SOCIOECONOMIC IMPACT MODELS FOR BOOMTOWN
PLANNING AND POLICY EVALUATION*

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In the last five years, concerted federal and industry actions to increase the U.S. domestic energy supply have caused an eruption of boomtowns across the nation. Development of offshore oil, Western coal, and constructions of large scale facilities for processing, transportation, and power generation frequently occur in small communities where their entry produces severe disruption, at least in the short run. Federal, state and local governments have debated the merits of several policy approaches, particularly various forms of impact aid to local governments to ameliorate public sector stress. Several states provide impact aid through local allocation of stiff severance taxes or via siting controls that moderate growth or require compensation. The federal government provides domestic aid for offshore oil impacts via the $1.6 billion loan and grant fund established under the Coastal Zone Management Act of 1976. Further impact aid proposals are currently before state and national legislatures. Other intergovernmental arrangements attempt to help boomtown communities plan for expansion.

The boomtown predicament has evoked substantial concern in government and industry circles. The confusion in many policy and
planning discussions reveals a perceived need for good estimates of boomtown conditions and reliable ways to predict the effectiveness of various policies. A number of modelling efforts have emerged in the last two years aimed at these concerns. They represent a substantial improvement over previous descriptive accounts that emerged from case study material. This paper reviews three such models, focusing comparatively on their purpose, techniques, sophistication, accessibility to policymakers and planners, and subjectation to real world testing. It focuses on the local public sector modelling efforts, since these are critical to impact aid debates.

The Peculiarities of Boomtown Growth

Jurisdictions other than energy boomtowns have also faced rapid population growth and development. The suburban explosion is the most obvious example. In that case, excessive public sector costs imposed on existing residents resulted in a variety of responses such as fiscal zoning, no growth movements, special assessments for incoming activities, and deals with developers. Growth (mainly residential) did not lead to demands for intervention by higher levels of government. However, several features of boomtown development hamper adjustment of the public sector so severely that they have resulted in appeals for intervention and aid.

I identify these features as follows:

a) Jurisdictional unawareness. The energy development prompting population growth takes place in a political jurisdiction different from the one which bears the cost.
b) Newcomers vs. oldtimers. Rapid growth frequently requires major new infrastructure expenditures which older residents resent subsidizing under uniform taxation arrangements. New residents may have substantially different preferences for public service mix and levels than older residents.

c) Insufficient control of land use; decisions about disposition of land as in federal coal or offshore oil leasing prevents the local government from using zoning or siting arrangements to ease adjustment.

d) Severity of growth. Sheer numbers of people entering to work, despite adequate housing, may be unassimilable without significant declines in quality of public services and community life.

e) Volatile production patterns. The boom-bust cycle associated with large capital facilities construction presents the local government with an uneven future path of public service demand.

f) Monopoly of information: the industry or federal government exercises tremendous power over the pace of development, and information available to planners about it; sometimes, an incentive to misinform exists.

g) Risk. The uncertainty surrounding the future of many energy activities raises the risk premium, often so high that the financial sector is unwilling to lend funds to or buy bonds of local governments.1

These conditions, present in varying degrees in particular boomtowns, affect production efficiency, social equity and political power of the various parties (oldtimers, newcomers, government officials, industry officials). An ability to incorporate these features is a prerequisite for useful modelling efforts.

Reviews of Socioeconomic Impact Modelling Techniques

Three recent studies review local socio-economic impact modelling techniques. Thomas Muller lists the basic methods used to construct relationships in impact models, including both microlevel and macroeconomic analyses.2 Surveying 93 different studies, mostly of suburban rapid growth and its fiscal consequences, Muller catalogues empirical results to date on the direction and strength of certain relationships. Most of these pertain to residential development and its fiscal burdens. They do not cover the peculiar boomtown conditions listed above. Muller finds that four features limit the scope of fiscal impact studies: lack of a conceptual framework, insufficient analyses of empirical data, shortages of resources and self-interested sponsor objectives.3 He concludes that "Since there are only limited data available on retrospective analysis, the reliability of techniques reviewed here have (sic) not yet been adequately assessed."4 Stinson's review concentrates on energy boom-

3Ibid, p. 33.
town impacts. Her study lists technical problems with current modelling in general, reviews some of the basic methods used recently for estimating employment population, service and budget impacts, and notes some of the unusual features of each of 20 efforts at modelling energy impacts in rural areas. Because boomtown studies are comparatively crude as a group, this study is not as helpful on details as Müller's study, but is a fair reflection of current boomtown applications. Stinson's study concludes, with reference to the local public sector:

"Regrettably, these estimates usually deserve little confidence since they are often the final figure in a cascade of forecasts offered without significance levels or confidence intervals."

and

"Unfortunately, the poor quality of available data seriously reduces both the accuracy of local level projections and their ability to foreshadow numerous serious impact problems."

A study by Stenehjem reviews modelling efforts aimed at predicting local levels of economic activity, but does not cover the local public sector in detail.


7Ibid, p. II-22.

Murdock, Leistris and Shriner raise several thoughtful self-criticisms about NEAP modelling efforts that apply across the board. They point out that NEPA requirements encourage aggregate rather than local assessment modelling, which is not helpful to local planning efforts. They underscore the importance of the production sector as the driving force in the boontown process and suggest that accurate prediction of employment and resulting population growth is underdeveloped in most models. They acknowledge the absence of distributional consequences, by income group, by sector, by geographical area in their model and others. They express concern that the quantification of impacts required by modelling neglects other important social consequences and argue that anthropological and other research results ought to be incorporated despite nonconformity to modelling structure.

Choice of Models for Review

From a large number of studies which purport to perform socio-economic impact modelling, three efforts are outstanding: the simulation model, BOOMI, developed by Andrew Ford at Los Alamos, 10


the North Dakota Regional Environmental Assessment Program (REAP) economic demographic model developed by Larry Leistritz and others,\textsuperscript{11} and the econometric model of the areal impacts of coal development by John Krutilla, Anthony Fisher and Richard Rice at Resources for the Future.\textsuperscript{12} Each of these is operational, and each has been used by planners and/or policymakers for boomtown situations. Each is accessible to review because its specification is explicit. Each is also relatively accessible to people who need to use it. Each has a fairly detailed subsector representing the local public sector for gauging fiscal impacts. Each employs methods which are potentially transferable to other situations.

Other modelling efforts lack these traits. None combines the detail of the local public sector with enough generality and flexibility to be transferable in the way that these three do. The PEA


READ econometric model predicts the aggregate local public sector impacts from energy development for use by national policymakers but does not disaggregate for particular situations.\textsuperscript{13} The Argonne model produces estimates of social costs from increased coal production by U. S. regions but the specification of the model is not available.\textsuperscript{14} The Department of Interior’s Resource and Land Investigation program has developed a model for evaluating environmental but not fiscal impacts at the local level.\textsuperscript{15}

Several excellent case studies employ detailed data and reliable techniques but are not easily replicable for other sites.\textsuperscript{16} Other attempts at predicting socioeconomic impacts are too crude or misconceived to qualify as models.\textsuperscript{17}


\textsuperscript{14} Erik Stenshjelm and Jane Metzger, "Economic Implications of the National Energy Plan: Comparative Social Costs of Increased Coal Production to 1985," Regional Studies Progress, Argonne National Laboratory, September 1977.


\textsuperscript{16} Dr. Ralph A. Laken, Thomas E. Carroll Associates, "Economic and Social Impacts of Coal Development in the 1970’s for Mercer County, North Dakota," (Washington, DC: Old West Regional Commission, October 1974) is an example.

Features for Model Comparison and Review

These models are reviewed for their usefulness and accuracy in portraying the local public sector, given the unusual characteristics of boombown development listed above. The review criteria cover proposed use of the model, methods used to operate the model, specific model structure, testability, and accessibility to users.

1) Proposed use of the model. Each model sets out in search of different goals at the various political levels. They range from priority on informing state and federal policymakers of policy consequences to facilitating local planning efforts. This difference produces variations in model design features. Nevertheless, good policymaking models can be good planning models. Each model will be evaluated for its potential contribution to both goals.

2) Modelling technique. Two techniques are employed by these models: econometric modelling and simulation modelling. Each has its strengths and weaknesses for portraying boombtown conditions. Each can also be judged on its own grounds.

