; U = Underground.

COAL-FIRED POWER PLANTS

STATE/COUNTY PLANT	OPERATOR	YEAR ON LINE	NAMEPLATE CAPACITY (MW)
MONTANA			
Richland			
Lewis & Clark	Montana-Dakota Utilities Co.	1958	50.0

1980 OIL AND GAS PRODUCTION AND DRILLING ACTIVITY

STATE/COUNTY	OIL PRODUCTION (1,000 BBLS.)	NATURAL GAS PRODUCTION (1,000 SCF)	NO. EXPLO. & WILDCAT WELLS	NO. DEVELOPMENT WELLS
MONTANA*				
Dawson	457.7	1.5	1	0
Fallon	6,250.3	2,414.2	4	4
McCone	159.8	0	3	0
Prairie	100.8	.3	1	0
Richland	4,406.6	1,880.8	27	34
Wibaux	1,580.0	77.2	2	0
NORTH DAKOTA				
Golden Valley	450.2	545.7	8	5
McKenzie	8,988.6	12,353.4	29	130
Williams	4,688.1	13,611.8	24	25

*Montana production figures are for taxable production only. They do not include production from federal leases which is not taxed by the state.

REFINERIES

STATE/COUNTY	COMPANY	CRUDE CAPACITY*	STATUS**
NORTH DAKOTA			
Williams	Northland Oil & Refining Co.	5,200	EI

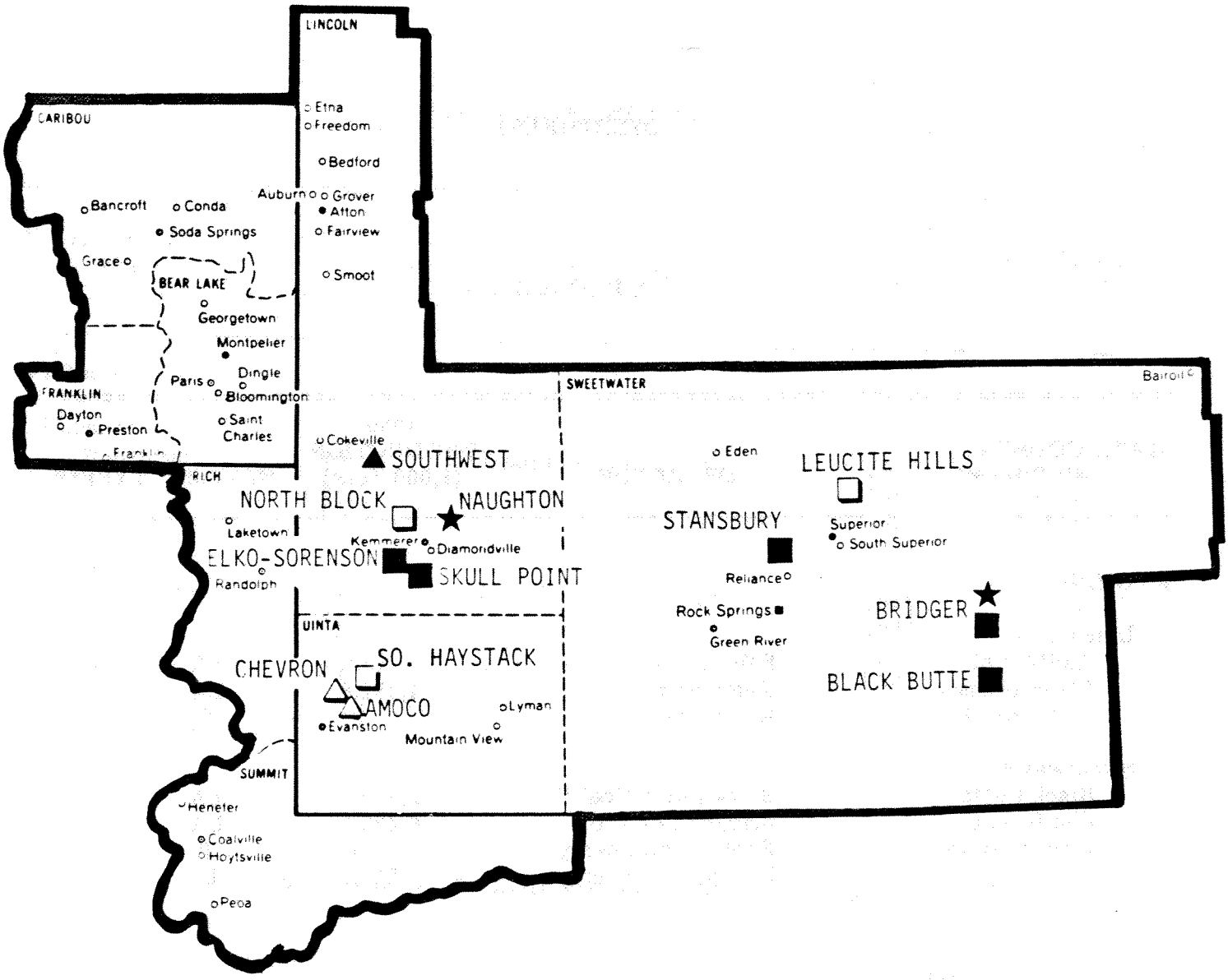
* Crude Capacity in barrels per calendar day (actual volume produced divided by 365).

