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State Policies and Requirements for Management of Uranium Mining and Milling in New Mexico

Volume V — State Policy Needs for Community Impact Assistance

MASTER

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STATE POLICIES AND REQUIREMENTS FOR MANAGEMENT OF
URANIUM MINING AND MILLING IN NEW MEXICO
VOLUME V

STATE POLICY NEEDS FOR COMMUNITY IMPACT ASSISTANCE

Prepared for the
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by

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ABSTRACT

The report contained in this volume describes a program for management of the community impacts resulting from the growth of uranium mining and milling in New Mexico. The report, submitted to Sandia Laboratories by the New Mexico Department of Energy and Minerals, is reproduced without modification. The State recommends that federal funding and assistance be provided to implement a growth management program comprised of these seven components: 1) an early warning system, 2) a community planning and technical assistance capability, 3) flexible financing, 4) a growth monitoring system, 5) manpower training, 6) economic diversification planning, and 7) new technology testing.

FOREWORD

In 1977, the Sandia Laboratories' Office of Environmental Policy Analysis and the State of New Mexico agreed upon a cooperative analysis of environmental, health, resource use, socioeconomic and institutional (EHRSI) problems resulting from uranium mining and milling in the state. Four issues were identified by state agencies as potentially significant constraints to increasing uranium production in New Mexico. Sandia had initiated the cooperative analysis by organizing a conference on the coordination of environmental analysis activities. The conference, held in Grants, New Mexico, in May, 1977, was cosponsored by the ERDA Office of Environmental Policy Analysis and the New Mexico Environmental Improvement Agency. A tour of the Kerr-McGee uranium mine and mill was included.

The objectives of the conference were: 1) to develop a mutual understanding of the issues, 2) to explore a mechanism by which to include local and state officials in national energy planning regarding New Mexico, and 3) to determine what actions were needed to facilitate analysis of the most critical issues. The conferees agreed that four major uranium production issues must be resolved to avoid potential conflicts between federal and state interests. As a result of the conference, Sandia Laboratories entered into negotiations with three agencies of the State of New Mexico for an assessment of the issues from the State point of view. Four contracts were signed in September

of 1977. Each contract provided for consideration of one of the four issues which had been identified in May.

The studies conducted by the State agencies were to have these five common features:

1. Identification of all governmental activities and associated decision makers that influence the issue under consideration.
2. Description of the policy options that are most relevant from the State's point of view for coordination with federal, state, and local government activities.
3. An outline and cost estimate of technical, scientific, and engineering support services required for development of the prospective options.
4. Operational and organizational recommendations for a cooperative policy-option analysis program.
5. An estimate of the resources required to provide the technical, scientific and engineering information and services which DOI would be asked to contribute to the proposed policy option analysis.

The issues and the State agencies contracted to explore them were as follows:

1. The New Mexico State Engineer agreed to a study of water availability and the related issues associated with uranium mining and milling in the San Juan Structural Basin. The State Engineer was expected to define the need for and the requirements of a

program to provide necessary information for management of the water resources in the Basin.

2. The New Mexico Energy Resources Board agreed to consider community impact assistance requirements in the Grants Mineral Belt. The Energy Resources Board was expected to define the problem and identify a program which would allow avoidance of socio-economic constraints on uranium production.
3. The New Mexico Environmental Improvement Agency, Radiation Section, agreed to provide a comprehensive description of its regulatory authority and planned regulatory developments. The agency was to describe the data and analysis needed to support regulatory development.
4. The New Mexico Energy Resources Board agreed to assess the electric power allocation for uranium development and the effects of competing power demands by the various energy industries, other industrial users, and communities in New Mexico.

These program planning studies were designed to provide DOE a basis for understanding the issues, the decision points, and the State's preferred alternatives for programs to solve EHRSI problems while increasing uranium production. Upon receipt of the studies, this office examined the issue analyses and recommendations of the State. The State, in turn, was invited to provide comments on the Sandia companion paper.

For two of the contracted studies, the Sandia analysis and the State's paper* comprise one volume (in two parts) of State Policies and Requirements for Management of Uranium Mining and Milling Impacts in New Mexico, prepared for publication by Sandia Laboratories. The third study stands alone as Volume IV. The fourth study did not provide an analysis of the issue; it proposed a management program, which comprises Volume V. The documents were prepared for the Office of Technology Impacts, the Department of Energy successor to the EFDA Office of Environmental Policy Analysis.

The five volumes of the study are as follows:

Volume I - Executive Summary, SAND 79-0973;

Volume II - Water Availability in the San Juan Structural Basin, SAND 78-1331;

Volume III - Adverse Effects of Uranium Mining and Milling on the Physical Environment,
SAND 78-1332;

Volume IV - The Supply of Electric Power and Natural Gas Fuel as Possible Constraints on Uranium Production, SAND 79-7105;

Volume V - State Policy Needs for Community Impact Assistance, SAND 79-7093.

*The State's issue paper in each volume is reproduced as presented to Sandia, without modification.

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INTRODUCTION

New Mexico has an abundance of energy resources, not only oil and gas that have been the historical foundation of our energy economy, but also coal, uranium, geothermal and solar energy that are the foundations of the future. A national energy policy advocating nuclear non-proliferation, reduction of oil imports and development of alternative energy sources requires New Mexico to increase its share of the national supply and increase production dramatically to meet increased demands. The way that these resources are managed will profoundly influence the economy, environment and security of the nation and the state. Although increased production will provide benefits and opportunities, it will also create risks and demand that public responsibilities be met.

Opportunities:	Increased state revenues, federal revenues, personal income, new community facilities, skilled manpower, jobs, economic base diversification.
Risks:	Environmental pollution; health and safety risks - both industrial and public, social and economic problems of rapid growth; risk of economic depression after energy resources are depleted; dependence on uncertain fuel prices.
State Responsibilities:	Protect the health, safety and welfare of both present residents and newcomers; assure New Mexicans reliable and affordable energy supplies; help achieve national energy policies; develop new energy technologies.

In order to take advantage of these opportunities, minimize risks and meet state responsibilities, the state energy plan must establish policies that will find and maintain a proper balance among these pressures. National energy policy recognizes these responsibilities in PL 95-91, the Department of Energy Organization Act which specifically sets forth a federal relationship with the states:

"Whenever any proposed action by the Department conflicts with the energy plan of any state, the Department shall give due consideration to the needs of such State, and where practicable, shall attempt to resolve such conflict through consultations with appropriate State officials. Nothing in this Act shall affect the authority of any State over matters exclusively within its jurisdiction."

The state energy plan is currently being revised to define guidelines for protecting the health, safety and welfare of New Mexico's residents. It offers a beginning point for negotiating "conflicts" which, if they should arise, can be "resolved" through "consultations."

New Mexico, a sparsely populated state with small communities in energy production areas, must be particularly concerned with its ability to accommodate safely the accelerated growth in population that rapid development of energy resources brings. When population growth outstrips the capabilities of ordinary taxation and financing procedures to provide community facilities and services, then extraordinary actions must be taken either to provide the facilities or to slow growth.

These kinds of emergency actions benefit no one. National energy production goals are not met. The cost of energy is substantially inflated by high labor costs resulting from low productivity, high turnover rates and high recruiting and training costs that rise much higher than expected because of employee dissatisfaction with community life.* These unnecessary costs are passed on to energy consumers throughout the nation.** Heavy demands are placed on state health and social services agencies to counter the abnormally high incidence of public health problems, crime and the abuse of alcohol, drugs and children that accompany boom conditions in unprepared communities. Economic diversification goals are difficult to achieve because living conditions do not invite new industries.

*A more detailed analysis of energy cost inflation is presented in A Relationship Between Community Investments and Energy Production Costs by Ronald Cummings and Arthur Mehr of the University of New Mexico. (See Appendix A.) Case studies of mining and power plant construction in Sweetwater County, Wyoming have also supported a causal relationship between community services and employment turnover. (See Appendices, A Growth Management Case Study: Sweetwater County, Wyoming, University of Denver Research Institute, January, 1975.

**A major responsibility of the Department of Energy is to hold down inflation of energy costs to consumers. A significant component of this inflation can be attributed to costs of labor and materials in unprepared boomtowns. (See Appendix D.)

These issues are recognized in the National Energy Plan by the statement that "The President is committed to insuring that no state, local community or Indian tribe suffers as a result of energy development. These are problems that need not be faced if a well defined process of managing impacts can be established. Such a process, triggered by an early warning system would require the coordination and cooperation of government, industry and private developers. (See Exhibit 1.) It could speed the traditional methods for planning and financing, and perhaps introduce some new ones, so that these problems will not catch anyone by surprise. New facilities would be in place when they are needed, and new diversified industries would sustain basic employment when the depletable resources are gone.

The state is presently experiencing severe shortages of housing and community facilities in the energy resource areas. Interviews with city and county officials in the impact areas indicate that entire subdivisions are often sold before construction is completed; mobile homes are comprising a larger percentage of new housing; families are living in motels for long periods. Further, these shortages are being intensified by the plans of more than 40 energy companies to rapidly accelerate their hiring. Employment and population projections are shown in Appendix E.*

There are however, many uncertainties about the timing of these energy projects that inhibit effective growth management. Delays in federal leasing, lengthy regulatory and NEPA proceedings, litigation, failure of both federal and state financial assistance legislation (principally financing for coal gasification projects and community assistance), all delay both energy projects and preparation for population growth. Further uncertainties are also induced by indecision of tribal councils and more particularly by such situations as the recent suit brought by the National Indian Youth Council against El Paso Natural Gas and Consolidation Coal Co. to halt strip mining on the reservation. Their principal concerns are about socioeconomic and cultural impacts.

Timing of new community facilities is critical. Heavy financial losses can result if housing and facilities have been built but the anticipated employment build-up is delayed at the last minute. On the other hand, housing lead times are longer than employment build-ups once a decision has been made for major construction on the energy project. Once the communities fall behind, it is very difficult to catch up.

*More detailed descriptions of boomtown problems are included in the policy statements of public officials in Appendix C.

SOCIOECONOMIC IMPACT MANAGEMENT PROCESS IN NEW MEXICO

*Energy and Minerals Department legislation, Section 3, F. Purposes.

Because of the special characteristics of these problems, procedures to accommodate rapid growth in a timely manner must include the following components:

1. Early Warning System

A system is needed that is capable of pinpointing areas where rapid growth will occur that is not manageable with ordinary means. A two year lead time is needed.

2. Community Planning and Technical Assistance

Streamlined impact assessment and planning procedures that move quickly to engineering and architectural specifications and criteria for service programs need to be established.

3. Flexible Finance

Financing methods that fit unique local conditions must be identified and used.

4. Growth Monitoring System

A monitoring system is needed that provides early warning when forecasts of employment, population and community facilities do not materialize as expected. It would also show when special efforts were no longer needed.

5. Manpower

Training programs are needed for local residents living within commuting distance of energy projects. This would not only reduce socioeconomic impacts but would also alleviate the severe manpower shortages that can be expected in New Mexico's uranium mining and milling industry.

6. Diversification

On-going studies are needed that either show good possibilities for diversification or that abandonment of the site after production has ceased is the most realistic strategy.

7. Appropriate Technology Communities

The substantial community development that must occur in rural areas presents the opportunity for testing new energy technologies and developing relocatable facilities.

If both state and federal governments are to carry out their responsibilities, they must share in making these components operational. Appropriate roles for the energy companies and private investors must also be defined during the planning process for each community. Recommendations for the division of responsibilities in each area follow.*

*See supporting policy statements of public officials in Appendix C.

EARLY WARNING SYSTEM

The purpose of an early warning system would be to alert all concerned agencies and communities to impending plans to increase employment in a given area. Inputs to the system should include federal planning assumptions about the quantity of fuel and power production that is expected from New Mexico to meet national needs, energy company production and employment plans, an estimation of the likelihood that projects will obtain needed permits on schedule, population forecasts and the capacity of communities to accommodate growth. Serious shortages in community capacities would signal the need for special state action on behalf of these communities, as shown in Exhibit 2.