3) Model Structure. For the local public sector, evaluation of model performance relies upon its ability to handle hypothesized relationships between boombtown growth and the local public sector, relationships which are suggested informally in the literature largely from observation and inductive method. These can be summarized as follows.

18. The only formal model of these relationships is contained in Ann R. Markussen, "Regional Economic Contract and Intergovernmental Finance: A Theoretical Perspective," Institute of Urban and Regional Development, University of California, Berkeley, December 1977, where it is applied to the case of rapid decline. The boombtown formulation is forthcoming in The Fiscal Crisis of American Boombtowns: An Analysis of State and Federal Policy, General Accounting Office, Spring 1978.
a) Population and Employment Sector. Public sector demand and supply is a function of extent, pace and character of incoming economic activity; model ought to include specification of labor force characteristics, net immigration, secondary and tertiary employment effects, family structure, and residential location. Accurate data is crucial.

b) Public Sector Demand: New levels of demand will depend upon population growth over time, with features stated above, including preferences of different population compositions, incomes, the tax price of services and the structure of political decision making. Conflict among different groups may be quite significant.

c) Production Function for Public Services: Output of public services is a function of infrastructure and operating costs (inputs of capital and labor), the degree of substantiability and flexibility; good models should allow for shortages and limits in capacity.

d) Investment Behavior: The ability of the local public sector to expand depends upon the availability of capital funds, which in turn is a function of risk, expected tax base growth, and in some cases legal constraints.

e) Public Expenditure: The budget for the local government will depend on the growth of the tax base, potential impact aid, the level of service demand and production costs, including finance charges from past and present investment, and budgetary behavior. In addition to the inclusion of such relationships, evaluators will consider the sophistication of their formulation and degree of interactions with other relationships in the model.

4) Testability. Can the model be tested? Has it been and what are the results? How important is the degree of testability in determining its usefulness?

5) Accessibility. An accurate, sophisticated model may be merely a modeler's toy if it does not allow policy makers, planners, and parties affected to understand and use it.
The Regional Environmental Assessment Program (REAP) Model

The REAP model has an interesting history. It is part of a well-funded state level program in North Dakota to assess and plan for impacts from development activity. In 1972, the Legislative Council contracted Battelle to design an information and forecasting system. They proposed REAP, which was established by the Legislature in 1975 with an initial $2 million from a severance tax financed coal development fund. By January 1977, the forecasting model was fully operational. It was designed to aid planning efforts and to inform policymaking at the local and state levels.

The REAP model employs simulation techniques. It will produce baseline and development forecasts, given basic estimates of employment expansion by industry. Geographically, it is restricted to a 13 county area in western North Dakota, where it will generate output for municipal, county and regional units. The relationships among variables employed by the model range from educated guesses, assumption of linear trends, engineering estimates, to

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an occasional parameter derived with cross-sectional regression techniques. Many of the parameters are available for user manipulation. If the user doesn't want to incorporate his/her own intuition about the strength of a relationship, the model will employ a “default” value, its own best guess.

The REAP model employs a rather sophisticated set of equations for predicting the economic and demographic consequences of development. The economic submodel uses an input-output model with thirteen sectors. Coefficients are based on data collected in 1969 from expenditure patterns of firms, households and local government in seven counties. Despite the small numbers of sectors, “rows only” and old data, the model appears to work reasonably well because the economy it describes is relatively simple and stable in its production specialization (agriculture and lignite mining). One interesting feature of the model is its endogenous treatment of households, which allows the model to trace the multiplier effects of increased economic activity through regional household expenditure patterns. The REAP model uses a cohort-survival demographic model which is relatively straightforward; its parameters are based on historic cohort levels, fertility rates and mortality rates for North Dakota and specific county subdivisions. The economic and demographic models are linked through a labor shortage mechanism. If predicted levels
of employment resulting directly and indirectly from development cannot be filled by the local labor force, the model assumes that migration from outside will occur to absorb these jobs. The model allows induced declines in employment in agriculture as a result of competition for land and other inputs by incoming activities, so that it does attempt to measure net job creation. A final component of the economic demographic sector allocates immigrants to residential locations via a gravity model.

The fiscal impact subsector of the model is considerably less sophisticated. It projects revenues and costs separately resulting in net surpluses of deficits. Non-school operating costs are projected as a function of population, where the relationship is assumed to approximate the current structure of expenditure/city size, estimated from a cross-sectional regression of sample local units. Implicitly this suggests that future demand for public services will exhibit the same properties despite the characteristics of the incoming population and that scale economies and capacity utilization rates in boomtowns will resemble cross-sectional experience. It is thus a yardstick technique, assuming that the population and local government can and will maintain services at the average expenditure level for a given city size, adjusted for inflation.

Capital costs are derived with assumptions of constant returns to scale and fixed capital/labor ratios. Population growth
creates new requirements for infrastructure, and engineering cost estimates are used to evaluate capital costs. Only in the demand for school operating and construction costs does the model account for any characteristics of the incoming population, in this case the predicted age/cohorts structure. Thus the model employs no demand functions based on hypothesized behavior of households nor does it permit factor substitution, nonconstant returns to scale or increasing factor costs, except insofar as the latter shows up in engineering cost estimates for infrastructure and in the general level of inflation.

Investment behavior in the model is assumed to be an automatic response to population increase. There are no discontinuities, implying an ability to adjust marginally. There are no constraints imposed by institutional features such as constitutional tax rate limitations or by inability to secure financing due to capital market rigidities or high levels of risk.

Revenues are projected from current tax rates and expected growth in tax base associated with development. The model produces a series of annual estimates of six revenue sources and seven categories of public expenditure. Frequently, these results produce projected deficits for earlier years of high level construction activity and surpluses for later years when operation of the new sector produces increased tax revenues. The model does not hypothesize the behavior of local governments in responding to
deficits or surpluses. They may choose to provide crowded and lower quality services, to raise tax rates, or to pursue some new revenue source such as deficit financing or additional intergovernmental transfers. Presumably, in actual situations the REAP modellers allow their clients to pursue these alternatives by working the model.

The REAP model has been used many times in concrete instances. To date, only the predictive accuracy of the demographic/economic sector of the model has been written up. Here the results are reported to be remarkably good. Leistritz reports that estimates of population growth for major impact communities for the period 1975-77 have generally been within 10% of the model's predicted changes (unfortunately he notes that the actual population estimates are also of questionable accuracy). Backcasting with the I-O model and comparing the results with EIA projections produces greater differences, generally more than 10% off, although Leistritz reports that revised EIA estimates have reduced the difference. No attempt to test the fiscal impact sector of the model against actual experience has been published by the REAP group. The User Manual includes an honest disclaimer:


17 Thor Hertsgaard, Randal C. Coon, F. Larry Leistritz, and Norman Fort Union Coal Region, EPA Report No. 77030, Department of Agricultural Economics, North Dakota State University, June 30, 1977 p. 16; and Letter, op. cit.
REAP has made every reasonable effort to ensure that the A-D model has been developed on a theoretically sound basis and has been properly validated. Default values represent REAP's "best guess"; however, REAP assumes no responsibility for the validity of the defaults, the validity of any user-specified over-rides of the defaults or the results that logically follow from those assumptions.12

Perhaps the most salutary feature of the REAP model is its splendid accessibility. Since its full scale operation commenced in January 1977, 46 users requested runs, including 14 state agencies, both partisan sides of the legislature, the state Supreme Court, five county groups, twelve city and school district units, five regional organizations, three universities and two private firms. The program can be run from a terminal that requires the user to respond to a series of questions about estimated population levels and intuitive feeling for parameters such as fertility rates and community attractiveness. Thus the model educates the user to some of its features in the process of projection, by forcing the user to confront many assumptions that would otherwise remain implicit.

A few examples of the uses to which the model has been put demonstrate its versatility in advising both policymakers and planners. In 1977, the model was used by the North Dakota Legislature (including both political party caucuses) to project the different results of various distribution schemes accompanying the proposed increase in the coal severance tax. (Ironically, this

very exercise points one of the inadequacies of the economic component - the inability with the current I-O structure to estimate the locational and production level response of firms to an increase in the severance tax.) The North Dakota Coal Impact Office uses the model to predict infrastructural, operating and planning needs in order to make grants to political subdivisions. The Mayor and Planning Commission of Beulah used the model to project population for four different paths of coal development and electric generation. The state highway department used the model for predicting highway needs in developed areas.