** Status: EA = Existing Active; P = Planned; EI = Existing Idle.

SYNFUELS PROJECTS

STATE/COUNTY PROJECT NAME	OPERATOR	TYPE*	STATUS
MONTANA			
Dawson			
Mobil	Mobil Oil Corp.	CL	On hold
McCone			
Montco	Montco	CG	In permit stage
Redwater Project	Washington Natural Gas	CG	On hold
Wibaux			
Tenneco	Tenneco Oil Co.	CG	On hold

* Type: CG = Coal Gasification; CL = Coal Liquefaction; CLG = Coal Liquefaction-Gasification; CLM = Coal Liquefaction-Methanol; COM = Coal Oil Mixtures; OS = Oil Shale; TS = Tar Sands.



OVERTHRUST REGION ENERGY PROJECTS

- ■ EXISTING COAL MINE
- ❑ PROJECTED COAL MINE
- ▲ EXISTING REFINERY/ PROCESSING PLANT
- △ PROJECTED REFINERY/ PROCESSING PLANT
- ★ EXISTING POWER PLANT

COAL PRODUCTION

STATE/COUNTY MINE NAME	OPERATOR	1980 PRODUCTION (1,000 Tons)	STATUS*	TYPE**
WYOMING				
Lincoln				
Skull Point	FMC Corp.	845.9	EA	S
Elko-Sorenson	Kemmerer	4,082.6	EA	S
North Block	Kemmerer	0	P	S
Sweetwater				
Black Butte	Black Butte Coal Co.	2,289.4	EA	S
Jim Bridger	Bridger Coal Co.	6,435.2	EA	S
Leucite Hills	Rocky Mtn. Energy	0	P	S
Stansbury	Rocky Mtn. Energy	228.1	EI	U

* Status: EA = Existing Active; P = Planned; EI = Existing Idle.

** Type: S = Surface; U = Underground.

COAL-FIRED POWER PLANTS

STATE/COUNTY PLANT		OPERATOR	YEAR ON LINE	NAMEPLATE CAPACITY (MW)
WYOMING				
Lincoln				
Naughton	#1	Utah Power & Light	1963	168.0
	#2		1968	218.0
	#3		1971	330.0
Sweetwater				
Jim Bridger	#1	Pacific Power & Light	1975	500.0
	#2		1976	500.0
	#3		1979	500.0
	#4		1980	500.0

1980 OIL AND GAS PRODUCTION AND DRILLING ACTIVITY

STATE/COUNTY	OIL PRODUCTION (1,000 BBLS.)	NATURAL GAS PRODUCTION (1,000 SCF)	NO. EXPLO. & WILDCAT WELLS	NO. DEVELOPMENT WELLS
IDAHO				
Bear Lake	0	0	4	0
UTAH				
Rich	0	2,782.2	3	0
Summit	3,846.7	8,513.3	14	10

1980 OIL AND GAS PRODUCTION AND DRILLING ACTIVITY
(continued)

STATE/COUNTY	OIL PRODUCTION (1,000 BBLS.)	NATURAL GAS PRODUCTION (1,000 SCF)	NO. EXPLO. & WILDCAT WELLS	NO. DEVELOPMENT WELLS
WYOMING*				
Lincoln	228.8	19,935.0	10	29
Sweetwater	9,983.5	115,350.4	64	114
Uinta	6,735.6	24,053.2	19	42

*Wyoming production figures are for taxable production only. They do not include production from federal leases which is not taxed by the state.