The state is in a better position to operate an early warning system for socioeconomic impacts than the federal government. The state's communities are impacted by coal and uranium mining and milling, by developments on and off Indian lands, and by power plant construction -- all at the same time. No single federal agency has jurisdiction over all of these activities, nor can a federal agency be as sensitive as the state to the effects of socioeconomic impacts on its communities.

However, New Mexico would not need such a system were it not for the energy requirements of the rest of the nation. New Mexico ranks first among the 50 states in uranium production and exports all of it. It ranks fourth in natural gas production and exports 87 percent. It ranks sixth in oil production and exports 80 percent. It ranks tenth in coal production and exports 90 percent in the form of coal or coal-generated electricity. Therefore, full federal funding of an early warning system appears reasonable and fair.

The federal government would also realize direct benefits from such a system. Federal policy planners would obtain feedback on the feasibility of achieving energy production objectives, and federal environmental staff of the various agencies that have jurisdiction in the state's energy resource areas would have complete and consistent information for preparing environmental impact statements. Both of these benefits would contribute to achieving national energy goals through realistic planning, avoiding delay in preparing environmental impact statements and avoiding time consuming court suits.

EXHIBIT 2

ESTABLISHING AND OPERATING AN EARLY WARNING SYSTEM AND IDENTIFYING CRITICAL AREAS

*Bureau of Business and Economic Research (the official population forecasting agency of the state)

**Community Assistance Council

COMMUNITY PLANNING

Once the early warning system has identified critical communities and the capacities of their basic facilities and services, then the state would initiate a planning process designed to define problems more specifically and implement mitigation programs. (See Exhibit 3.) One of the first steps in this process would be to appoint a problem-solving task force composed of federal, state and local officials and industry. Federal officials would be appointed from 1) the agency most able to coordinate an assessment of the activity causing the impact, 2) a solution-oriented agency such as an appropriate regional economic development agency and 3) the Department of Energy so that information could be coordinated into federal energy policy considerations. On the state level, an equal number of appointments would be made by the governor so that diverse state needs could be evaluated. Appropriate local decision-makers would also be appointed to the task force, as would industry representatives.

Once the most difficult impact problems were defined, local community officials and planners would develop their own strategies for finding solutions. During this process they might need technical assistance from experts in specialized fields which would take many forms. For example, it might consist of applying to a regional commission for emergency funding, forecasting community revenues and expenditures, developing an impact monitoring system, planning a campaign for the passage of a bond issue, developing a bond prospectus, forecasting population growth, preparing a presentation to major employers for financial assistance, developing a training program or analyzing human service needs. Most of these tasks can be done in a short period of time by someone with the appropriate skills and experience.

Providing the right expert at the right time is a joint responsibility of the state, the federal government and the energy companies, since all will benefit from solving community problems. The state will protect public health and welfare, the federal government will come closer to achieving national energy production goals, and the energy companies will avoid the high costs of employee turnover. Thus, all three groups should make arrangements to make personnel available immediately to local groups as needed. They should also make funds available for hiring experts, as needed, to respond quickly to local requests.

EXHIBIT 3

DEFINE PROBLEMS AND IMPLEMENT MITIGATION PROGRAM

*Facilities refer to both physical facilities and services

**Investors refer to both public agency and private sector decision makers

FLEXIBLE FINANCING

Most communities can eventually collect enough revenues to cover the costs of new public facilities, however, most energy boomtowns are presently bonded to their constitutional capacities. Developers and builders can also raise construction money, although mortgage funds may be scarce if energy project lives are short and development plans are uncertain. A special financing problem arises because housing and community facilities are needed before tax revenues can be collected from the industries causing the impact.* Therefore, front-end financing problems should be shared among state and federal governments and the energy companies because they share in the benefits of their solutions.

The traditional federal approaches to financial assistance -- block and categorical grants calculated on the basis of uniform formulas and conditions -- cannot be expected to solve the unique financing problems of boom communities. Instead, many other forms of grants, loans, loan guarantees and insurance policies have been proposed. The important criterion is that these aids be designed and administered flexibly enough to fit unique local situations.

For example, a federal fund might be established for each state for use in communities that meet federal criteria and have been designated by the governor as having critical growth problems. The amount of the fund could be based on the number of energy company employees that are projected to move into an area, with about \$3,000 per influx employee being sufficient to cover basic public services.

Each community would negotiate the combination of loans, guarantees or grants that best met its needs. It would also retain responsibility for accommodating service sector population influx and controlling land use, since its revenues and bonding limits would generally be adequate for this limited purpose.

The state could also contribute funds, allocated in New Mexico by the Community Assistance Council. The states would also need to approve the disbursement of funds to ensure that the needs of all communities were met.

*The front-end financing problem has been well-established as a unique problem of energy boomtowns that requires innovative methods for its solution. See Appendix F for a list of references that analyze this problem in detail.

The New Mexico Community Assistance Council, after a critical review of public facility needs in energy impacted communities, concluded that a total of \$73 million is required in the short run (1 to 2 years) and a total of \$304 million is needed over the next 3 to 5 years. (See Exhibit 4.) This money would finance projects in water, sewer, solid waste disposal, transportation, public safety, fire protection, health and social services and recreation. Last year the council provided \$10 million in state grants toward these needs. Capital for new housing needs is estimated at about \$741 million over the next eight years.*

Most New Mexico energy companies are also willing to participate in community development. They, too, are very interested in keeping their labor costs down by making sure their employees are satisfied with their living conditions as well as their jobs. They would probably be willing to provide loan guarantees for some projects and to make direct contributions to the front-end costs of public facilities and services, if they could get a tax credit for this public service. Then they would know that their payments to the public would be of direct benefit to their employees.

In New Mexico uranium resource areas, the financial responsibilities for community development by any one company are not clear. Each town is impacted by several companies and each company impacts more than one town. The companies are also on different employment schedules, creating the impression that projects on earlier schedules create smaller impacts than those that start later. Since company responsibilities are diffused, the communities need to take the initiative in sorting out the complexities and making clear cut requests to the impacting companies for sharing in the mitigation programs.

*San Juan and McKinley counties 1976-85, high, Appendix F: 68,381 forecasted influx ÷ 3 (average household size) = 22,793 new housing units needed. 22,793 ÷ 2 (half mobile home and half permanent housing) = 11,397. 11,397 X \$15,000 (average mobile home price) = \$171 million. 11,397 X \$50,000 (average new home price) = \$570 million. Total = \$741 million.

EXHIBIT 4

ENERGY IMPACTED COMMUNITIES IN NORTHERN NEW MEXICOSURVEY OF FACILITY REQUIREMENTS 1978-1983

<u>Communities*</u>	<u>High Priority</u> <u>(1-2 years)</u>	<u>Medium Priority</u> <u>(3-5 years)</u>
San Juan County	\$ 18,362,685	\$ 16,150,000
Farmington	12,825,000	20,100,000
Bloomfield	2,215,000	2,794,000
Aztec	6,386,000	4,773,340
McKinley County	2,885,000	21,531,400
Gallup	5,765,000	5,774,530
Valencia County	3,250,000	9,480,000
Grants	14,808,300	912,000
Milan	1,558,000	4,759,000
Cuba	1,378,565	2,525,915
Colfax County**	2,173,000	NA
Raton**	1,175,000	NA
Totals	\$ 72,781,550	\$ 88,800,185
Total both columns	\$ 161,581,735	
Education Requirements***	37,310,000	
Highway Requirements	105,000,000	
GRAND TOTAL	<u>\$ 303,891,735</u>	

*Other communities will also be considered for funding where justified by energy development impacts.

**Partial survey of highest priorities only.

***Does not include Colfax County School Districts.

SOURCE: A Survey of Facility Requirements 1978-1983 from
Testimony Relating to the Community Assistance Act, House
Bill 204. February, 1978.

MANPOWER

Community assistance and manpower assistance are closely related. First, an emphasis on local hiring reduces the population influx and hence the impact on community services and facilities brought about by that influx. In New Mexico, however, local residents who are not now employed are generally not skilled in underground mining and need training and remedial education.

Second, the quality of the community affects the productivity and turnover rates of labor and hence the number of people who ultimately have to be trained and hired. This relationship has been substantiated by Gilmore's study of mining in Sweetwater County, Wyoming.* He observed that employee productivity was 25 to 40 percent less than expected, and that turnover ranged from 35 to 100 percent. One company hired 583 people in one year to achieve a gain in employment of 84.**

Federal assistance is needed in two areas. First, a study is needed to assess the national availability of underground miners and mill workers. If the shortage is nationwide, then extensive federal support for training is warranted. If the problem is simply one of labor force dislocation, then federal assistance to attract skilled underground miners to uranium areas would be more appropriate.

In either case, it will be difficult for New Mexico to increase its underground uranium workforce by 9,000 over the next six years, which is the number of additional workers the state will need to maintain its 46 percent share of national production. If only 50 percent of the additional uranium industry workforce needs training, and 30 percent turnover rates can be expected, the training requirement would be 975 people per year.***

This number is far in excess of the capacity of the state's one uranium mining training program which is designed to train 100 people per year but has not yet reached that level.

Clearly, manpower planning, training and community impact assistance are all needed to obtain the skilled and stable workforce required to meet increased national energy production goals.

*Appendices, A Growth Management Case Study, Sweetwater County, Wyoming, University of Denver Research Institute, 1975.

**Interview, Resource Communities Inc., February, 1976.

*** $9,000 (.5)(1.3)/6 = 975$.

GROWTH MONITORING SYSTEM

If special impact assistance efforts are to be effective, community capacities must be planned and built according to forecasts that cannot be depended on to come true. A monitoring system is needed for each critical community to make sure that neither under nor over building occurs and that service capacities match demands. Such a system should be linked to the early warning system to make sure that the problems it identified are being addressed and that no further special efforts are needed. Such a system should monitor:

Employment

- Workforce of energy companies and family characteristics
- Induced employment
- Unemployment

Education

- Enrollment
- Pupil/teacher ratios
- Teaching staff level
- Support staff level
- Pupil classroom size
- Drop outs

Housing

- Company housing
- Private housing
- Public housing

Public Sector Services

- Fire protection
- Law enforcement
- Municipal utilities (water, sewer, fuel, power, telephone)
- Recreation
- Transportation

Private Sector Business

- New services
- Industrial expansion
- Economic activity

Health and Social Services

- Mental health facilities
- Senior services
- Public health activities
- Ambulance service
- Public housing authority
- Hospital facilities

Public Sector Finances

- Revenues
- Expenditures

Population

- Present
- Projected

DIVERSIFICATION

Dependence on a single industry for a viable economy is risky, especially when that industry is almost certain to cease operations when its economically recoverable resources are depleted. This situation encourages state legislators to increase severance taxes and bank them in permanent funds for future generations. It also lowers municipal bond ratings and increases the interest rates for construction and mortgage financing. Unless there is some hope of permanent employment, investments in housing and public facilities must be made in temporary structures.

A state plan is needed for economic diversification of the energy resource areas. This plan should be based on an analysis of the changes in the regional economy induced by energy development, with particular emphasis on an area's natural resources and the skilled labor and infrastructure brought into the area by the energy industry. Permanent growth centers can be identified, and new industries brought in to take advantage of the investments that have already been made.

To implement the plan, the state will need to target potential investors in housing, commercial and industrial facilities. It will also need to obtain information on their competing investments so that investments in the growth centers can be made equally or more attractive. The state will need to publish periodic reports of investor information that show progress toward diversification. In sum, the message needs to be clear that once-in-a-lifetime opportunities will be lost if action is not taken now.