One caveat, however: It is unclear that the model is really available to all affected parties. If a local government should be captive of certain interests (either pro-development or anti-development) it is possible that the model will be used to support a vested position. Since "private" users are charged very high rates for model runs, they cannot challenge the projections. While a high user fee may be reasonable for industry, it may be prohibitive for minority groups in the community.

The REAP model has an admirable usage history but an uncertain accuracy record. Although it was designed to aid local planning efforts, it may be best at the state policymaking level and riskiest for local use in planning. The manual cautions, "In general, greatest care should be taken in interpreting model results for
the smallest geographical units." This weakness, especially in
the fiscal impact sector, results from the absence of behavioral
modelling — demand for public services from a changing population,
response to differential tax rates by the production sector, local
government behavior with respect to budget disruption. It also
derives from fundamental characteristics of boomtown growth, which
I summarize below as a challenge to all the modelling efforts.

The Boom Model

The Boom model arose out of modelling efforts begun at Los
Alamos in 1975. The original local impact model was applied to
the Navajo Reservation in the Four Corners area, in order to "find
construction timetables for the various industries which allow
orderly community growth." The purpose of the Boom model has
more recently shifted to charting development impacts, in order to
advise policymakers and local planning officials about adjustment
strategies. It aims at producing useful information to four types
of decision makers: federal administrators drafting national legisla-
tion to assist boomtown, state legislators debating statewide stra-
tegies for alleviating local impacts, local officials discussing

19 Ibid., p. 45

20 Lawrence A. Bruebner, and Michael D. McKay, "Preliminary
Report on Local Impact Model," Los Alamos Scientific Laboratory,
LA-6139-MS, November 1975.
zoning variations to allow location of energy facilities within their jurisdiction and energy company planners attempting to reduce the decline in construction worker productivity that results from adverse booms and conditions.\textsuperscript{21}

The Booz model employs simulation techniques to model the interactions between large-scale incoming activity and secondary growth, migration, housing and public service consequences. It emphasizes system dynamics features, which allow projection of important variables by simulating multiple interactions among sectors, adopted from the work of Forrester. It does not estimate 48 parameters employed in model relationships, but borrows them from diverse sources, including the REAP modelling effort. Thus, it does not use place-specific data in constructing most relationships.

Booz uses the power plant as its hypothetical boom activity. The construction and operating levels of employment are carefully modelled over time, producing uneven population growth and secondary growth. There is no input-output model or demographic model. Construction workers are assumed to migrate in with new jobs and to disappear with the completion of the project. Secondary activity is a function of increased basic activity via an income multiplier, modified by a measure of distance to other trade centers and by a

reluctance in the service sector to expand for construction-related activity alone. The model thus produces a more intensive hypothetical view of the dynamic path of boomtown development but with less detail about the sectoral and demographic characteristics at each point than REAP.

The population dynamics and the pattern of growth in tax base resulting from the power plant development drive the rest of the model. Population growth is also dependent on worker productivity, which in the Boom simulation is highly sensitive to boomtown conditions. This produces interactions among model subsectors. Population may grow to levels higher than originally anticipated because adverse boomtown conditions may induce high rates of workers turnover, prompting producers to expand the construction labor force.

The Boom local public sector has a large number of equations (25 listed in the User's Guide) and is currently being expanded through work at the University of Texas. 22 Like the REAP model, it does not contain explicit output measures, but employs expenditures as a proxy. Thus it cannot distinguish changes in levels of demand resulting from changes in incomes or preferences, from changes in expenditure. It assumes a "normal" public service level per capita as a yardstick, so that it can trace service shortages and gluts through the boomtown cycle.

Public services are produced with fixed proportions of physical

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capital and labor. The Roome model allows the cost of capital to be bid up through inflation in the construction sector, but this does not induce an adjustment toward more labor-intensive methods. Operating costs are not subject to local inflationary pressure.

Local governments will build new public sector infrastructure if the population grows (assuming a need of $2000 per capita/1975), if a gap emerges between existing capital stock and this desired level, and if it can finance the expansion. Since inability to finance may thwart investment aims, capital shortages may emerge. These shortages diminish the quality of life in the community and result in higher rates of worker turnover and expanded peak populations.

The budgetary process embedded in the model assumes that local governments will try to expand services to the yardstick level. If growth in tax revenues lags behind population growth, they will raise tax rates to cover debt obligations, operating costs and 4% of new construction costs. They will try to raise the other 60% of new investment by issuing new debt, constrained by their bonding capacity.

This public sector model has its weaknesses. It cannot distinguish among city, county and school district impacts because it does not have a locational component. It assumes voters will tolerate new tax rates. It does not allow production sector behavior to act to alleviate or help pay for unusual public sector impacts;
instead it assumes their behavior will exacerbate the situation. (In fact, in several boom towns producers and builders have slowed construction rates, provided loan guarantees or agreed to finance certain facilities directly.) Nevertheless, this modelling effort provides the best detailed simulation of the process of adjustment that a community is likely to confront given the unevenness of boom-town development.

In its several uses, the Booml model has demonstrated its flexibility. In workshop with community leaders in Farmington, New Mexico, the Booml model was combined with a technique called multi-attribute utility measurement (MAUM) to incorporate subjective judgements about the desirability of different public sector decisions during a boom-town cycle.\textsuperscript{23} Simulations included runs on two basic choices: to provide or not to provide temporary population with a full array of services. Simulations were also run with pre-planning and investment strategies, and with introduction of potential intergovernmental responses (loan guarantees, direct grants and increased transfer payments). The major use to date of Booml is its adaptation by National Oceanic and Atmospheric Administration to model coastal development associated with offshore oil; its projections of state-by-state impacts may be used to allocate $800 million in loan guarantee funds. The modelling in both these cases simulates hypothetical, not actual, towns.

While flexibility is the model’s strength, accuracy and reliability are its weaknesses. The only test of the model is a comparison with the actual experience in Rock Springs, Wyoming. While the comparison shows close correlation, the test is not meaningful because a large number of the parameters embedded in the simulation model were derived from the Denver Research Institute’s work on Rock Springs. No other testing has been written up.

The Boom model is designed for use by policymakers and planners, but is fact accessible only to those political units and groups who have in-house capability to run the model.

The successful efforts to expand and improve the original Boom model have been possible only because the model can be transferred to and understood by groups of experts outside Los Alamos. All in all, eight groups with special expertise on energy boom towns have transferred the Boom model to their own computer systems.

Given this technical barrier to access, the use of the model to inform state and local policymaking could be quite dangerous. Unlike REAP, the implicit assumptions in the model are not readily available to lay persons nor does the process of projection require input from the user in a way that forces recognition of these assumptions.

If the model were used merely to help policymakers conceptualize the dynamics of boom towns, it would be a tremendous boon.

25 Ford, "Simulating the Effects of Boom Town Policies," p. 4. The users other than NOAA, The University of Texas and the University of Alberta are not specified.
to educating participants about the nature of a complicated development process. However, the model does purport to inform decisions about policy and planning, particularly to "test" policy options. The results are highly sensitive to the assumptions embedded in the model. This is quite possible that policymakers and planners exposed to model results, "without an intimate knowledge of the model's constructions, will mistake the simulation of a process for prediction of results.

It is difficult to see how any untested simulation model could be used to test policy alternatives without this problem arising. Users will tend to look not at the adjustment process, but at the resulting magnitudes of projected variables and at the absolute differences between different projected paths. It is hard to see how Farmington officials could not come away from their workshop thinking that unless they can get loan guarantees or grants from higher levels of government, it is not worth it to them to expand infrastructure for temporary workers. But since this will incur hardship, they should lobby for such aid. This may be true, but the simulation hardly proves it, since its parameters and relationships are not tested on the local reality. Furthermore, the model design doesn't allow for the possibility that the production sector might adjust its plans in order to mitigate conditions. How do the policy options tested include production sector responsibility for public sector disruption. Policymakers and planners may there-
fore be unconsciously directed away from several other possible
development paths and policies.