REFINERIES

STATE/COUNTY	COMPANY	CRUDE CAPACITY*	STATUS**
WYOMING			
Lincoln	Southwestern Refining	800	EI

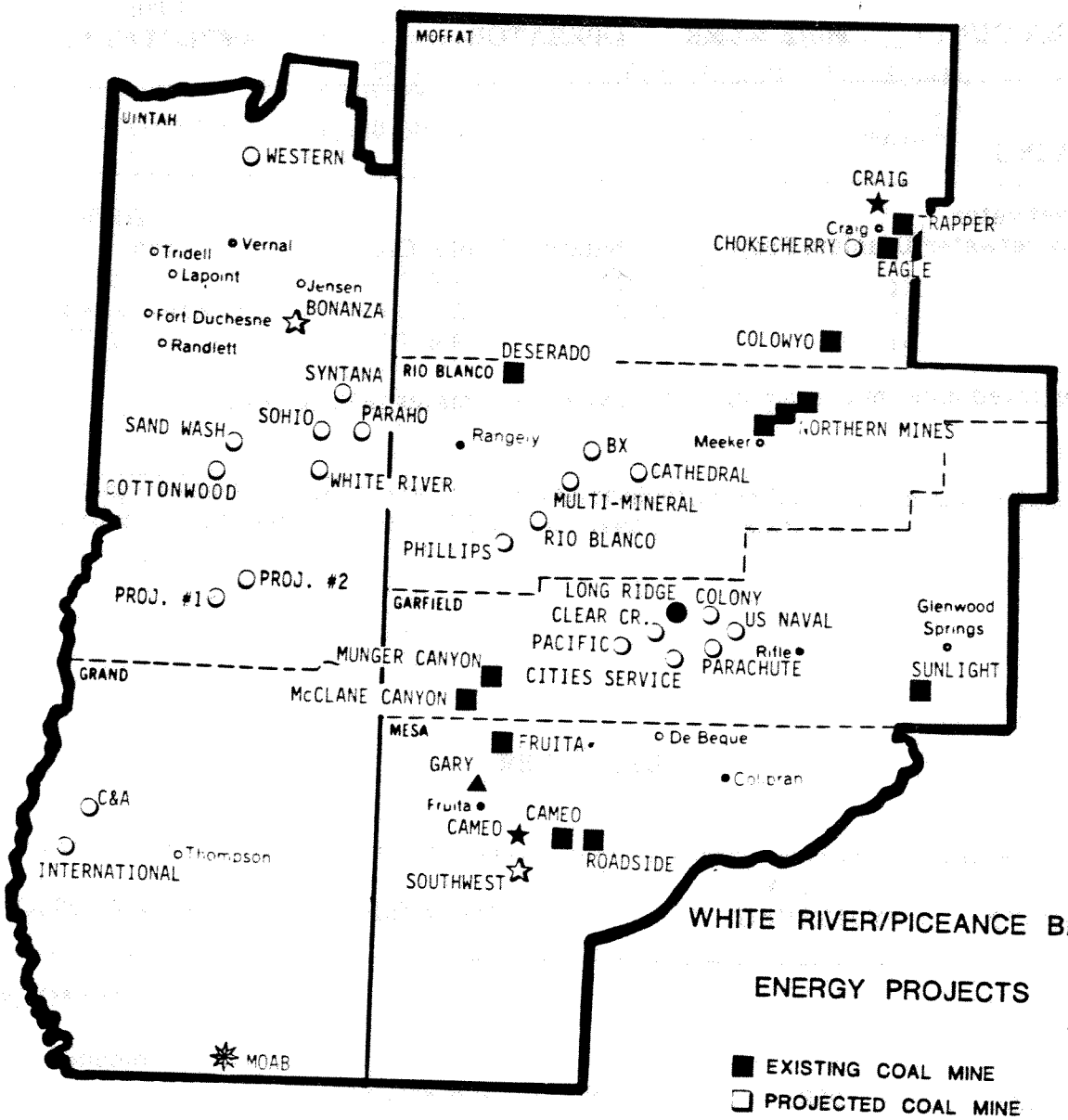
* Crude Capacity in barrels per calendar day (actual volume produced divided by 365).