To assist New Mexico and other states in diversifying their economy after the extractive industries phase out their operations, the federal government should research the conditions under which diversification is feasible and the types of industries that could be attracted to energy areas. The results of the research would guide investments in permanent structures at sites where transitions in the economic base appear feasible and would identify sites where the development of temporary/transportable structures would be a more realistic strategy. A convincing diversification plan might also relieve pressures for further increases in energy severance taxes to protect future generations by reducing fears of economic depression after energy resources are depleted. The analysis methods developed during the research would be widely applicable throughout the country for the many sites where energy resources must be developed in rural areas.

APPROPRIATE TECHNOLOGY COMMUNITIES

The need for major expansion of housing and community facilities in the rural energy resource areas of New Mexico presents an opportunity for the design of communities that apply the concept of appropriate technology -- that is, technology that is appropriate to the ultimate fate of the community: permanent growth center or abandonment. The state, in conjunction with the impacted communities will need to make deliberate decisions about which strategy is more appropriate in each individual case.

Those communities that will remain as permanent economic growth centers after depletion of the mineral resources permit application and testing of new concepts of energy efficient development. Some of those concepts include solar energy communities, energy efficient land use patterns and densities, efficient rural transportation strategies, beneficial use of uranium mine water and energy conserving building design and demonstration. The rapid growth of boomtowns also presents the opportunity for accelerated testing of new energy technologies that may not yet be available for commercial application.

Communities that are fated to be temporary permit wider development, application and testing of temporary or relocatable facilities. Both the remote Bisti and Star Lake areas of the state are sites where several thousand people will be employed in the next five years, but there is presently no economic activity. Facilities designed for a life that matches the expected life of the energy resources may be transferred to the many similar energy resource sites throughout the rocky mountain west.

Federal assistance is needed to develop criteria and guidelines for determining which energy resource communities should be designated as permanent growth centers and which should be temporary and ultimately abandoned. This effort would be equally beneficial to other rural energy producing states facing the same dilemma.

Assistance is also needed to define opportunities for developing permanent energy efficient communities in New Mexico. Some obvious candidates include Crownpoint/Thoreau, Gallup/Grants/Laguna and Farmington/Shipprock/Cuba.

Finally, assistance is needed to develop planning, technological and design innovations for temporary and relocatable housing and communities that are financially feasible, energy conserving and conducive to a high quality of community life.

STATUS

Some progress has been made toward a state growth management process. In 1975 the New Mexico Community Assistance Council was organized and granted \$10 million to impacted communities; an additional 1.5 million will be allocated in 1978. The State Highway Department has received a \$10 million appropriation for construction of roads in energy impacted areas.

On the national level, an Energy Impact Assistance Steering Group has been organized (see Appendix B), composed of representatives from 15 states, federal agencies, the White House, Indian tribes and local governments. The governors of the states in this group have proposed federal reforms to restructure federal assistance programs, increase funds and authority. These reforms include actions for organizing joint federal-state impact assessment and financing alternatives similar to those described in this paper. The state of New Mexico is part of this effort and supports it fully. Also, an increasing number of public officials from all levels of government are speaking out for assistance to impacted communities (see Appendix C).

However, none of the elements of the growth management system described above are fully in place. Taking advantage of the opportunities offered by energy resource development, minimizing its risks and meeting our collective responsibilities requires early implementation of such a system.

PROGRAM DESCRIPTIONS

Each of the policy needs discussed in the previous sections of this report are described in this section in terms of the tasks that need to be accomplished. Also included are estimates of the amount of effort that would be required for three program options which generally address problems in order of their effect on future uranium production.

An eight year program is presented because most of the acceleration in employment and population is expected over this period. No special state or federal intervention would be needed after population growth has stabilized.

Programs were chosen that are suitable for federal support. Although the Department of Energy may wish to coordinate the entire program because of the overriding objective of increasing energy production,* other agencies such as Housing and Urban Development, Labor, Commerce and Agriculture may wish to contribute funds, manpower and information.

*See Appendix D for relevant excerpts from PL 95-91, the Department of Energy Organization Act.

Options are generally designed to first address problems in geographic areas where substantial uranium production is expected but communities are least prepared.

		Effort Level (person-months/yr)		
<u>Early Warning System</u>		<u>Options</u>		
<u>Task</u>		A	B	C
1. <u>Identify energy development plans.</u> Update employment forecasts of energy companies (surveys and interviews). Obtain energy production expectations, by fuel and region, from federal sources. Update every 6 months. Compare plans with expectations and identify gaps.				
Options: A. Mail surveys only.		3		
B. Add survey follow up.			6	
C. Add federal coordination.				12
2. <u>Evaluate community capacities.</u> Establish baseline capacities and future plans in 10 community sectors (housing, water, sewer, schools, etc.) Update every 6 months.				
Options: A. Crownpoint/Thoreau area.		2		
B. Add Gallup, Grants and Laguna (uranium belt).			4	
C. Add Farmington/Cuba (includes Navajo/Exxon project).				5
3. <u>Design and operate the early warning system.</u> Design data input, processing and output procedures, including model for converting employment to population distribution. Identify critical constraints. Establish thresholds for unacceptable impacts.				
Options: A. Crownpoint/Thoreau.		6		
B. Add Gallup, Grants and Laguna.			7	
C. Add Farmington/Cuba.				8
4. <u>Establish Local/State/Federal task force.</u>		1	1	1

Early Warning System Cont.

Task

5. Design impact mitigation programs. Establish plans for removing critical community constraints (planning, financing and operations). Update every 6 months.

Options: A. Crownpoint/Thoreau.
B. Add Gallup, Grants and Laguna
C. Add Farmington/Cuba

Options

A B C

3 6 9

Total (person-months)

15 24 35

Total cost @ \$4k/mo. (000s)
per year

60 96 140

Five year cost (\$000s)

300 480 790

Consequences of no action:

1. Delay in problem identification delays community capacity increases.
2. If community limits pose unexpected threats to public health, uranium production goals may be delayed until capacities are increased.
3. Feed back to federal energy production planners on community constraints would not be available in advance.

		Effort Level (person-months/yr)		
<u>Community Planning and Technical Assistance</u>		<u>Options</u>		
Task		A	B	C
1. <u>Negotiate arrangements for quick response technical assistance.</u>				
Options:	A. Private consultants	2		
	B. Add state agencies		4	
	C. Add federal agencies and laboratories			6
2. <u>Provide assistance as requested.</u>				
Assuming three critical sectors per community and two person-months of assistance per sector,				
Options:	A. Crownpoint/Thoreau.	12		
	B. Add Gallup, Grants and Laguna.		30	
	C. Add Farmington, Shiprock and Cuba			48
Total (person-months/yr)		14	34	54
Total cost @ \$4k/mo. (\$000s) per year.		56	136	216
Eight year cost (\$000s)		448	1088	1728
Consequences of no action:				
1.	Planning and financing of additional capacity will not be accomplished when it is needed.			
2.	After the pressures of growth have begun to increase, it is unlikely that unprepared communities will be able to "catch up." If threats to public health develop, it may be necessary to slow growth and delay uranium production goals.			

Effort Level
(person-months/yr)

Flexible Finance

Task

Options

A B C

1. Work with Energy Impact Assistance Steering Group to draft new administrative procedures and legislation (federal) to make sure that proposals are appropriate for meeting the wide range of unique local needs and are related to the cause of the problem (uranium, coal and electric power - not oil and gas).

Options: A. Northwest New Mexico.
B. Add Wyoming.
C. Add other uranium producing areas.

6
9
12

2. Develop a financing plan for increasing capacities of impacted communities that draws on all appropriate sources: Local bonding, state programs, federal programs, private investors and energy companies.

Options: A. Crownpoint/Thoreau.
B. Add Gallup, Grants and Laguna.
C. Add Farmington, Shiprock and Cuba.

6
9
12

Total (person-months)

12 18 24

Total cost @ \$4k/mo
(\$000s) per year

48 72 96

Two year cost (\$000s)

96 144 192

Consequences of no action:

1. Federal assistance actions will not be appropriate, thereby continuing a past trend (see pgs. 3-5 of Governor Apodaca's statement in Appendix C).
2. Financing will be delayed, and com. mity facilities may not be adequate to protect public health and welfare. It may be necessary to slow growth and delay production goals until facility capacities are adequate.

		Effort Level (person-months/yr)		
<u>Manpower</u>		<u>Options</u>		
Task		A	B	C
1. Conduct a study to define the supply and demand for uranium industry workers if national goals are to be met. Estimate the inter-state migration and the increased number of training program graduates that would be required. Include an assessment of the competition for labor from the other energy sectors and estimate the shifts in skills and places of employment that will be needed to meet national energy goals.				
Options:	A. Limit study to supply and demand in New Mexico.	6		
	B. Expand to national scope.		12	
	C. Expand to other energy sectors.			18
2. Assess the expansion potential of existing training programs in New Mexico. Design and finance additional programs that would maximize the training of workers presently living within commuting distance of planned uranium projects. Estimate how the training requirements would be affected by community investments designed to reduce turnover rates.				
Options:	A. Limit study to existing training programs.	6		
	B. Expand to include new programs.		12	
	C. Expand to define relationship between training requirements and community satisfaction.			18
	Total (person-months)	12	24	36
	Total cost @ \$4k/mo. (000s) one year study	48	96	144
Consequences of no action:				
1. National uranium production goals not met because of inadequate skilled manpower.				
2. Labor costs inflated because of higher wages need to attract and retain skilled workers.				
3. Increased demands on training programs and inflated labor costs due to dissatisfaction with community life that causes high turnover and decline in productivity.				

		Effort Level (person-months/vr)		
<u>Growth Monitoring System</u>		<u>Options</u>		
Task		A	B	C
Identify data sources and analytical procedures for monitoring changes in employment, population and ten sectors of community activity (housing, water, sewer, schools, etc.). Provide feed-back to both the early warning system and the community planning process. Implement the system.				
Options:	A. Crownpoint/Thoreau.	4		
	B. Add Gallup, Grants and Laguna.		10	
	C. Add Farmington, Shiprock and Cuba.			16
Total (person-months)		4	10	16
Total Cost @ \$4k/mo. (\$000s) per year		16	40	64
Seven year cost (\$000s)		112	280	448
Consequences of no action:				
	1. Under or over-investments.			
	2. Delays in identifying problems.			
	3. Financial loss.			

		Effort Level (person-months/yr)		
<u>Diversification</u>		<u>Options</u>		
Task		A	B	C
1. Define changes in regional economy that can be expected if national energy production goals are to be met. Identify locations best suited for permanent growth centers. Identify economic activities that are good candidates for diversification. Develop methods applicable in other states.				
2. Identify potential investors in housing and commercial and industrial facilities. Prepare periodic reports designed to attract investments in permanent facilities where they can be justified by diversification potential.				
Options:	A. Task 1 only.	12		
	B. Tasks 1 & 2, but limit reports to new industrial developers.		18	
	C. Tasks 1 & 2, (reports for all investors).			<u>27</u>
	Total (person-months)	12	18	27
	Total cost @ \$4k/mo. (\$000s) per year	48	72	108
	Task 2 would be conducted in second year after Task 1 completed.			
Consequences of no action:				
1.	Continued uncertainty of future when energy resources have been depleted will continue to increase pressures for increase in state severance tax and permanent fund.			
2.	Severance tax increases will discourage and delay investments in expansion by the uranium industry and thereby delay the achievement of national production goals.			
3.	Investments are much more likely to be made in temporary facilities, thereby increasing short term costs, lowering the quality of community life and increasing turnover in energy industry employment.			

Effort Level
(person-months/yr)

APPROPRIATE TECHNOLOGY COMMUNITIES

Task

Options

A B C

1. Define opportunities for the use and testing of new technologies for community development (solar energy, beneficial use of mine water, community densities, rural transportation strategies, building conservation - including mobile homes, etc.).