The Northern Great Plains Study

The Northern Great Plains study, by John Krutilla, Anthony
Fisher and Richard Rice at Resources for the Future, aims at ad-
vising Montana and federal policymakers about the fiscal consequen-
ces of alternative coal development paths.\textsuperscript{26} The study focuses on
two Montana counties, Big Horn and Rosebud, and simulates annual
local public sector needs to 1990 through a combination of various
techniques.

The employment and population estimates are generated by using
the Harris forecasting model.\textsuperscript{27} This model projects population and
employment levels by county for the U.S. as a whole, allowing optimi-
sing behavior on the part of industry and households. Firms respond
to relative prices, transportation costs, past investment levels,
and agglomeration opportunities; households to wage rates and
regional unemployment. The Harris model uses behavioral relation-
ships based on 1965-66 and 1970 Census data. It is not a simultaneous

\textsuperscript{26}John Krutilla, Anthony Fisher, and Richard Rice, \textit{The Regional
Study of Northern Great Plains Coal}, (Baltimore: Johns Hopkins Uni-

\textsuperscript{27}Curtis Harris, \textit{The Urban Economics}, 1985: A Multiregional,
Multi-Industry Forecasting Model (Lexington, Mass: Lexington Books,
1973.)
equation system, but forecasts each sector using ordinary least squares estimation, where changes in levels of output are a function of lagged price, etc., variables. The behavioral modelling of county level activity, based on a model which takes into account interactions among counties across the nation, is a strength other boomtown effects do not have; it takes into account comparative advantage and locational competition. On the other hand, the large-grained model prevents the inclusion of important variables relevant to the peculiarities of boomtowns, such as the effects on economic behavior of public service quality and high taxes, and high degrees of uncertainty and risk. Production and population migration decisions are treated independently of the outcomes in the local public sector.

The Harris model does not distinguish between the location of employment and the location of households associated with it by jurisdiction. This is a serious problem for the local application in Montana. The Great Plains study handles this by redefining its task. The aim is not to project or simulate accurately, but to allow bias in a consistent direction, ultimately to test for sufficiency of revenues to cover expanded public service costs. Where there is uncertainty, then, the bias is allowed to work in the direction of increasing local service requirements or diminishing revenues. This technique is employed throughout the study. It is not clear in all cases that the study has correctly identified the direction of bias. In the instance just mentioned, it may be that location of households outside the county of employment may result
in higher overall expenditures than their location in county.

A final problem with the population/employment simulation is the likelihood that the U.S. county-by-county model will improperly project the events in counties growing rapidly from new development. This the Great Plains study handles by superimposing on the data the local schedule for mine openings, construction activity and changes in output levels in the boom sectors. The authors do not indicate how important a role this local nondiscrete data plays. Apparently, the introduced data replace the Harris estimates for the bulk of primary activity. The model is then used as a sophisticated multiplier. The study does not assure us that the correct changes in local price and wage levels are registered in the model with this procedure.

The public sector simulation relies on separate projections of revenues and costs. There is no effort to simulate demand apart from expenditures. There is no means for detecting excess capacity or shortages, and their consequences for service quality. Both demand and supply forces are buried in procedures that estimate revenue and expenditure paths from a combination of institutional features, computational procedures, and regression techniques across Montana counties.

The revenue projections are elegantly done. They reflect a detailed knowledge of Montana tax law, documented in three chapters. The local detail enables the authors to distinguish which are the
most significant taxes, which are subject to jurisdictional rigidities or sharing, and what sensitivity tests need to be employed to incorporate alternative assumptions about features such as assessment practices. It allows limited tax rate behavior on the part of local governments, employing differential tax rate assumptions. This set of projections for state, county, school districts and local government may be the most significant contribution of this study. Of course, its estimates are dependent upon the reliability of the population and employment projections mentioned above.

The expenditure projections are much messier. They are most detailed for education. Population is assumed for these purposes to be related to school enrollment levels and auto registrations; alternative assumptions are employed to anticipate numbers of school-aged children per household. School infrastructure investment is determined by yardstick 1974 engineering costs. The school district is assumed to build whenever the previous peak enrollment has been exceeded. No substitution of capital for labor is permitted, although the authors mention the possibility of mobile homes (consistent with their bias technique). Finance costs are a function of a fixed term structure and interest rate. They find that school districts will experience differential problems from boom development, depending on the location of the incoming activity and resulting tax base. But with the current severance tax and state equalization practices, enough revenue is available to cover costs with judicious administration.
The non-educational projections for local governments are generated through two regression equations that relate expenditure levels and tax rates to income per capita, tax base per capita, population density and land area. This is conceptually confusing, because each is actually the result of a simultaneous decision-making process. Expenditures are the outcome of demand and supply forces that arise from incomes, preferences, location, local price levels for inputs, the tax base and economies of scale in public production. The importance of each cannot be distinguished in the expenditure formulation. Furthermore, since the regression employs a cross section of Montana counties, it is not likely to pick up those unusual features of boomsoms that affect incomes, preferences, cost structure, and scale economies. Similarly, the tax rate is the local tax rate that is the local tax rate that is assumed to be expected to make for local services, given demand and supply features. The poor results of the regressions, in terms of overall explanation and significance of parameters suggest that the exercise is unable to capture differential public sector costs, scale economies and preferences for Montana counties and towns as a whole. They are likely to be even less reliable for boomtown conditions. The regressions share the inherent problems of all efforts to model the local public sector with expenditure studies. 28 Despite these technical problems, the authors contend that although expenditure/revenue gaps are likely in those

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28 Elliot Morse, ""
jurisdictions with increased population but no direct tax base growth, the existence of state level mechanisms to redistribute severance tax revenues and mineral leasing receipts can overcome the gaps.

The Great Plains model does not test its results. Its aim to simulate several future paths of activity in order to see if current tax arrangements are ample enough to cover fiscal costs associated with rapid development. By employing inequalities, they dismiss many of the problems with their estimates. Fortunately for them, the answer to the problem turns out to be affirmative: there are currently enough funds to cover costs, if properly administered. However, this appears to be primarily the result of the generous severance tax currently levied by Montana (30%). If the tax did not exist (and it will soon be under constitutional attack), the gap between revenue and expenditure arising from diverse roots (jurisdictional unevenness, risk and uncertainty, the rapid pace of development, the intensity of the boom/bust cycle) appear to be potentially severe in the case studies. The model doesn't allow the identification of the magnitude of these various causes of local public sector stress. Nor does it answer the question, in lieu of the severance tax, which development path would be best for maximizing output while minimizing fiscal costs?

The inequality technique as an obviator of testing renders the modelling effort unusable for the really critical policymaking decisions. It also means that the same techniques cannot easily
be transferred to other regions currently without the severance tax, because its formulations are simply not precise.

Finally, the Great Plains model is not accessible to decision makers. It is embedded in a book length text, without the basic equations, computations, and interconnections presented in one easily viewable form. It requires a careful reading of the entire text to discern the technical features of the study and to follow the fume of the argument. The various sources of bias allowed by the authors are never aggregated; it is difficult to keep track of them. A Montana legislator, trying to employ the results, will simply have to have faith in the conclusion that severance taxes are ample (intuitively acceptable given that there are not many environmental claims as yet levied against it). She/he will not have any idea how ample it is, whether or not it could be lowered by 5%, 10%, or 20% without affecting fiscal soundness. Local communities will probably be confused by the meaning of the detailed revenue and expenditure projections listed in the table, given that the study has purportedly overestimated expenditures and underestimated revenues, but is silent by how much.

A Summary of the Contents of the Magic Black Box

The individual models each contribute information and applied modelling techniques which can be used to inform policy and planning efforts: the behavioral modelling and regressions of the North Great Plains study, the simulation techniques in the REAP and Boool models,
the information accounts in all three. All efforts need work on improving model structure and reliability. The REAP model demonstrates how modelling efforts can be accessible to decisionmakers.

Can these models handle the peculiarities of boomtown growth that are most frequently mentioned as the source of public sector problems? I have referred to these above as jurisdictional unevenness, newcomers vs. oldtimers, insufficient control of land use, severity of growth, volatility of production patterns, monopoly of information and risk. The models reviewed have varying degrees of success with each of these roots.