** Status: EA = Existing Active; P = Planned; EI = Existing Idle.

URANIUM MINES

STATE/COUNTY	MINE NAME	OPERATOR	1980 EMPLOYMENT
WYOMING			
Sweetwater			
	Sweetwater Uranium Proj.	Minerals Explo. Co.	270

* Integrated mine-mill complex. Employment estimates include both.



WHITE RIVER/PICEANCE BASIN

ENERGY PROJECTS

- ■ EXISTING COAL MINE
- ❑ PROJECTED COAL MINE
- ● EXISTING SYNFUEL PROJECT
- ○ PROJECTED SYNFUEL PROJECT
- ★ EXISTING POWER PLANT
- ☆ PROJECTED POWER PLANT
- ▲ EXISTING REFINERY
- ✳ EXISTING URANIUM MILL

COAL PRODUCTION

STATE/COUNTY MINE NAME	OPERATOR	1980 PRODUCTION (1,000 Tons)	STATUS*	TYPE**
COLORADO				
Garfield				
Sunlight	Black Rock Mining Co.	.8	EA	U
McClane Canyon	Sheridan Enterprises	14.2	EA	U
Munger Canyon	Sheridan Enterprises	0	EI	U
Mesa				
Fruita Mines	Dorchester Coal Co.	10.7	EI	U
Cameo	GEX Colorado, Inc.	207.2	EA	U
Roadside	GEX Colorado, Inc.	547.7	EA	U
Moffat				
Colowyo	Colowyo Coal Co.	2,682.7	EA	S
Eagle Mines	Cyprus Mining Co.	654.1	EA	U
Trapper	Utah International	2,014.4	EA	S
Rio Blanco				
Northern Mines	Northern Coal Co.	218.1	EA	U
Deserado	Western Fuels - Utah	0	P	S
Uinta				
South Haystack	Rocky Mountain Energy	0	P	S

* Status: EA = Existing Active; P = Planned; EI = Existing Idle.

** Type: S = Surface; U = Underground.

COAL-FIRED POWER PLANTS

STATE/COUNTY PLANT		OPERATOR	YEAR ON LINE	NAMEPLATE CAPACITY (MW)
COLORADO				
Mesa				
Cameo	#1	Public Service Co. of Colo.	1957	25.0
	#2		1960	50.0
Southwest	#1	Colorado-Ute Electric Assn.	1987	500.0
Moffat				
Craig	#1	Salt River Project, Tristate	1980	400.0
	#2	Platte River Authority	1979	400.0
	#3	Colorado-Ute Electric Assn.	1983	400.0
UTAH				
Uintah				
Bonanza	#1	Deseret Gener. & Trans.	1985	350.0
	#2		1997	350.0

1980 OIL AND GAS PRODUCTION AND DRILLING ACTIVITY

STATE/COUNTY	OIL PRODUCTION (1,000 BBLS.)	NATURAL GAS PRODUCTION (1,000 SCF)	NO. EXPLO. & WILDCAT WELLS	NO. DEVELOPMENT WELLS
COLORADO				
Garfield	4.2	7,144.9	7	22
Mesa	.8	2,618.4	27	34
Moffat	457.1	22,452.2	13	12
Rio Blanco	17,878.7	31,554.4	15	103
UTAH				
Grand	102.4	5,792.5	17	66
Uintah	3,821.7	21,765.9	14	78

REFINERIES

STATE/COUNTY	COMPANY	CRUDE CAPACITY*	STATUS**
COLORADO			
Mesa	Gary Refining Co.	13,000	EA

* Crude Capacity in barrels per calendar day (actual volume produced divided by 365).