Options: A. Crowpoint/Thoreau.
B. Add Gallup, Grants and Laguna.
C. Add Farmington, Shiprock and Cuba.

12
24 33

2. Develop design innovations for temporary/relocatable housing and community facilities that are financeable, energy conserving and conducive to a high quality of community life.

Options: A. Design concepts.
B. Site-specific design approaches for Crowpoint/Bisti area.
C. Extend design concepts for additions to existing communities.

9
12
18

Total (person-months)

21 36 51

Total cost @ \$4k/mo
(000s)

84 144 204

Start in year two after
specifications defined

Consequences of no action:

1. R & D opportunities lost.
2. Continuation of low density, energy inefficient, unplanned development.
3. Inappropriate investments in permanent facilities can cause financial losses.
4. Opportunities lost for temporary designs applicable to a wide range of remote energy resource development sites.

Cost and Schedule Summary of Action Program Options

Year	Effort Level (person-months)			Effort Level X \$4k/month		
	A Options	B	C	A Options	B	C
1	65	112	161	260	448	644
2	66	128	195	264	512	780
3	33	68	105	132	272	420
4	33	68	105	132	272	420
5	33	68	105	132	272	420
6	18	44	70	72	176	280
7	18	44	70	72	176	280
8	1	44	70	72	176	280
	254	576	881	1136	2304	3524

APPENDIX A

A RELATIONSHIP BETWEEN COMMUNITY INVESTMENTS AND ENERGY

PRODUCTION COSTS

A RELATIONSHIP BETWEEN COMMUNITY INVESTMENTS
AND ENERGY PRODUCTION COSTS

In addition to the many social problems of traditional energy boomtown life, the economy is characterized by inflated costs of labor, materials, and services over nonboom conditions. Much of this inflation can be attributed to inadequate community facilities and services, as evidenced by high employee turnover rates, high training costs and the payment of higher than normal wages and benefits experienced by the energy companies.

The escalation of costs and prices not only causes hardships for local residents on fixed incomes but it also results in increased costs to energy consumers throughout the nation. To the extent that these costs can be held down by providing adequate community facilities and services, all would benefit -- community residents, energy companies and energy consumers. The obvious questions that present themselves are, "How much investment in the community is needed to stem this inflation and who should make it?"

Recent research by Ronald Cummings and Arthur Mehr of the Department of Economics at the the University of New Mexico addresses the first question and is the subject of the remainder of this appendix. Although the question of who should pay will not be addressed, it is obvious that the investments needed to realize the cost saving should be shared by the beneficiaries of the saving. Since the benefits of avoiding the unnecessary inflation of energy production costs accrue principally to consumers throughout the nation, it seems that the federal government should assume a major responsibility for the cost of community facilities that are needed to hold down costs. However, the amount should be limited to that required to avoid the boom conditions, which is discussed below.

Cummings and Mehr have compiled an extensive data base of per capita investments in municipal infrastructure in 26 towns in Colorado, New Mexico, Utah and Wyoming. In comparing the characteristics of towns with rapid and stable growth, they found that substantially higher non-agricultural wages were paid in rapid growth towns than in stable growth towns. They were able to explain this difference in terms of inadequate community facilities and services, as shown by differences in per capita investments in municipal infrastructure and the distance of the towns from the nearest metropolitan area. Although additional research would be needed to show the relationship between all of the inflated costs that are passed on to energy consumers and the costs of community facilities, their results, using wages alone, are useful for estimating the level of investment that would be required.

Table 1 shows the front-end investments in municipal infrastructure that would be needed in three New Mexico energy towns to avoid inflation in wages. These investments equal the present value (over 10, 20 and 30 years) of the difference in wages that can be expected to be paid over these periods with and without the infrastructure investment. A total of

\$122.7 million would be needed for the three towns to provide facilities for a 20 year period. An explanation of the method used to obtain these estimates follows the Table.

ESTIMATED EXPENDITURES FOR INVESTMENTS IN MUNICIPAL INFRASTRUCTURE
FOR SELECTED TOWNS IN NEW MEXICO

Estimated Investments in Infrastructure with Planning Horizons of:

Town	10 years (millions of 1975 \$)	20 years (millions of 1975 \$)	30 years (millions of 1975 \$)
Farmington	8.5	51.1	78.0
Gallup	7.0	26.5	37.3
Grants/ Milan	19.2	45.1	61.6

TABLE 1

METHODOLOGY

Investment levels given in Table 1 were calculated in the following manner:

- 1) estimated yearly population levels for each town as supplied by the Energy Resources Board staff are in Table 1-1 (missing years were interpolated). Population in any year is denoted by P_t .
- 2) estimates for total municipal infrastructure¹ in 1975 (1974 for Grants/Milan and Farmington) by Cummings et. al.² These estimates, denoted by K, are as follows (thousands of 1975 dollars):

Farmington	\$ 22,297.5
Gallup	13,227.6
Grants/Milan	4,908.7

- 3) from a study by Cummings, et. al.,³ the following equation is developed which relates wages to per capita municipal infrastructure, where:

P_t = the population in year t,

1. These measurements of municipal infrastructure include value of buildings and equipment used for police, fire, recreation, streets and roads, water, sewage-sanitation, and general government. Facilities for education are excluded.

2. Cummings et. al., "An Inquiry Regarding Surrogate Measures for Social Benefits Attributable to Municipal Infrastructure in Boomtowns", (mimeo) Department of Economics, University of New Mexico, June 1977.

3. Ibid.

TABLE 1-1

POPULATION FOR SELECTED NEW MEXICO TOWNS

<u>Town</u>	<u>Year</u>	<u>Population</u>
Gallup	1976	17,000
	1981	18,612
	1985	21,783
Farmington	1976	32,000
	1981	36,103
	1985	45,114
Grants/Milan	1976	15,000
	1981	17,010
	1985	22,082

Source: Energy Resources Board staff

$k_t = K/P_t$ is per capita municipal
infrastructure,

W_t = the average wage in year t ,

D = the commuting distance from
Albuquerque

N = the average rate of unemployment.

$$W(t/K) = 8.6403 - .03747 \ln (k/P_t) \\ + .16931 \ln D - .07977 \ln N$$

Thus, for each town (as described by N and D , (see Table 1-2), given a level of municipal infrastructure K and a projected time path for population, the corresponding time path of wages can be calculated.

- 4) given the initial level of municipal infrastructure (K_0) for each town (see 2 above), wages are calculated using the population estimates given in Table 1-1; these wages, $W(t, K_0)$, assume that further investments in municipal infrastructure will not be made. We then arbitrarily chose other levels of infrastructure $\hat{K}$, and compute the associated time path of wages, $W(t, \hat{K})$, (see figures 1-3). The present value of the wage differential associated with the larger infrastructure $\hat{K}$, $W(t, \hat{K}) - W(t, K_0)$, is compared with the investment cost, $\hat{K} - K_0 = I$. The investment levels given in Table 1 are those for which the present value of wage differentials (resulting from the investment in municipal infrastructure) just equals the investment I ; i.e.,

$$\sum_{t=1}^{10,20,30} \frac{W(t,\widehat{k}) - W(t,k_0)}{(1+r)^t} = I$$

A discount rate of 10% is used for these calculations.

TABLE 1-2

DISTANCE (D) FROM ALBUQUERQUE AND AVERAGE UNEMPLOYMENT RATE (N)
FOR SELECTED BOOMTOWNS IN NEW MEXICO

<u>Town</u>	<u>D (miles)</u>	<u>N</u>
Gallup	140	6.4%
Farmington	180	6.7
Grants/Milan	75	6.1

Source: Cummings, et. al., Op Cit.

FIGURE 1

Time path of estimated wages in Grants/Milan with current infrastructure and with estimated infrastructure - 20 year horizon

FIGURE 2

Time path of estimated wages in Farmington with current infrastructure and with estimated investment - 20 year time horizon

FIGURE 3

Time path of estimated wages in Gallup with current infrastructure and with estimated infrastructure - 20 year horizon

APPENDIX B

ENERGY IMPACT ASSISTANCE STEERING GROUP

MEMORANDUM FOR DISTRIBUTION

ENERGY IMPACT ASSISTANCE
STEERING GROUP

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NACO

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Dick Monteau
Northern Cheyenne Tribe

Governors' Alternative Option - Major Federal Reform Initiatives To Restructure Programs and Increase Funds and Authority

APPROACH

The Governors' Alternative Option reflects the view that federal energy policies and programs are a significant cause of energy impact problems. Thus, the federal government should bear a major burden of the front-end costs of the adverse impacts associated with rapid energy development as well as other costs over the long term of development that cannot be adequately met by existing programs. State and local governments should continue to play a major role in impact mitigation, including influencing key decisions concerning the siting of development projects. However, under this option there would be a significant change in the distribution of fiscal burden among the federal, state, local and tribal governments. States, localities and tribes would benefit from additional funding and the consolidation of certain impact assistance programs. This option represents a significant commitment of federal resources and authorities to ensure that adverse impacts of energy related growth do not interfere with the expansion of production and utilization of this nation's energy resources in pursuit of the NEP's goals.

PROPOSED ACTIONS

Information, Participation in Decision-Making, Planning and Management, and Coordination are combined recognizing their functional interdependence, into: Joint Federal-State Impact Assessment.

Substate regions presently undergoing or likely to experience the impacts of domestic energy development would be designated by each appropriate governor.

Each governor would select a certain number of state officials and nominate a like number of

Joint Federal-State Impact
Assessment (continued)

federal officials - appropriate to each state situation - to a Joint Impact Assessment Committee. Appropriate local officials would also form the Committee. In the case of energy related impacts occurring on indian reservations a similar structure might be considered.

With respect to the federal officials participating on such a committee, one should represent that agency most able to coordinate an assessment of the activity causing the impact. Another should represent a "delivery" agency such as a regional economic development commission. And a third should represent the Department of Energy so that information gathered by the Committee could be fed into federal energy policy considerations.

Initial planning grants would be given to each state designating an "impact area" for the initial assessment conducted by the affected communities and the Committee.

The Committee would be responsible for forecasting significant energy activities occurring or likely to occur within the impact region. Additionally, the Committee would forecast the nature and extent of energy-related impacts.

On the basis of this preliminary assessment the committee would receive a federal grant to prepare a mitigation plan, suitable to the institutional needs at either the state or local level. Second round planning grants would also be used to build the capacity of local governments within the impact region. The Committee would also be

Joint Federal-State Impact Assessment (continued)

responsible for monitoring functions within the region.

The federal agency designated as the lead assessment agency would be responsible for bringing together all federal information concerning the activity and its impact. The lead "delivery" agency would be responsible for coordinating federal assistance programs.

In providing assistance to impacted communities efforts should be made to utilize existing structures such as the regional economic development commissions.

In addition to the joint assessment of impact and the coordination of assistance, state government should be directly involved in energy development decisions through such mechanisms as gubernatorial concurrence, consistent requirements with state development plans, and prior project notification.

Financing

The financing approaches described below would be utilized to fill identified gaps in providing the necessary infrastructure and services to impacted communities. In each case an attempt should be made to use existing programs and structures.

1. Federal grants for joint federal-state impact assessment. Second round grants made on the basis of need formula.
2. Grants to states for revolving funds for impact assistance. A decay rate from grants and loan forgiveness to be set.

Financing (continued)

3. Full funding of housing support in section 306 of the Coal Conversion Act. Augment to cover energy facility construction and oil shale development.
4. Federal grants for highway construction and maintenance for railroad grade separations and bypasses. Could be raised by excise tax on coal haulage.
5. Grants for interstate and state-indian reservation impact mismatches.
6. Assistance for the development of state energy facility siting program oriented toward direct internalization of impact costs.
7. Loan guarantees for states and localities with assured forgiveness or payment deferral.