Jurisdictional unevenness is amenable to incorporation within models. The REAP model uses a gravity submodel to locate the population growth associated with a particular expansion. This technique, with polish, can be relied upon to inform planners in which jurisdiction the actual public sector demands will be registered.

Newcomers vs. oldtimers, the problem of distributional justice, is not currently handled well by any of the models. Because none of the models use measures of real output of public services, nor of their distribution by recipient, it is impossible to tell who really gains and loses. The conflict over equity and over differing notions of adequate public services cannot be anticipated or informed by the model. This problem could be remedied by requiring some sort of revealed preference information in the model, perhaps along the lines of the MAUM technique employed in Boom!. Modellers
would have to ensure that they polled a proper set of interests, beyond the local government. And, of course, the gaming behavior possible in public choice situations would have to be anticipated. In general, the lack of distributional information and functions is the biggest failure in socioeconomic impact modeling efforts.

Insufficient control over land use is an institutional feature which does not need to be modeled in order to identify its importance. The models can handle the local effects of leasing or other use arrangements contracted for by another level of government.

Intensity of growth and volatility of production patterns can be modeled in current efforts and are the driving sector in each model. Unfortunately, the modeller is here dependent upon the production sector to send the proper signals about what employment and occupational structure levels at different points in time will be. If these signals are correct, modellers can do some very sophisticated things with migration, absorption of excess unemployment, and secondary effects at each point in time. However, the modelling results are useless if the estimates of production patterns and intensity are off. In actuality, estimates are frequently very loose or far wide of the mark.29

In addition, since the production sector has a monopoly of

information on future production patterns, it may have an incentive to manipulate the information it gives to the public sector for its own interests. A company fearful that local residents will oppose large scale development may underestimate their employment expectations. Or, interested in avoiding boomtown problems associated with high housing and public service costs and shortages, they may overestimate the future population growth, particularly of permanent jobs past the construction stage. There is no way that the modelling effort can avoid this possibility.

Finally, to the extent that financing difficulties arise from unwillingness of the financial market to take a risk on an uncertain future, the modelling effort cannot easily identify the extent of this problem. If a high risk interest rate is available, then it could be used as a measure. In most cases, however, there is no bond rating, no bank willing to lend, or a bonding ceiling which prevents an evaluation of risk. Since the risk factor may be very important, and will vary tremendously across production sites, this weakness in the models could be serious. It prevents the model from notifying planners and policymakers how likely the projected future is and who will be left with the responsibility to pay if a shutdown occurs.

These points lead me to believe that there is a fundamental flaw in all boomtown socioeconomic impact modelling to date. The flaw lies in their relatively benign neglect of this production-activity
itself, as an actor whose behavior can be changed by policy action. Since the models do not assume that location of production sector activity, and its pace of construction and production, can be directly affected by policy tools (zoning, siting, tax levels, special arrangements, loan guarantees etc.), valuable information on mitigating strategies is lost. An exception to this neglect is the feed back on worker productivity from adverse boomtown conditions included in the Bould work. In that case, adverse boomtown conditions are assumed to have a multiplier effect by requiring ever larger numbers of workers. This implies that loan guarantees or impact aid would decrease the severity of the initial conditions. However, adverse conditions might also induce production decision-makers to modify the pattern of development, decreasing the pace and the intensity of boom and bust. Other policy tools like siting arrangements, industry loan guarantees and severance taxes might discourage the production sector from undertaking disruptive development paths, by internalizing the excess costs of boomtown growth in the sector responsible for them. The models as currently constructed do not consider this possibility.

The major conclusion of this review is that techniques for predicting the future of boomtown public sector needs are currently in the development stage and are relatively crude, but quite

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30 I expand this notion of cost internalization in a forthcoming paper.
promising. However, refinements in the motor of the little black projection box will not substitute for good policy analysis.

Ironically, more research time and money have been devoted to socioeconomic impact modelling (and growth modelling in general) than to fiscal impact policy analysis. Although much of this has been contracted by private or semi-private organizations, for political and planning purposes, governments at all levels have also lavishly supported modelling. This signals a greater concern with what will happen than with what ought to happen. It assumes that policy plays a reactive role rather than an interactive one. Most studies implicitly suggest that policy should redress adverse impacts but not prevent them. Muller notes that, "Although considerable sums of money are allocated by both the public and private sectors for fiscal impact studies, it is not known what influence these studies have on land use decisions. A follow-up of selected publicly and privately sponsored studies undertaken to aid in the land use decision process would be useful to determine their effect, if any, on that decision process."31

The danger of a policy approach that relies too heavily on modelling impacts instead of preventing them is that models will become overtaxed in competitive battles over impact aid.

The competitive battle over modelling can lead to two distortions. One, pointed out by Greenberger, is that adversary modelling

31Muller, op cit, p. 44.
may shift the policy debate from important issues to fine technical but perhaps trivial points. Such a situation is developing already in the Coastal Zone Management Impact aid program, where funds are allocated to jurisdictions on the basis of estimates of future employment, population, and public service need. The administering agency, NOAA, was a long time considering a version of the model called ASCEND to predict levels across States and counties, but several jurisdictions have taken issue with the NOAA model and have produced their own projections. What may result is a battle of the models, where each political competitor (at considerable expense) hires experts to argue that its modelling is superior. In fact, it is not better modelling of offshore oil development that is crucial (although modelling could surely be improved) but assurance about levels of population, land values, and uncertainty exogenous to the model. The debate has diverted attention from the offshore oil policy issues, particularly the high probability of default at the U.S. taxpayers expense, and the possibility that the current program will result in overbuilding of infrastructure.

The other danger is that the technical requirements for using and developing models will close out some groups concerned with the development process. The competition will be only among those groups, agencies and institutions which can afford to pay for

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model services. Since questions of distribution and justice are quite significant in boombows, the emphasis on modelling may bias the policy and planning outcome in favor of special interest groups. This possibility requires serious public consideration.

This review of boombow models, measured against their tasks, indicates that a self-conscious debate about the role of socio-economic impact modelling in policy-making and planning should be on the agenda before investing more public money in their development. Perhaps we should think more about the simultaneous nature of the relationship: while models should inform the policymaking and planning process, the latter should direct the construction and use of boombow models.
EN ENERGY BOOMTOWNS

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INTRODUCTION

One of the effects or "impacts" of the energy development currently underway in the United States is the emergence of booms--the rapid and extreme growth of population and the consequent changes in the social, economic, and cultural systems of the communities affected. While the boom phenomenon can occur whenever a large industry locates in a community and there is a significantly large in-migration of work force and related services, the current technology of energy development, based upon labor intensive power plant construction and mineral extraction, is especially amenable to the creation of booms. The vast stores of mineral resources in the Rocky Mountain and Northern Plains states of Colorado, Wyoming, Montana, Utah, New Mexico, Arizona, Nebraska, North Dakota and South Dakota make communities in the sparsely populated western states especially susceptible to the boom phenomenon in communities adjacent to mines and construction sites.

Current estimates indicate twenty-five emerging booms in Colorado alone and over 200 such communities in the Rocky Mountain/Northern Plains region (Rocky Mountain News, 1977:16). These estimates refer to those small, rural communities ranging from a few hundred to a few thousand in population. The boom label can also fit the larger cities of Denver, Billings, Casper, and Bismarck which, as regional service centers, are experiencing rapid growth as a result of energy
development in the region. From the macro level of analysis one might argue that few persons living in the western region are unaffected by the boombtown effects of western energy development. Valuable state resources in the form of tax dollars and government services are being expended to mitigate the negative aspects of boombtowns as well as to encourage the positive economic benefits to communities where energy development is occurring. Moreover, the visibility of boombtowns, in addition to the real social problems inherent in them, are enhanced because they are taking place in a region where little has occurred in the way of rapid social change for many decades. The boombtown is also an especially thorny problem for policy-makers in a region where the attraction of industry, population, and economic development has been the major goal for over a century. We have attempted to discuss the sociological significance of these conflicts with relation to the boombtown issue in general elsewhere (Cortese and Jones, 1977) and will not dwell upon that here.