** Status: EA = Existing Active; P = Planned; EI = Existing Idle.

SYNFUELS PROJECTS

STATE/COUNTY PROJECT NAME	OPERATOR	TYPE*	STATUS
COLORADO			
Garfield			
Clear Creek	Chevron Oil Co.	OS	In permit stage
Cities Services	Cities Services	OS	Lease
Pacific	Cleveland Cliffs Iron/ Superior/Sohio	OS	Denied, 2nd round synfuels applicant
Colony	Exxon/Tosco	OS	Shut-down 5/1/82
Parachute	Mobil Oil Corp.	OS	In permit stage
Silmon Simon Project	Shale Energy Corp.	OS	Denied, 2nd round synfuels applicant
Long Ridge	Union Oil	OS	In construction
Naval Oil Shale	U.S. Dept. of Energy	OS	2nd round synfuels applicant
Moffat			
Chokecherry	Energy Transition Corp.	CLM	2nd round synfuels applicant

SYNFUELS PROJECTS

STATE/COUNTY PROJECT NAME	OPERATOR	TYPE*	STATUS
COLORADO (continued)			
Rio Blanco			
BX	Equity Oil Co.	OS	Lease
Multi-Mineral	Multi-Mineral Corp.	OS	On hold
Logan Wash	Occidental	OS	Conducting tests
Cathedral	Occidental/Tenneco	OS	On hold
Phillips	Phillips Petroleum	OS	Lease
Rio Blanco	Rio Blanco Oil Shale Co.	OS	On hold
UTAH			
Grand			
C & A	C & A Companies	TS	Lease holder, in planning stage.
International	International Hydrocarbons Tar Sands Project	CG/TS	In conceptual stage, 2nd round Synfuels applicant
Uintah			
Agency Draw	GeoKinetics	OS	Surface retort, 2nd round Synfuels applicant
Wolf Den	GeoKinetics	OS	Pilot, producing, 2nd round Synfuels applicant
Cotton Wood	Magic Circle Energy Corp.	OS	On hold with DDA, 2nd round synfuels applicant
Paraho-Ute	Paraho Devel. Corp.	OS	2nd round synfuels applicant
White River	Sohio, Phillips, Sunoco	OS	Site preparation
Sohio	Sohio Shale Oil Corp.	TS	Conceptual
Syntana	Synthetic Oil Corp.	OS	DDA completer, need land exchange
Sand Wash	Tosco	OS	Planning (lease holder)
Western	Western Tar Sands, Inc.	TS	Lease holder

* Type: CG = Coal Gasification; CL = Coal Liquefaction; CLG = Coal Liquefaction-Gasification; CLM = Coal Liquefaction-Methanol; COM = Coal Oil Mixtures; OS = Oil Shale; TS = Tar Sands.

URANIUM MINES

STATE/COUNTY	MINE NAME	OPERATOR	1980 EMPLOYMENT
COLORADO			
Mesa			
	Jumbo	Durfee Mining Co.	2
	Yellow Jacket #1	Durfee Mining Co.	2
	G3/CG27	Ralph Foster & Sons	2
	Mesa #5	Ralph Foster & Sons	2
	Lincoln	Gramham Mining Co.	2
	Hubbard Mine	Hubbard Mining Co.	2
	Peaches	Minerals Reserves Group	5
	October Adit	Mineral Reserves Group	19
	Wedge	Vernon Moores & Sons Co.	3
	Rajah #30	Pool Mining Co.	3
	Lost Dutchman	Rajah Ventures	3
	New Verde	Rajah Ventures	5
	Pack Rat	Rajah Ventures	2
	Rajah #49	Rajah Ventures	6
	Thorton	Rajah Ventures	4
	Urantah	Staats Mining Co.	4
	Matchless Mine	Ben Zimmerman	2
Moffat			
	Maybell Pit	Donald G. Steel Construction	21
Rio Blanco			
	Butterfly	J.R.J. Mining Co.	3
UTAH			
Grand			
	Clark Mine	Clark Mining	6
	Bi Centennial	Cotter Corp.	10
	Thornburg Memorial	Cotter Corp.	4
	Cactus Rat	Four E's, Inc.	2
	New Sheila #2	Gramlich Explor. Co.	2
	Joe Mine	Johnson Mining Co.	5
	Yellow Circle Mine	Larry & Jody Mining	2
	Squaw Park Mine	Pene Mining	4
	Polar Mesa	Union Carbide Corp.	4

* Integrated mine-mill complex. Employment estimates include both.

URANIUM MILLS

STATE/COUNTY MINE NAME	OPERATOR	CAPACITY TONS ORE/DAY	1980 EMPLOY-MENT
UTAH			
Grand			
Moab Mill	Atlas Minerals Corp.	1,400	247

* Integrated mine-mill complex. Employment estimates include both.

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