Policy Considerations

Avoidance

Joint assessment will feed impact potential into both federal and state policy decisions on energy development activities. Financing package permits anticipatory financing of some mitigation needs.

Closing Policy Gaps

Assures state and local input into energy policy decisions and allows for the joint development of assistance and mitigation policy.

Closing Resource Gaps

Furnishing some degree of funding and flexibility for states to deal with

Closing Resource Gaps (continued)	most pressing capital needs for impact mitigation.
Barriers to Implementation	Joint impact assessment could be authorized by executive order: financing would require legislation and appropriations, but most could be delivered through existing mechanisms.
Risk Sharing	Will reduce risk borne of uncertainty through joint impact assessment. Will transfer some risk from state, local and Tribal levels to federal government by furnishing new federal grant and loan funds in flexible mode.
Cost Internalization	Furnishes significant incentive to states to internalize costs to energy consumer by siting permit stipulations.
Impact on Federal, State and Local Budgets	Will impact existing federal revenue streams by \$ M/year; plus \$ M/year for revolving fund grants from oil price equalization tax and \$ M/year for transportation, maintenance and construction from new coal transportation excise tax. Will permit states and local governments to make investments not otherwise feasible to protect public health, safety and welfare and support energy productivity.
Incentives for Enhanced State and Local Capacity	Will increase state, local and Tribal capacity through joint impact assessment. Incentives for state siting and permitting legislation enhance internalization capability. Provision of capital for public investment free some residual public revenue for increased operating costs.
Enhanced Leverage on Industry Participation and Mitigation	Joint impact assessment and state siting/permitting both increase possibility of industry participation in providing housing infrastructure, and services to accommodate energy related growth.

APPENDIX C

COMMENTS BY PUBLIC OFFICIALS

TESTIMONY OF

Jerry Apodaca
Governor of the State of New Mexico

Before the
Senate Public Works Committee

Senator Randolph, Chairman

August 2, 1977

"Distinguished Senators of the Committee on Public Works.

"I am addressing this testimony to you on the occasion of hearings for Senator Gary Hart's Bill 'Federal Energy Development Inland Impact Assistance Act of 1977'.

"I have already conveyed my message of support for this Bill in a prior letter of support to Senator Jennings Randolph, Chairman of your Committee.

"The views which I expressed in that letter are still relevant to your hearings today. I am extremely interested in the results of this Senate Committee Hearing.

"I realize that this is not the first piece of legislation introduced in Congress for providing additional aid to energy resource states. But let me emphasize, we will be experiencing heavy financial burdens in assisting our small cities and towns with energy-related population growth. We will need special funds to construct the new public facilities. We will need federal assistance to serve 'boomtowns.'

"For a moment, I would like to discuss what I mean by 'boomtown'. Our boomtowns experience extreme growth rates. In some cases this means a doubling of the total population in five years, in others, ten years. The demand this places on city officials to provide adequate water, sewer, roads, education, and social services is enormous.

"Several boomtown communities of New Mexico tripled in population in the last ten years. They are receiving a large influx of new residents in a very short period of time. Up to ten times the average State population growth.

"Living in a boomtown is not pleasant. Frequently, a family must wait up to three weeks before their child can be enrolled into school, because there just isn't enough room to accommodate them.

"It means drinking substandard water containing minerals and impurities, or using substandard sewer facilities.

"Often it means living in crowded trailer homes, substandard apartments, and transient camper trailer camps while waiting for better accommodations.

"And for the city government, it means utilizing every possible source of taxation to attempt to generate enough money for city services, like police, fire, and environmental services. In most situations, the tax base is insufficient to support the needed services.

"The living standard is generally low in boomtowns, although the wages of mineral workers are high. The reason for the difference is that they do not stay to invest in their community. They are a mobile population. They need these basic community services, but generally will not stay long enough to pay for them. The burden always falls on the permanent resident who sees his city grow by leaps and bounds in a very short time period.

"The net effect of a situation like this is to cause social and economic dislocations and lead to lower resource extraction and production levels.

"Last year I testified before your Subcommittee on Economic Development when they held hearings in New Mexico. At that time many witnesses from these boomtowns presented documentation on the serious consequences of rapid

energy related development in their communities. These impacts still exist, in fact, they have become more serious.

"At that time I appointed a task force to research the problem and recommend courses for action. Their research and recommendations have been published in preliminary form and I am submitting them for the review of this Committee. In response to the findings in this report and to hearings conducted last year by the New Mexico Legislative Energy Committee, our State Legislature recently enacted the 'Community Assistance Act.' This Act set up a council of State agency directors and public members to administer a \$10,000,000 impact aid fund. In light of the \$244,000,000 need for new facilities over the next 5-7 years, this is only a drop in the bucket.

"However, this Act represents New Mexico's firm commitment to help our energy impacted areas and thereby, facilitate the domestic energy production goals outlined in the New National Energy Act.

"However, we do need additional help. The State of New Mexico, in concert with other Rocky Mountain States, The Western Governors' Regional Energy Office and The National Governors' Conference, has been requesting additional federal assistance for impacted communities for several years now.

"We were very encouraged when President Ford formed the Energy Resources Council in 1975 which created an Inter-Governmental Coordinating Committee to research the energy impact assistance programs among the federal agencies. Several documents resulted from this effort, but no substantial increase in either financial or technical assistance was forthcoming. As one mayor

commented, 'Producing handbooks of possible federal assistance programs was like throwing a drowning man a first aid manual'.

"Then there was the Synthetic Fuels Bill. This Bill had a number of provisions to help communities deal with social and economic impacts resulting from the construction of a synthetic fuel facility like the coal gasification plants planned for Northwest New Mexico. That was defeated by one vote.

"Then there was the Federal Energy Development Impact Assistance Act of 1976. Again, this program offered a variety of loan programs to aid impacted communities, but was defeated.

"Now we are being told to use the new 12½% additional share of federal mineral leasing royalties for impact assistance. After reviewing the measure, our State Legislature directed the additional share to be added to the general fund in the same manner as the 37½%.

"The original intent of the Federal Mineral Leasing Act of 1920 was to provide some form of compensation to the States for the removal of certain taxable revenue sources which occur on federal land. Oil and gas revenues account for 98% of this federal royalty and those lands are not our major impacted areas. Our major impacts are from coal and uranium development in the Northwest Portion of the State. Taking this additional 12½% away from the current allocation to schools and roads statewide and allocating it to a specific section of the State would not only counter the original intent of the Act, but will create controversy within the State as to who is rightfully entitled to those funds. In regard to the loan program, we

are awaiting the final promulgation of the regulations from the Department of Interior and the review by the Office of Management and Budget. This may provide some relief for those communities who have the financial capacity to participate in the loan program, but it does not address the needs of those communities who are bonded to capacity and have little ability to pay debt service. Also many of our communities need front-end financing right now in the form of direct grants. This is why we set up our \$10,000,000 Community Assistance Act.

"Now we have Senator Gary Hart's Bill. This legislation addresses our needs in the most effective and feasible manner to date. I support it. If this Bill is passed it will provide a flexible program to address the serious needs we already are experiencing, as well as those overwhelming demands that will be placed on us when the goals of the National Energy Act are implemented. A recent report from the Federal Energy Administration indicates that our New Mexico coal production could increase as much as 15 times about the present level, and that uranium could increase up to four times. If we even take our moderate State projections of a threefold increase in uranium production and fivefold increase in coal production, we will need a strong progressive piece of legislation to mitigate the impacts. In review of this Bill I would recommend to the Committee the following policies:

1. The Federal Government must recognize its role in triggering energy development.
2. Attempts at dealing with impacts of energy development in a piecemeal fashion are inadequate. We need a comprehensive program to increase existing federal programs, revenue sharing mechanisms, loan programs and grants programs, all in one flexible combination.

3. The ability to relate socio-economic impacts to specific federal action should be an integral factor in any development of domestic energy resources.
4. The State's responsibility for protection of health, safety and welfare of citizens affected by energy development must be acknowledged.
5. Local communities should not be required to bear an unfair burden of the impact cost, nor should the State.
6. Authority to provide for coordination among the federal agencies is essential to the success of any impact program.
7. Impact assistance should not be limited to traditional infrastructure needs such as water and sewer, but should extend to health, housing, social services and other areas.

"I hope you consider the problems of the energy producing states during this period of rapid increase in energy resource extraction. Boomtown problems do hinder energy development.

"Social problems lead to higher employee turnover rate, thus lowering production levels. We do want to fulfill our role in meeting the national energy demands, but we do not wish to become an energy colony and bear all these high social economic and environmental expenses. We have taken the first step and allocated \$10,000,000 for our boomtowns. Now it is up to the Federal Government to provide its matching share. I thank you for this opportunity to testify before your Committee. I will be happy to provide you with any additional information you may require."

Sincerely,

Jerry Apodaca
Governor
State of New Mexico

TESTIMONY TO THE
SENATE PUBLIC WORKS SUBCOMMITTEE
ON REGIONAL AND COMMUNITY DEVELOPMENT

By
Fred L. O'Cheskey
Energy Resources Administrator
State of New Mexico

August 27, 1977
Albuquerque Public Library
300 Copper Street NW
Albuquerque, New Mexico

"Chairman Randolph, Senator Domenici, distinguished guests, ladies and gentlemen: It is indeed a pleasure to have you here today. We are most honored.

"I would like to thank you, Chairman Randolph, and you, Senator Domenici, for bringing the Senate Public Works Subcommittee on Regional and Community Development to New Mexico. I believe that this hearing is a sign of your willingness to respond to the needs that have arisen in New Mexico and other states as a result of energy development, and the State of New Mexico is eager to work with you and your subcommittee in any way it can.

"I would also like to thank you for inviting me here today to discuss how we in New Mexico are dealing with the social, economic and environmental impacts of energy development. I welcome this opportunity. I can think of no other subject that could be more timely, and no other subject that could be more critical to the future well-being of the people of this state.

"I would like to give you a brief overview of the situation New Mexico finds itself in today regarding energy development, and describe how the state is responding to the situation. I will then conclude my remarks by addressing the General Accounting Office report on federal impact assistance.

"An evaluation of energy development in New Mexico today might be taken from the opening lines of Charles Dickens' Tale of Two Cities. It seems to be the 'best of times' or the 'worst of times,' depending on one's point of view. Perhaps it is both.

"On one hand, New Mexico is receiving substantial economic benefits as a result of the development of our state's abundant uranium and coal resources.

But on the other hand, New Mexico is finding that these benefits are being purchased at a price, and the cost often involves environmental degradation and the disruption of fragile socio-economic structures.

"Unfortunately, the situation is expected to get much worse before it gets better.

"As stated by our Governor in his written testimony to your subcommittee earlier this month, the President's National Energy Plan calls for a three-fold increase in coal production by 1985. This enormous demand is already having an impact on New Mexico, which contains approximately 25 per cent of the nation's strippable low sulfur coal.

"As the Governor also stated, ERDA has projected that a four-fold increase in uranium production will be needed by 1985. This too is having a significant impact on New Mexico, which contains more than 50 per cent of the nation's economically recoverable uranium reserves.

Both the coal industry and the uranium industry have already entered boom periods here in New Mexico. In the last few years, uranium industry employment has doubled in New Mexico. Currently, there are over 5,000 employees in the industry earning over \$30 million from 33 different corporations.

With the assistance of an Economic Development Administration planning grant, the State of New Mexico has calculated that due to increased coal and uranium activity, as many as 72,000 new residents could move into north-western New Mexico alone.

"This will mean an annual average area growth rate of about 5 per cent with the growth rate as high as 8 per cent a year in some areas. This is 7 times the national average.

"The demand that are already being placed on public facilities and services are enormous.

"New Mexico has tried to help itself. The 1977 New Mexico Legislature took an unprecedented step by approving the Community Assistance Act. This act provides \$10 million in state funds for grants to political subdivisions impacted by energy or mineral development.