Aside from arguing for the importance of the boombtown effect of energy development, the above discussion should also serve to point out that the evaluation of impacts is hardly straightforward. We use the term "impact" in a non-evaluative sense and where we feel there is general agreement that particular impacts are good or bad, we try to identify those by the terms "positive impact" or "negative impact". One thing of which our research in boombtowns has made us clearly aware is that various groups view and evaluate the same impact differently. The purpose of our work thus far has been to identify impacts. The much greater task of evaluating impacts remains to be done.

PURPOSE

There are several places one might search for information on boombtown impacts. First, the history of the West is largely a history of boombtowns (see Griswold and Griswold, 1958). The gold rush of the late nineteenth century, the uranium boom
of the 1950's, and the recreational and ski industry boom of the 1960's have all created boomtowns. The major difference from earlier counterparts is that energy-related boomtowns are, for the most part, long-established, relatively stable agricultural communities, which, like Craig, Colorado, have grown more than 200 percent in seven years.

Second, the literature of classical sociology, most notably the works of Durkheim, Toennies, Marx, and Weber, stemming as they do from the social changes wrought by the Industrial Revolution, remain a rich source of theoretical knowledge on the impact of industry on the community. Carnes and Friesma (no date) have done a remarkable job of summarizing and relating this literature to the growth and urbanization of the Northern Plains region stemming from energy development.

Third, there is the "community studies" literature of sociologists, political scientists, and anthropologists, parts of which should provide some insights into the phenomenon in question (see, for example, Bell and Neaby, 1972). Also, there is the literature on modernization which some have found lacking in useful information on the transition process itself (see Freudenburg, 1976) and the literature of human ecology which contains much about the adjustment of rural migrants to urban settings (see Killian, 1953; Stein, 1973) but almost nothing about the adjustment of rural natives to the in-migration of urbanites.

We expect and hope that researchers will continue to probe these sources for more information. We, for the moment, have chosen another direction. The focus of this report is the information contained in the vast amounts of current research being done as a result of energy development—a wealth of paper distinguished primarily by the poverty of its publicity and accessibility.

Social impact assessments are multiplying faster than proposed energy exploration and extraction projects themselves. Conferences are held in business, governmental, and scholarly circles where information on the boomtown phenomenon is shared.
Universities, regional commissions, independent scholars, planning and research firms all have contributed to studies of boomtowns. The local press in the region frequently reports on new developments or carries stories by journalists who have visited these communities and reported their observations.

These reports, symposia, proceedings, environmental impact statements, and journalistic accounts vary to the extremes in quality. This literature is not all research in the conventional sense. But, it is all experiential. Some reports are detailed statistical descriptions, some are ethnographies, some very impressionistic personal accounts.

The purpose of our research was to organize systematically what is currently known about the boomtown aspect of community and regional impacts of energy development projects, focusing specifically upon the less widely available literature, on the western United States, and on fossil fuel development. Our work has involved two major tasks:

1. The development of a model which incorporates the wide range of variables and relationships inherent in the boomtown phenomenon, and;

2. Locating, synthesizing, and documenting available literature on boomtown impacts in order to augment the model with what we have chosen to call, somewhat inaccurately, "propositions".

Some of these propositions are actually research findings of a scientifically or methodologically acceptable nature. Some have been verified empirically, either statistically or through rigorous participant observation techniques. Other propositions are just that—a statement of relationship based on some degree of observation or derived from the application of a body of theory. Still others (e.g., many of those found in journalistic accounts and symposia proceedings) rank in the more unscientific realm of superficial observation and "expert" opinion. Many of our propositions are, in actuality, hypotheses in search of better data to support them.
Nevertheless, the statements which we have incorporated, regardless of the
degree of scientific rigor in their origin, represent what we know to be or what
passes for knowledge about the boomtown aspect of energy development contained in
this literature. Obviously, the further and more accurate testing of many of these
propositions should be a major focus of future research.

SOURCES OF PROPOSITIONS

Citations supporting the propositions provided in this report refer to sources
which:

1. Provide a cross-section of types of material being collected;
2. Could be adequately reviewed within the time available, and;
3. Would yield rich, qualitative social impact descriptions.

The Construction Worker Profile (136)* was used to provide the core propositions
since the model employed came from those data.

THE BIBLIOGRAPHY

The selected annotated bibliography contains approximately two-hundred titles.
Almost twice this many sources were uncovered in our search and those which were
selected for inclusion were those which appeared most relevant to the task at hand.
This does not mean that our selected bibliography might not contain titles whose
contents shed little or no light on the boomtown phenomenon. Some reports were
inaccessible to our research team but were included because references to them in
other reports strongly indicated their relevance.

We regret that the reader of our bibliography will find many occasions where
the citation gives little indication of where one might obtain a copy of the docu-
ment. We have provided as much information of a citational nature as was available.

*The number in parentheses refers to the number of that source in our bibliography.
Items in the bibliography will be referred to accordingly throughout.
Still, in many cases the reader is left with no more information than that the document was produced for example, by the "Colorado Legislative Council" in a certain year. Where a request should be sent (other than somewhere in Colorado, and probably Denver) will take some ingenuity. We considered providing such information but the task proved too great. Beyond the usual limits of time for such a task, the place where we located a particular document in many instances would be unable to satisfy requests for copies or to provide information regarding where copies might be obtained.

Despite this limitation, we believe the bibliography provides a current and extensive compilation of literature specific to boomtowns. In addition, the annotations provide at least a general sense of the applicability of many of the sources. While some sources contain no annotations, many are referred to in the propositions contained in the expanded discussion of the model. Still others, at this point, remain neither annotated nor cited in our explication of the model. Some of these are either more easily accessible, more widely known, or provide adequate indication of content in their title alone.

THE MODEL

Figure 1 is a diagrammatic representation of our social impact assessment model. The model was developed from an earlier version (Jones and Cortese, 1976) with additions from models developed by others (Olsen and Merwin, 1976; Wolf, 1974; Leistritz, 1975; Finsterbusch, 1976; Gold, 1974).
NON-LOCAL CONTEXT
Policies and perspectives outside the community which help set the tone and pace for energy project.

IMPACTING ELEMENT
The nature of the new project being introduced into the area.

LOCAL CONTEXT
 Characteristics of the local community which will determine how the new element affects the community.

SOCIAL IMPACT
 The social and cultural changes that occur as the new element enters the local community.

MODES OF RESPONSE
The ways which people and their institutions react to social and cultural changes.

Figure 1. Social Impact Assessment Model
Figure 1. Social Impact Assessment Model
The outline which is provided in Figure 2 amounts to an "opening" of each of the five boxes in our model. We have attempted to provide an organized list of the various categories of conditions upon which positive or negative impacts depend and within which various impacts occur. Within the outline in Figure 2 an asterisk denotes those characteristics for which we have provided propositions from the literature. The propositions along with some discussion will be provided in the following section.

Figure 2. Explicated Model

I. NON-LOCAL CONTEXT (Non-Local Contextual Conditions)

* A. Official Policy Declarations, Laws, Regulations—about energy scarcities and options and about environmental concerns

* 1. Federal
   2. Regional
   3. State
   * 4. Corporate

B. Alternative Perspectives (interest group positions)

  1. Current declarations
  2. Current credibility and attention received

II. IMPACTING ELEMENT (New Project Characteristics)

A. Public vs. Private Sponsorship

  1. Public or private ownership or operation
  2. Public or private land utilized
  * 3. Environmental Impact Statement and other control implications
  * 4. Impact assistance implication
  * 5. Tax revenue implications

* B. Type of Energy-Related Activity

  1. Extraction
     a. Mining
        (1) Strip mining
        (2) Deep mining
     b. Damsing
     c. Other
I. Power generation
   a. Coal and coal gasification
   b. Steam-electric
   c. Hydroelectric
   d. Nuclear
   e. Solar
   f. Geothermal

II. Energy processing
   a. Petroleum refineries
   b. Electrochemical industries
   c. Nuclear fuel cycle facilities

III. Transmission
   a. Transmission lines
   b. Ground or waterway shipment (railroad, barge)
   c. Pipeline
   d. Aqueducts, tunnels

C. Type of Non-Energy Related Activity
   1. Recreational
   2. Military
   3. Highway/transportation
   4. Industrial/manufacturing

D. Scale
   1. Large or small
   2. Labor intensive vs. technology intensive
   3. Physical or symbolic presence
   4. Concentration or dispersal of facilities