"In establishing grant guidelines, the state told communities to submit only 'bare-boned' requests for the funds. When the applications were all in, more than \$19 million had been requested.

"If the state had asked these communities to submit 'wish lists,' the state believes that it would have received approximately \$200 million in requests.

"I would like to conclude my presentation by addressing the federal impact assistance report that was prepared recently by the General Accounting Office.

"The main conclusion of this report was that the energy producing states will raise enough revenue from severance taxes and federal royalties to pay for energy development impacts.

"However, the State of New Mexico believes that the General Accounting Office staff left two important factors out of their analysis.

"First, it is true that increased development will increase the amount of severance taxes.

"However, New Mexico is already using \$10 million of this revenue for community assistance purposes this year and cannot afford to pay for all the costs of energy development.

"With the assistance of the Economic Development Administration, the State of New Mexico has determined that the state's political subdivisions will need approximately \$244 million over the next seven years in order to cope with energy-related growth.

"If severance tax revenue was used to pay for these costs, it would severely deplete the state's severance tax fund. New Mexico has been unwilling to do this. The purpose of this fund is to set aside funds that will benefit future generations of New Mexicans after our state's irreplaceable resources are gone. In the case of uranium, most authorities estimate that this resource will last little more than one generation.

"If New Mexico did as the General Accounting Office staff suggests and used severance tax money for energy impacts, then one day the state would wake up to find its irreplaceable resources gone and little money in the severance tax fund to show for it.

"Secondly, the General Accounting Office staff is accurate in stating that New Mexico could receive up to \$56 million over the next 5 years from its increased share of Federal Mineral Leasing Act funds.

"However, the report fails to mention that 98 per cent of the state's royalty share is derived from oil and natural gas production -- not coal and uranium production. Thus, the Federal Mineral Leasing Act royalties do not accurately relate energy tax revenues to energy impacts.

"In addition, the State of New Mexico invests nearly all of the 37½ per cent in royalty funds it historically has received into its public school system. The additional 12½ per cent that the federal government recently made available is needed to meet inflationary costs in our school system. As a result, the New Mexico Legislature has directed that the additional 12½ per cent be spent in the same manner as before, to meet our increasing educational costs statewide.

"Finally, let me conclude by stating that New Mexico believes the energy impact problem should be considered just as much a national problem as a state problem. Energy production in states such as New Mexico is taking place to meet national demands -- not state demands.

"New Mexico ranks first in uranium production and exports all of it. We rank fourth in natural gas production and export 87 per cent of it. We rank fifth in oil production and export about 80 per cent of it. We rank tenth in coal production and export approximately 90 per cent of it in the form of coal or coal-generated electricity.

"In addition, 42 per cent of New Mexico's land area is under federal or Indian ownership, including 87 per cent of its strippable coal resources and a comparable percentage of its recoverable uranium resources.

"As a result, when decisions are made in Washington about resource development, they directly affect the growth rate and capital needs of New Mexico.

"Therefore, we are glad that Senator Hart's Bill, Senate Bill 1493, clearly spells out the federal government's responsibility in mitigating the impacts it triggers through leasing policies, tax incentives and loan guarantees.

"The State of New Mexico believes that the energy producing states share a common desire to fulfill their share in meeting our national energy goals, but not at the unfair expense of paying for all the social and economic impacts.

"We support Senator Hart's bill and hope your colleagues give it full consideration.

"Once again, Chairman Randolph and Senator Domenici, I appreciate the opportunity of testifying before you today. We look forward to working closely with you, as we have in the past, in trying to mutually solve the energy problems, not only for New Mexico but for the rest of the country.

"I thank you very much."

(The following article by E. Michael Myers by United Press International appeared in the Albuquerque Journal during the 1978 session of the New Mexico Legislature.)

"'Boom' cities demand aid

"Dunn raps energy industry

"Towns feeling the growing pains of booming energy production and population took their cases to the Senate Finance Committee Monday and expressed demands for housing and services.

"Committee chairman Sen. Aubrey L. Dunn, D-Otero, looked around the room packed with mayors and municipal officials seeking his blessing of \$20 million in state relief. He spoke sharply to the absent lobbyists of the state's energy industry.

"'I can see no way the legislature can consider this proposal if the industry is not responsible in paying its share,' Dunn said Monday. 'They could just clean out the natural resources of the state and not help pay for it.

"'They turn their cold shoulder to the state and this legislature, come into the hallways of the Capitol and fight up and down against a tax,' Dunn said, the crimson flush rising on his high forehead. 'This shows they are very irresponsible and do not care a little bit about the people of New Mexico. It is embarrassing.

"'I sympathize with you people who live in that area and depend on the industry to take care of you,' Dunn said. 'I as one individual will do all I can to help you. It is impossible to consider -- with sewage running down the streets of towns -- they can come in here with a straight face and fight taxes with the coal and uranium tax almost nil.'

"Uranium and coal production is soaring in Grants and Gallup and the industry workers and their families are outstripping the services of the communities. It is proposed the state funnel revenue generated by the Federal Mineral Leasing Act to support energy impact areas until they can fiscally rebound from the surge.

"'We are not trying to build a Taj Mahal or make gold plated improvements,' Grants Mayor Mitch Wells said. 'We are bonded to capacity in revenue bonds. If we don't get some front end money I don't see how we can finance our water and street and other improvements. Once we are going the growth will carry itself and then retire anything else that has to be done.'"

IMPACT OF ENERGY RESOURCE DEVELOPMENT
ON SMALL WESTERN COMMUNITIES
SUBCOMMITTEE ON REGIONAL AND COMMUNITY DEVELOPMENT
OF U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

August 27, 1977 Albuquerque, N.M.

Statement by

STATE REP. P. R. GRANT, JR.

Headlines and articles in Albuquerque newspapers a little more than 20 years ago proclaimed the advantages to New Mexico's economy of the energy boom taking place in the San Juan Basin. This was the period of the most rapid development of the Basin's Mesa Verde and Dakota gas and oil fields and the inception of underground mining at the recently discovered Ambrosia Lake uranium deposits - soon to be the most extensive and prolific deposits in the world. Interest in the state's energy boom was so keen the state's largest newspaper devoted full pages daily solely to energy developments.

Farmington's population increased dramatically. Housing became so short in Grants that the uranium industry was forced to construct over 800 units for their employees. Though hard-pressed and with financial resources stretched to the limit, most of the impacted communities managed to cope with the demands for services. Their citizens generally welcomed the influx of people and capital and reacted as if the expansion and prosperity would last forever.

It didn't. By the early '60s most of the miners had left Grants and the petroleum industry was well into its own depression. As quickly as the economies of the impacted communities had expanded, they collapsed. Housing became virtually impossible to sell and businesses floundered. Nobody except those immediately affected really cared. Government -- state or federal -- had not developed a social conscience.

The communities survived, turned to other pursuits, and eventually thrived. Now, many of the same communities are being asked to do it again. Understandably, they may be somewhat reluctant to pledge their credit and commit resources for improvements and services that past experience indicates may be needed for only a short time.

Incredibly - and in spite of massive energy related impacts being primarily the result of short-sighted federal policies over the past 23 years, the federal government still takes the position that it has little or no responsibility for the problems it has caused. As late as January of this year the official position of the U.S. Department of Interior as expressed in a letter from the Assistant Secretary - Administration and Management to the Director, Energy and Minerals Division of the General Accounting Office (comments on Rocky Mountain Energy Resource Development: Status, Potential and Socioeconomic Issues) was, "state and local governments have the prime responsibility for providing the necessary facilities and services ... since these governmental units receive new economic benefits over time from energy development activities. Further, the final report itself, published last month (July 13, 1977) concluded, "the need for additional federal assistance at this time has not been demonstrated."

It should be clear that government policies at the federal level are responsible for most of the variables and provide the majority of the uncertainties that make long term energy demand determinations difficult and commitments by small impacted communities very reluctant. A slight shift of policy gears in Washington presents a small town mayor who makes a living doing something else aware that his community is to be "blessed" with a brand new mine, mill, generating plant or something else that requires improvements and services his community simply isn't ready to provide. Those so-called "economic benefits" cited by the Department of Interior usually become higher property taxes, higher crime rates, local small businesses becoming non-competitive with the new Safeway, higher prices for labor and material, non-existent or sub-standard housing, traffic problems, school problems, water and sanitation problems and a dramatic change in life style. About the time the community begins to cope, another Washington shift occurs and whatever it was that is providing the "benefits" becomes obsolete or non-competitive and the community is left holding a bankrupt bag.

Nevertheless, since the impacts are going to occur it is interesting to speculate on New Mexico's energy future and controllable options within it. Whether such speculation is useful or even desirable in helping the state perceive or direct

events - with or without the federal government - depends on one's viewpoint. In the past, the state's primary reaction to economic opportunity has been one of passive indifference, an attitude its citizens probably won't tolerate in energy development. The magnitude of major decisions, impacts and changes originated and influenced by external energy economics and the rapidity of their occurrences requires constant monitoring, response and participation by the state and its local government subdivisions.

Controllable options include extraordinary expansion of economic opportunities beyond furnishing raw material. They also include attempts to influence federal decision makers to take some responsibility for making certain energy development is not mismanaged. This does not imply federal management with catch-22 categorical grants, loans and controls and the "strings attached" that delight the federal paper shufflers and leave the frustrated local official wondering why he even bothered to apply.

Changes are taking place with a speed that several years ago would have seemed impossible, suggesting that the time has come for decisions at the federal level to mitigate energy related impacts instead of continuing to study them. We know, for example, that large numbers of expensive, extensive and sometimes duplicative reports commissioned by state and federal entities demonstrate socioeconomic energy oriented impacts on existing communities. Few had to be told that Farmington, Grants and Gallup are being substantially affected by new activities and expansion of existing ones. However, many of the new energy actions in the San Juan Basin will occur in areas that have little or no community service base to begin with. It is unfortunate for the planners that industry provides its impacts where the need exists, not where government suggests they ought to be. This is a major cause of "after the fact" reaction to boom town symptoms that, if unpleasant, could have been avoided if government and industry were not in perceived or actual adversary positions, permitting reasonable interchange of information and joint venturing.

One major uranium firm has executed a contract for an expensive deep mine shaft, requiring large numbers of housing units which don't exist near Crownpoint for their construction workers. The area is some 65 miles from viable communities such as Grants, Gallup and Farmington -- too far to expect employees to drive. The same company announced plans for

500 housing units for permanent employees at the unincorporated settlement of Thoreau because there is presently no better alternative, despite all the studies.

Besides communities like Crownpoint and Cuba, names like Bisti, Burnham, Hospah, Star Lake and Torreon will become familiar to New Mexicans as new and expanded uranium and coal activities develop. According to one state study Managing the Boom in Northwest New Mexico, Governor's Energy Impact Task Force, February, 1977, over 72,000 new persons must be housed and provided with urban services in McKinley, San Juan and western Valencia counties by 1985. If just the announced developments take place, this represents a 46 percent increase in the 1976 population of the region and will require an estimated \$224 million in new or improved community services, highways and education facilities. What is not indicated is that about half of this massive impact will be felt in areas where no community presently exists. If these impacts become the type of development representing the undesirable elements of rapid and mismanaged growth, who should be blamed and whose responsibility is it to resolve the problems?

The state has little control over the cause of the problems, that of furnishing fuel to a demanding nation. The state does have the right and obligation to insist that those who create the demands and truly reap the benefits from energy production -- industry, consumers and the federal government -- share the service, social and financial burdens.

That's why it's important to acknowledge the significance of S. 1493, the Inland Energy Development Impact Assistance Act of 1977. First I'd like to make a few comments about specifics in the bill,

1. Perhaps the Department of Commerce is the appropriate federal agency to administer the act. However, of prime importance, if it is to succeed, is not to simply add another level of federal agencies for that unpaid, understaffed local mayor to go to or require additional hierarchy in state government to sort out the grants. If at all possible, it would be extremely appropriate to have just one agency in charge of energy impact assistance, as stated in the preamble of the Act (Sec. 1101 A-6) and not confined to planning and forecasting.

2. Sec. 1101 (A) (7) appears to offer terrible potential for even more federal delay and inaction than even now exists. Nobody will be able to "adequately plan for and provide the necessary new public facilities and services..." to the satisfaction of all federal agencies. Leave it out, there are adequate safeguards in existing law and regulations, and it adds nothing to the bill.

3. Page 5, Line 12: The words "oil and gas" without a comma separating them would imply that if you developed one without the other you might not qualify for the federal incentives.

4. Page 8, Lines 19-24. "Impact Crisis" should include not only adverse conditions which have already been caused, they should include conditions which may be caused. As stated, the section includes only those adverse affects which have already happened requiring additional facilities in existing communities. Anticipating adverse affects might mitigate the problems associated with development of new communities where no services or facilities exist to begin with.

5. Page 14, Lines 7-12. Seem to imply that a new environmental impact statement needs to be prepared every time a planning grant is applied for. Most of the San Juan Basin will be covered by existing EIS's. Why should these be duplicated?

Other comments I would have would be consideration of the following:

1. The Act provides for funds for planning, grants, loans and loan guarantees only to states and Indian tribes. Although it is possible they may "farm out" and contract with private entities, why not consider expanding the applicants to include private entities. The Arabians have built magnificent new communities with the expertise of American private firms -- to plan and to build the city from scratch. One reason we encounter a number of diverse enterprises leading to duplication or wasteful use of facilities is that industry is reluctant to disclose plans to competitors and government, even though they may share common problems and ultimate solutions. A "third party" with access to a planning grant could be the catalyst to provide joint working plans and ultimately services and facilities that are in the best interests of both industry and government.

2. Perhaps the singularly most important provision of S. 1493 is Sec. 1107 (B), page 19, lines 3-16. This bill could provide a most unique opportunity for the federal government to joint venture with private enterprise a new community self-sufficient with respect to conventional energy fuels. It is in the nation's best interest to provide an opportunity to demonstrate what billions in federal expenditures on research

and development into solar energy, for example, can do. To test the latest techniques in waste disposal, provide alternatives in transportation and traffic control, etc. The bill should go so far as to suggest and provide under certain circumstances, subsidies for application of new energy techniques.

3. The bill might consider that a great deal of the energy activity it is directed at takes place on federal or Indian lands, and that in some regions there may be no private land to develop. In this instance would it not be appropriate to offer federal land for community development?

4. Without the "catch - 22" provisions mentioned previously, there should be some mechanism in the planning and development stage for the ultimate phase out of the energy initiative. Particularly in the instance of new communities developed solely for a unique energy enterprise. The planning stage should consider alternatives to maintain the economic viability of the community after the energy oriented employment is gone.

5. Finally, unless there is some overriding consideration, why not permit local government entities (mayors and county commissions) to make direct application for available funds? They are the ones affected, closest to the scene and least appreciative of adding another middle man through layers of state bureaucracy.

APPENDIX D

EXCERPTS FROM PL 95-91

EXCERPTS FROM PL 95-91

Sec. 102 The Congress therefore declares that the establishment of a Department of Energy is in the public interest and will promote the general welfare by assuring coordinated and effective administration of Federal energy policy and programs. It is the purpose of this Act --

(3) to provide for a mechanism through which a coordinated national energy policy can be formulated and implemented to deal with the short, mid and long term energy problems of the Nation; and to develop plans and programs for dealing with domestic energy production and import shortages;

(9) to promote the interest of consumers through the provision of an adequate and reliable supply of energy at the lowest reasonable cost;

(11) to provide for the cooperation of Federal, State, and local governments in the development and implementation of national energy policies and programs;

(13) to assure incorporation of national environmental protection goals in the formulation and implementation of energy programs, and to advance the goals of restoring, protecting, and enhancing environmental quality, and assuring public health and safety;

(15) to provide for, encourage and assist public participation in the development and enforcement of national energy programs;

Sec. 103 Whenever any proposed action by the Department conflicts with the energy plan of any State, the Department shall give due consideration to the needs of such State, and where practicable, shall attempt to resolve such conflict through consultations with appropriate State officials. Nothing in this Act shall affect the authority of any State over matters exclusively within its jurisdiction.

Sec. 203 (a)The Functions which the Secretary shall assign to the Assistant Secretaries include, but are not limited to, the following:

(6) Intergovernmental policies and relations, including responsibilities for assuring that national energy policies are reflective of and responsible to the needs of State and local governments, and for assuring that other components of the Department coordinate their activities with State and local governments, where appropriate, and develop intergovernmental communications with State and local governments.

(7) Competition and consumer affairs, including responsibilities for the promotion of competition in the energy industry and for the protection of the consuming public in the energy policymaking process, and assisting the Secretary in the formulation and analysis of policies, rules, and regulations relating to competition and consumer affairs.

Sec. 655. (a) The Governors of the various States may establish Regional Energy Advisory Boards for their regions with such membership as they may determine.

(c) Each Board established pursuant to subsection (a) may make such recommendations as it determines to be appropriate to programs of the Department having direct effect on the region.

Sec. 657. The Secretary shall, as soon as practicable after the end of each fiscal year, commencing with the first complete fiscal year following the effective date of this Act, make a report to the President for submission to the Congress on the activities of the Department during the preceeding fiscal year. Such report shall include.....

(2) an estimate of (A) the domestic and foreign energy supply on which the United States will be expected to rely to meet

such needs in an economic manner with due regard for the protection of the environment, the conservation of natural resources, and the implementation of foreign policy objectives, and (B) the quantities of energy expected to be provided by different sources (including petroleum, natural and synthetic gases, coal, uranium, hydroelectric, solar, and other means) and the expected means of obtaining such quantities.

(3) current and foreseeable trends in the price, quality, management, and utilization of energy resources and the effects of those trends on the social, environmental, economic, and other requirements of the Nation:

(4) a summary of research and development efforts funded by the Federal Government to develop new technologies, to forestall energy shortages, to reduce waste, to foster recycling, to encourage conservation practices and to increase efficiency; and further such summary shall include a description of the activities the Department is performing in support of environmental, social, economic and institutional, biochemical, physical and safety necessary to guarantee that technological programs funded by the Department are undertaken in a manner consistent with and capable of maintaining or improving the quality of the environment and of mitigating any undesirable environmental and safety impacts.

(7) a summary of substantive measures taken by the Department to stimulate and encourage the development of new manpower resources through the Nation's colleges and universities and to involve these institutions in the execution of the Department's research and development programs:

Sec. 801 (a) The President shall --

(2) seek the active participation by regional, State and local agencies and instrumentalities and the private sector through public hearings in cities and rural communities and other appropriate means to insure that the views and proposals of all segments of the economy are taken into account in the formulation and reviews of such proposed Plan:

(b) Not later than April 1, 1979, and biennially thereafter, the President shall transmit to the Congress the proposed Plan. Such proposed Plan shall --

(1) consider and establish energy production, utilization and conservation objectives for periods of five and ten years, necessary to satisfy projected energy needs of the United States to meet the requirements of the general welfare of the people of the United States and the commercial and industrial life of the Nation, paying particular attention to the needs for full employment, price stability, energy security, economic growth, environmental protection, nuclear non-proliferation, special regional needs and the efficient utilization of public and private resources.

(2) identify the strategies that should be followed and the resources that should be committed to achieve such objectives, forecasting the level of production and investment necessary in each of the significant energy supply sectors and the level of conservation and investment necessary in each consuming sector, and outlining the appropriate policies and actions of the Federal Government that will maximize the private production and investment necessary in each of the significant energy supply sectors, consistent with applicable Federal, State, and local environmental laws, standards, and requirements;

(c) (3) an evaluation of current and foreseeable trends in the price, quality, management, and utilization of energy resources and the effects of those trends on the social, environmental, economic and other requirements of the Nation:

(5) a review and appraisal of the adequacy and appropriateness of technologies, procedures, and practices (including competitive and regulatory practices) employed by Federal, State, and local governments and nongovernmental entities to achieve the purposes of the Plan.

Sec. 1002 Each comprehensive review prepared for submissionshall include --

(9) an assessment of the effect of the program on the national economy, including, but not limited to, the effects of competition, economic stability, employment, unemployment, productivity, and price inflation, including costs to consumers and to businesses;

(10) an assessment of the impact of the program on the Nation's health and safety;

APPENDIX E

EMPLOYMENT AND POPULATION FORECASTS

EMPLOYMENT AND POPULATION FORECASTS

Most of New Mexico's uranium and coal resources are located in the northwest quadrant of the state, north of the highway that connects Gallup, Grants/Milan and Albuquerque. It is in the Four Corners region where the states of Utah, Colorado, New Mexico and Arizona meet. Most of the present uranium production is in the areas north of Laguna and Grants/Milan. Although industry plans to expand present production areas much of the increased production during the next eight years is expected to shift towards the west and concentrate in the Crownpoint/Gallup area. Uranium exploration is also underway on the Navajo Reservation southwest of Shiprock.

In addition to uranium development, substantial increases in coal production are expected in the areas between Crownpoint and Cuba and between Crownpoint and Farmington. New power generation and coal gasification plants are also planned for the Crownpoint/Farmington area, within a 10 mile radius of an abandoned trading post called Bisti. Access to this area is via unpaved roads. Additions to existing power plants and the Navajo Indian Irrigation Project near Farmington are also planned. Most of these activities are within two counties, San Juan and McKinley.

Forecasts of employment and population in these areas change rapidly as announcements of federal coal leasing opportunities are followed by announcements of delays in environmental impact statements; coal mining lease approvals by the Navajo tribal council are followed by litigation concerning socioeconomic and cultural impacts; railroad plans to transport coal are delayed by right-of-way acquisition and federal permits; a 2000 megawatt power plant at Bisti is announced just after the most recent forecast has been made. The tables appended to this text show some of the recent forecasts in the energy development areas. Although they do not share the same assumptions for the reasons listed above, they do indicate the general magnitude of the increases expected by the 1985-1986 time period.

Most of the communities in the area are small but have been experiencing steady growth over the last five years. This situation has resulted in severe housing shortages, little additional capacities in community facilities and public debt at bonding limits. Many of the settlements in the area are on Indian lands where bonding is not possible, and additional

capacities depend on the changing fortunes and allocations of many federal agencies. Additional uranium production demands will exacerbate an already difficult situation.

The example of Crownpoint illustrates many of the community problems created by increased uranium production in New Mexico. Employment in the uranium industry in the vicinity of this town of about 2500 people is expected to increase from 486 in 1977 to 2085 in 1982. This increase is planned for projects by Phillips, Mobil/TVA, Conoco, Pioneer Nuclear, Western Nuclear and Gulf. Employees of these projects are expected to account for 17 percent of New Mexico's uranium production and eight percent of the nation's.

Thirty five miles north of Crownpoint in the Bisti area, the Public Service Company of New Mexico, Western Coal Co., Eastern Coal, Arch Minerals, Consolidation Coal and El Paso Natural Gas Co. are planning projects that could increase employment from 6 in 1977 to 2200 in 1982, rising to 4000 by 1990.

These projects could generate a population influx of 20,000 people to be housed and served by 1982. If a new town is not built in the area, the burden of serving this influx must fall on:

Crownpoint, an Indian town of 2500 people where checker-board land ownership patterns, steep slopes, cultural conflicts, housing shortages and difficult financing problems inhibit rapid expansion of facilities and integration of newcomers.

Thoreau, an unincorporated village of 700 people 25 miles south of Crownpoint.