E. State of Development
   *1. Planning and speculation
   *2. Acquisition
      a. Lease
      b. Purchase
   c. Both
   3. Construction
      a. Mine
      b. Plant
      c. Other (processing, transmission facilities)
   4. Operation and maintenance
   5. Close-down/slow down
   6. Departure

F. Timing of Project
   *1. Duration
   *2. Phasing (suddenness/drawn out)
   *3. Simultaneous projects
   *4. Relations with host community
G. New Population

1. Size relative to host community
   a. Smaller (minority)
   b. Equal
   c. Larger (majority)

2. Socioeconomic characteristics
   a. Similarity/dissimilarity to host population
   b. Homogeneity/heterogeneity
   c. Income

3. Settlement patterns
   a. Live in host community
   b. Commute to and use host community facilities
   c. Combinations

4. Mix of labor force
   a. Mostly local and regional
   b. Mostly non-local or non-regional
   c. Construction/operating multiplier effect
      (1) Absolute numbers
      (2) Ratios
   d. Boomtown people
   e. New professionals
   f. Returning natives

III. LOCAL CONTEXT (Host Community Characteristics)

A. Location of Community

1. Rural
2. Urban
3. Suburban
4. Exurban

B. Community Size

1. Few hundred
2. Few thousand
3. Many thousand
4. Demographic characteristics
   a. Population trends
   b. Population density
   c. Existence of special population groups

5. Socioeconomic characteristics
   a. Income
   b. Social stratification
   c. Homogeneity

C. Regional Stature

1. Dominant in region
2. Subdominant in region
D. History of Community and Current Status

1. Previous experience with rapid growth and fluctuations or historically stable
2. Ascending/declining
3. Efforts to attract/avoid growth
4. Economic base

E. Institutional Types and Development (politics/government, economy, education, religion, recreation, helping services, family, media)
1. Number of institutional agencies
2. Size
3. Complexity/bureaucracy
4. Specialization of function
5. Planning capabilities
6. Adequacy of present performance
7. Horizontal and vertical linkages

F. Readiness to Change
1. Information availability
2. Projected changes without project
3. Capacity of community institutions to deal with rapid change

IV. SOCIAL IMPACTS

A. Institutional impacts

1. Family
   a. Functions
      (1). Socialization
      (2). Social control
      (3). Sustenance (as a unit of production)
   b. Family cohesiveness
   c. Familial dependence
   d. Conjugal relationship
      (1). Sex roles
      (2). Employment of women
   e. Divorce, separation, abuse

2. Economy
   a. Equity
   b. Modernization
   c. Economic base
   d. Cost of living
   e. Prosperity
   f. Increased competition
      (1). Chain and franchises
      (2). Jobs
   g. Availability of housing, goods and services

3. Government/politics
   a. Provision of services
      (1). Quantitative (provide more of something)
         (a). More personnel
(b). More equipment
*(c). More funds
*(2). Qualitative (provide something different)
(a). Different personnel (turnover)
(b). Different positions
(c). New technologies

*b. Political alterations

*4. Help/Plug Services
   a. Quantitative changes
      (1). More personnel
      (a). Turnover
      (b). Additions
      (2). Facilities
      (3). More funds
   *b. Qualitative changes

*5. Recreation
   a. Indoor
   b. Outdoor

6. Religion
*a. Growth
*b. Importance
*c. Functions

*7. Education
*a. Physical facilities
   b. Turnover
      *(1). Students
      *(2). Teachers, administrators and staff
*c. Standards
*d. Programs

8. Media
   a. Newspapers
      (1). Local
      (2). Regional
   b. Radio
   c. TV
   d. Cinema
   e. Libraries

*B. Social Structural Impacts
1. Role differentiation
2. Role creation
3. Role definition/redefinition
4. Role succession
*5. Community integration
*6. Social stratification

*C. Cultural Impacts
1. Non-material culture
   a. Beliefs
   b. Values
   c. Norms
2. Material culture (physical impacts)
V. MODES OF RESPONSE

A. Resources Available

1. Corporate
2. Local
3. State
4. Regional
5. National (private)
6. Federal (public)

B. Non-local Response

1. Corporate
2. State
3. Regional
4. National (private)
5. Federal (public)

C. Local Response

1. Personal
2. Organisational
3. Institutional
NON-LOCAL CONTEXTUAL CONDITIONS

The energy projects which can create boombown situations are not generated in a vacuum. Instead, energy companies operate in an environment formed through governmental actions (legislation, regulations, policy statements), other corporate actions (profit considerations, competition), and interest group actions (environmental suits, protests, publicity). Such actions, taken outside the local community, do shape the kinds of developments that occur. They set the pace, they establish priorities between forms of energy resources development, or they dictate the conditions under which energy development must occur.

If the current national controversy over the relative merits of coal vs. nuclear energy is resolved in favor of greater emphasis on coal, more boombowns can be expected in the western states since coal-fired plants are being located adjacent to coal fields. At the federal level, a national energy policy which de-emphasizes energy conservation and the development of alternative energy sources, or considers such approaches unworkable, will require more energy projects of the type with which boombowns are usually associated. Also, federal research and development expenditures and subsidies with regard to energy choices and priorities will be a major determinant of the number of boombowns that can be expected to develop in the West. At all levels of government, new regulations can suddenly alter the stated intention of an impact industry to stay in the impacted community for a long period of time. Such reversals lead to rapid and unexpected boom and bust fluctuations.

At the regional governmental level, inter-state governmental organizations are capable of playing a major role in determining the nature, extent, and timing of major energy projects of the type which spawn boombowns. Furthermore, to the extent that technologies for energy development emerge faster than methods for social and environmental protection, rapid energy development will lead to more boombowns with little mediation of ensuing social problems.
Official Policy Declarations

Proposition: Licensing and permit requirements play a major role in initiation of major energy projects. Licenses, permits, and approvals may need to be obtained from either federal (e.g., Federal Power Commission), state (e.g., water use permits), or local governing units (e.g., rezoning).

(150, p. 123)

Federal

Proposition: There is a clearly emerging national policy to promote economic growth in non-metropolitan areas of the United States

(33)

Regional

Proposition: Actions by local governments with regard to taxation or non-taxation of power plants and other related facilities help determine the incidence of boomtowns.

(67)

Corporate

Proposition: One source of uncertainty for a community already impacted or soon to be impacted by energy development stems from the interlocking directorate ownership patterns of the energy companies, whereby their interests in numerous competing energy sources can alter decisions about which source to develop and when and where to develop it.

(38, p. 5)

Proposition: A national arrangement of power in which the influence of large energy companies of public policy-making far exceeds that of small western communities will give rise to the kinds of energy projects with which boomtowns are usually associated.

(38)

Proposition: Changing profit considerations with regard to the type of energy sources to be developed, the timing, and the locations can suddenly alter the impacting industry's stated intentions of remaining in the impacted community for some time; such reversals lead to boom and bust cycles.

(38, p. 4)

IMPACTING ELEMENT: NEW PROJECT CHARACTERISTICS

The characteristics of a new project vary according to whether they are public or private in nature. This is applicable to the project itself or to the land being utilized. The type of activity is another factor in predicting different outcomes.
In general, whether the project is energy-related or not plays a part in such reactions to it as public attitudes and governmental response. The size or scale of the project, its stage of development, and the timing of development are all variables which have been dealt with in the literature. Differences in the demographic and cultural characteristics of the new population migrating to the community as a result of the project are important, as are their settlement patterns. Generally such factors as the size of the new population in relation to the host community, its similarity to the host community's population, and its origin all act to mediate or compound problems of assimilation or conflict.

Environmental Impact Statement and Other Control Implications

Proposition: A major construction project which is publicly funded and operated will allow the impacted community to bring more political pressure to bear on the project to meet environmental and social goals than would be the case for a privately funded project.

Impact Assistance Implications

Proposition: A major construction project which is publicly funded and operated is likely to allow the impacted community to obtain more federal funds to deal with the ensuing problems.

Tax Revenue Implications

Proposition: A major construction project which is privately funded and operated will generally create more tax revenues for the impacted communities' governments.

Type of Energy-Related Activity

Proposition: The nature of the project which creates a boomtown situation can be instrumental in determining residents' perceptions of how severe the impacts are. The more environmentally disruptive (land use, air, water, noise pollution) the project is the more likely the project is to generate public interest.