Grants /Milan and Gallup, towns of 15,000 to 18,000 people 50 to 60 miles from Crownpoint, with already serious shortages of housing and facilities caused by nearby energy developments.

Farmington, a town of 30,000 people 65 miles north of Crownpoint, accessible largely via unpaved roads, with already serious shortages of housing and facilities caused by nearby energy projects.

Accommodating 20,000 additional people in this environment over the next five years requires well coordinated efforts by all involved: the state, local officials, the Navajo tribe, federal agencies, the energy companies and private developers and builders.

Study Area Employment in the Energy Industry
Projected by Employment Area
1977 - 1985

<u>Employment Area</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
Ambrosia Lake	2,681	2,805	3,048	3,080	3,131	3,091	3,041	3,041	3,041
Mariano-Smith Lake	160	235	239	320	585	665	580	580	580
Crownpoint	10	110	145	145	300	675	789	896	1,032
Chruchrock	1,350	1,498	1,646	2,350	2,679	2,951	3,101	3,151	3,151
Nose Rock	316	472	738	805	810	830	910	970	950
Gallup Area	197	430	532	532	532	532	532	532	532
Bluewater	856	568	571	586	686	736	735	307	307
Laguna - Cebolleta	1,140	1,334	1,588	1,484	1,359	1,565	1,526	1,445	1,445
Star Lake	13	322	679	877	371	437	654	737	737

Source: Stephen R. Flance & Associates, Inc., September, 1977, prepared from data supplied by the energy companies.
FINANCING CAPITAL FACILITY REQUIREMENTS OF ENERGY IMPACTED COMMUNITIES, Flance & Assoc.

Note: These employment forecasts can be attributed to the uranium industry except for Star Lake and a portion of Gallup which are coal projects.

EMPLOYMENT IN THE URANIUM INDUSTRY: HIGH PROJECTION

1977	5,626
1978	7,329
1979	8,858
1980	9,975
1981	11,131
1982	12,647
1983	14,098
1984	17,318
1985	20,918

SOURCE: Employment Projections Utilizing High Demand Estimates as presented in Uranium Industry in New Mexico, New Mexico Energy Institute, Nov. 1976, p. 71.

FINANCING CAPITAL FACILITY REQUIREMENTS OF
ENERGY IMPACTED COMMUNITIES, Flance & Assoc.

COMMUNITY POPULATION ESTIMATES 1970-1977

	<u>Grants</u>	<u>Milan</u>	<u>Cuba</u>
1970	8,768 ¹	2,222 ¹	630 ³
	²	²	³
1971	8,626 ²	2,111 ²	745 ²
1972	8,484 ¹	2,037 ¹	865 ²
1973	8,342 ²	1,963 ²	990 ³
1974	8,463 ¹	2,038 ¹	1,110 ³
1975	8,583 ⁴	2,112 ⁴	1,160 ⁴
1976	11,500 ³	3,000 ²	1,200 ²
1977	13,350	3,425	1,250

1"1973 and 1975 population estimates and 1972 and 1974 per capita income estimates for counties and incorporated places in New Mexico" U. S. Bureau of the Census, April 1977.

2 Interpolated

3 Pat Clifford, Mid Rio Grande Countil of Governments, August 1977.

4 Energy Resources Board, June 1977.

SOURCE: Stephen R. Flance & Associates, Inc., September, 1977.
FINANCING CAPITAL FACILITY REQUIREMENTS OF ENERGY
IMPACTED COMMUNITIES

Population Projections 1976 - 1985

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
<u>Low: Assumes natural increase and no migration.</u>										
Grants	11,500	11,660	11,830	12,000	12,170	12,340	12,520	12,700	12,880	13,060
Milan	3,000	3,040	3,080	3,130	3,180	3,220	3,270	3,310	3,360	3,410
Cuba	1,200	1,220	1,250	1,270	1,290	1,320	1,340	1,370	1,390	1,420
Thoreau	700	720	730	750	770	790	810	830	840	860
<u>Moderate: Assumes Development of All Planned Projects.</u>										
Grants	11,500	16,530 ¹	16,450	16,730	16,490	16,570	16,580	16,590	16,290	16,540
Milan	3,000	5,530 ¹	5,450	5,550	5,900	5,950	5,910	5,850	5,330	5,120
Cuba	1,200	1,260	1,940	2,630	2,110	1,990	2,080	2,430	2,500	2,430
Thoreau	700	1,170	1,440	1,650	1,740	2,040	2,280	2,300	2,280	2,270
<u>High: Assumes Additional Development to meet Demand Estimates.</u>										
Grants	11,500	15,850 ²	16,630	17,250	17,100	17,280	17,390	17,850	18,620	20,000
Milan	3,000	5,180	5,550	5,810	6,280	6,420	6,440	6,680	6,680	6,860
Cuba ³	1,200	1,260	1,940	2,630	2,110	1,990	2,080	2,430	2,500	2,430
Thoreau	700	1,100	1,470	1,750	1,880	2,250	2,580	2,730	3,080	3,280

¹ The apparent jump in population is not expected to actually occur--it is due primarily to the assumption that the population associated with the energy industry is projected to live within the incorporated area, whereas, presently some live outside the boundaries--present estimates indicate 13-14,000 in Grants & 3-4,000 in Milan and 3,000 in the immediate area. By 1979-80 this situation should change so that the population projections will reflect actual service area populations.

² This figure is lower than the moderate estimate because the published employment data for high assumption projected a later start-up date for some operations.

³ The moderate and high projections are the same for Cuba.

Source: Stephen R. Flance & Associates, Inc., September 1, 1977.

FINANCING CAPITAL FACILITY REQUIREMENTS OF ENERGY IMPACTED COMMUNITIES. Flance & Assoc.

CURRENT AND PROJECTED POPULATION:CROWNPOINT, TOHATCHI, SHIPROCK

Population	Crownpoint		Tohatchi		Shiprock	
	No.	%**	No.	%	No.	%
Current*	2,672		2,081		8,770	
Increase 1977-81	1,397	13	1,009	12	3,889	11
Increase 1977-85	3,238	15	1,799	11	7,981	11
Total, 1985	5,910		3,880		16,751	

*Sources for current population estimates:

Crownpoint: Crownpoint Water System Improvements, Gordon Henkenhoff & Associates Inc., September, 1976, Albuquerque, p. 3

Tohatchi: Step 1 Facility Plan, Tohatchi and Chuska New Mexico, Bohannon Westman Huston & Associates, Inc., February, 1977, Albuquerque, p. A-4.

Shiprock: Survey by the Navajo Youth Development Program during the summer of 1977.

**Average Growth Rate = Total Percent Increase/No. Years.

SOURCE: NAVAJO COMMUNITY FACILITIES AND THE DEMANDS OF ENERGY DEVELOPMENT: CROWNPOINT, TOHATCHI AND SHIPROCK, Resource Communities Inc., 1977.

PROJECTED GROWTH RATES 1970-1986

	<u>SAN JUAN COUNTY</u>					
	<u>LOW</u>		<u>MEDIUM</u>		<u>HIGH</u>	
	Population	Growth Rate %	Population	Growth Rate %	Population	Growth Rate %
1970	52,517	NA	52,517	NA	52,517	NA
1976	65,000	24	68,507	30	82,208	57
1978	72,244	38	90,304	72	108,364	106
1981	84,044	60	105,055	100	126,066	140
1986	82,192	57	102,740	96	123,288	135
Total 16 yrs.		57		96		135

CITY OF FARMINGTON

1970	21,979	NA	21,979	NA	21,979	NA
1976	29,720	35	33,450	52	33,450	52
1978	31,809	45	37,904	72	38,778	76
1981	34,557	57	42,663	94	45,682	108
1986	38,162	74	48,561	121	54,758	149
Total 16 yrs.		74		121		149

SOURCE: MANAGING THE BOOM, Socioeconomic impacts of energy development in northwest New Mexico, Energy Impact Task Force, September, 1977.

PROJECTED GROWTH RATES 1970-1986CITY OF AZTEC

	LOW		MEDIUM		HIGH	
	Population	Growth Rate %	Population	Growth Rate %	Population	Growth Rate %
1970	3,354	NA	3,354	NA	3,354	NA
1976	4,327	29	4,729	41	5,165	54
1978	4,729	41	5,762	72	6,406	91
1981	5,299	58	6,607	97	7,513	124
1986	5,534	65	6,976	108	8,117	142
Total 16 yrs.		65		108		142

CITY OF BLOOMFIELD

1970	1,574	NA	1,574	NA	1,574	NA
1976	2,030	29	2,219	41	2,424	54
1978	2,219	41	2,707	72	3,006	91
1981	2,487	58	3,101	97	3,526	124
1986	2,597	65	3,274	108	3,809	142
Total 16 yrs.		65		108		142

SOURCE: MANAGING THE BOOM, Socioeconomic impacts of energy development in northwest New Mexico, Energy Impact Task Force, September, 1977.

MAXIMUM ENERGY DEVELOPMENT
SCENARIO POPULATION PROJECTION

Gallup, New Mexico 1970-1986

1970	14,596*
1976	17,600**
1978	19,157***
1981	20,556***
1986	21,753***

PROJECTED GROWTH RATE

1970-1986	49.45%
1970-1981	37.44%
1970-1976	17.68%

*U.S. Official Census Figure, 1970.

**Sterling, Allgood and Mataya Engineers, Area Wide Waste Water Study for Gallup, New Mexico Planning Area.

***McKinley Area Council of Government's, December, 1976

SOURCE: MANAGING THE BOOM, Socioeconomic impact of energy development in northwestern New Mexico, Energy Impact Task Force, September, 1977.

PROJECTED TOTAL POPULATION OF MCKINLEY COUNTY 1970-1986

	Low Projection	Medium Projection	High Projection
1970*	43,400	43,400	43,400
1972**	46,800	46,800	46,800
1974**	49,500	49,500	49,500
1975**	50,400	50,400	50,400
1976		51,600	
1977		52,800	
1978		54,100	
1979		55,300	
1980	54,200	56,500	58,200
1981		57,600	
1982		58,700	
1983		59,900	
1984		61,000	
1985	58,400	62,100	65,200
1986		66,700	

*United States Official Census Figure, 1970.

**Census update

Source: Bureau of Business & Economic Research, New Mexico
Population to 1985 and Impact on Job Outlook, 1976.

RECENT AND PROJECTED POPULATION GROWTH

(All numbers rounded to nearest 100)

	<u>1970</u>	<u>1976</u>	<u>1980</u>	<u>1985</u>	<u>1995</u>
Grants/Milan Planning Area	11,800	18,800	25,100	37,500	46,500
Cuba Planning Area	700	2,200	2,800	3,500	5,700
Bernalillo Planning Area	3,300	5,500	6,800	8,500	11,100
Corrales Planning Area	2,200	3,700	4,500	5,500	6,700
Rio Rancho	1,200	6,400	12,100		

SOURCE: MANAGING THE BOOM, Socioeconomic impacts of energy development in northwestern New Mexico, Energy Impact Task Force, September 1977.

APPENDIX F

REFERENCES TO FRONT-END FINANCING PROBLEMS

The Impact of Energy Development On Northwestern New Mexico. Hearing before the Subcommittee on Economic Development of the Committee on Public Works, United States Senate, Ninety-Fourth Congress, second session, March 12, 1976, Farmington, New Mexico, Serial No. 94-H35.

Tax Lead Time Study, The Colorado Oil Shale Region, Colorado Geological Survey, Department of Natural Resources, State of Colorado, Denver, Colorado, 1974.

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Workshops on Financial Aspects of Socioeconomic Impacts, Sponsored by the Federal Energy Administration Office of Energy Resource Development, Dillon, Colorado, August 3-5, 1976.

Federal Energy Impact Assistance, An Analysis and Evaluation of Techniques, Edward H. Allen.