Proposition: The nature of the project will be the major determinant of the size and mix of required labor force.
Proposition: Substitute gasification plants and oil refineries have the most rapid buildup of employees. Coal-fired electric and nuclear plants require slightly fewer employees, but employ them for longer periods of time. Coal export mines and platform fabrication facilities require few construction workers, but generate larger numbers of operations employees.

(191, p. 3)

Scale: Labor Intensive Vs. Technology Intensive

Proposition: The physical scale of a major construction project will determine the size of the labor force.

(136)

Proposition: Commonly, plants that will employ about 100 persons will be built by a construction force of nearly a thousand.

(69, p. 4)

Scale: Physical and Symbolic Presence

Proposition: The physical scale of a major construction project will determine the social image of the project.

(136)

Proposition: Disruption will depend upon the "intrusiveness" of a new development—including its audibility, visibility, proximity to population, in addition to size—and on the "sensitivity" of the host community.

(69; 137, p. 5)

Stage of Development

Proposition: There is generally little overlap between the construction phase and the operation phase in personnel or skill requirements.

(69, p. 4)

Stage of Development: Planning and Speculation

Proposition: After the construction phase is underway, residents often perceive the energy company as having employed devious tactics (secrecy, rumor spreading) for acquiring land and mineral rights.

(146; 136; 82)

Proposition: During the planning and acquisition phase, as rumors of land acquisition by the energy company circulate, landowners experience anxiety about whether or not their property will be purchased.

(82; 136; 146)
Stage of Development: Acquisition

Proposition: The shortage of housing due to influx of work force is further aggravated by the acquisition, demolition, or fencing of housing and farms by the energy company for uses associated with the energy project.

(136)

Timing of Project: Duration

Proposition: Some negative impacts of the boom-bust cycle may be alleviated if the project company establishes itself as a permanent or long-term entity in the impacted community.

(51, p. 95; 61, p. 65)

Timing of Project: Phasing (suddenness/drawn-out)

Proposition: A rapid build-up of incoming employees associated with a major project will lead to more negative community impacts than a gradual build-up. The same relation will pertain for the winding-down of a project.

(136)

Timing of Project: Simultaneous Projects

Proposition: Social impacts associated with a series of major projects taking place simultaneously or over a number of years will be greater in magnitude than those stemming from a single project.

(136)

Timing of Project: Relations with Host Community

Proposition: Although other factors are also important, the greater the amount of pre-project town resistance the more likely it is the project company will assist the community with front-end planning activities.

(163)

Proposition: Ability of a community to plan effectively to meet the needs of both its permanent and temporary problems is only as effective as the input of information it receives from the sources of growth.

(61, p. 129; 51, p. 88; 94, p. 5)

Proposition: Social impacts in a small boomtown community will be intensified if communications between the impacting project and the community are either lacking or inadequate in terms of thoroughness and timeliness. A community cannot cope with a situation for which it has no time to prepare.

(51, p. 88; 109)
New Population: Size Relative to Host Community

Proposition: The larger the number of newcomer employees, relative to the host community's population, the greater the social impacts upon the community.

(136)

New Population: Socioeconomic Characteristics (SES)

Proposition: During construction periods anywhere from 50 to 75% of the construction workers will bring their families with them, compared to 80-90% of operations personnel who will eventually live in the community with their families.

(24, p. 7)

New Population (SES): Similarity/Dissimilarity to Host Population

Proposition: The greater the cultural differences the host population sees between itself and the newcomer population, the greater the cultural and social impacts will be. If the host community is generally resistant to change and/or the new project, any cultural difference will be viewed as a major disruption.

(136)

New Population (SES): Homogeneity/Heterogeneity

Proposition: The larger the number of newcomer employees, the greater are the chances of heterogeneity among that labor force and for diversifying the host community's population.

(136)

Proposition: To the extent that the project requires large numbers of diverse new employees, clearer social delineations will be created among those groups.

(136)

New Population (SES): Income

Proposition: To the extent that the project requires large numbers of diverse new employees, clearer social delineations will be created among those groups.

(136)

New Population: Mix of Labor Force

Proposition: Impact will be directly proportional to the number of new (unemployed) persons entering a region and will vary directly with the unemployment rate outside the region and the general notoriety of the project outside the region.

(69, 136, p. 18)
Proposition: New jobs created by industrialization generally require at least semi-skilled persons and consequently the industrial growth has little effect upon the local unemployment rate. (33; 168)

Proposition: The higher the skill level requirements of the new project, the greater the disruption. (69, p. 17)

Proposition: Plants which employ primarily men will generate more growth than those which employ primarily women since few families will migrate so that the wife can find employment. (33)

Mix: Mostly Local and Regional

Proposition: A major construction project whose labor needs can be met by the native population will create fewer social impacts on a small community than one which requires the importation of large numbers of new employees. (69, p. 17; 94, p. 7; 136)

Mix: Mostly Non-Local and Non-Regional

Proposition: A major construction project whose labor needs can be met by the native population will create fewer social impacts on a small community than one which requires the importation of large numbers of new employees. (136)

Mix: Construction/Operating Multiplier Effect

Proposition: During construction periods, each new construction job will generate from 0.3 to 0.9 secondary jobs while that ratio increases during the operations phase to 1.1 to 2.3 secondary workers per basic worker. (191, p. 5)

Proposition: To the extent that the project requires large numbers of diverse new employees, clearer social delineations will be created among those groups. (136)

Proposition: In small traditional western towns, short-term construction workers will be assimilated into the community. The permanent operating force will eventually be most successfully assimilated. (136)

Proposition: Integration into a boomtown community will be less difficult for wives of management level project employees than for wives of construction workers. The former are more likely to have met each other in prior boomtowns, may have a special recreational facility, and will have available the societal roles generally
fulfilled by a woman of that social status (volunteerism, civic activity).

(136)

**Mix: Boombown People**

**Proposition:** A boombown will attract a phenomenon referred to as "boomers", relatively transient workers or entrepreneurs in search of ever more profitable business or short-term employment opportunities.

(136)

**Mix: New Professionals**

**Proposition:** To the extent that newly created professional-level jobs cannot be filled by the host community's population, professionals will be attracted to a boombown.

(136)

**Mix: Returning Natives**

**Proposition:** Boom growth in a small community will offer the native resident who has left the community to find adequate employment an opportunity to return and find work.

(136)

**LOCAL CONTEXT: HOST COMMUNITY CHARACTERISTICS**

While each community prefers to think of itself as unique, and it is true that different communities will react differently, there are patterns or typologies of characteristics of communities which help explain how a particular community reacts to becoming a boombown. These characteristics can be generally categorized as location, community size, stature in the region, history and past experiences, level of development in institutional and economic terms, and readiness to change. The communities' proximity to the project and to other populations will be one determinant of the kinds or intensity of impacts it will receive. Its position in the hierarchy of ecological dominance is also important. Whether a community is dominated by a nearby large city or is the major center within a wide region will determine, among other things, the amount of influence it exerts and the amount of impact it will share with other towns. The size and structure of the host population could mediate or compound the impacts. Whether the community has had previous experiences which
would enable it to deal more effectively with the boom is important, as is the level of experience and training of institutional leaders.

Location of Community

Proposition: The geographic location of a community in relation to a major urban center is one determinant of the community's level of institutional development and, therefore, is one determinant of the extent to which the community will be impacted by a major construction project. (136)

Community Site

Proposition: The largest community in the region of a major construction project will attract the largest population influx, even when smaller communities are much closer geographically. (31, p. 93; 136)

Demographic Characteristics: Population Density

Proposition: Given a particular development, the lower the population density of the host region, the greater the disruption. (69, p. 15)

Demographic Characteristics: Homogeneity

Proposition: Rural people in the great plains are not socioculturally homogeneous and their towns do not function as tightly-knit communities. Rather, the people are distributed into various "minority groups" based upon occupational status, such as cattleman, sheep-herder, dryland farmer, townsman, etc. (31, p.7)

Regional Stature

Proposition: The geographic location of a community in relation to a major urban center is one determinant of the community's level of institutional development and, therefore, is one determinant of the extent to which the community will be impacted by a major construction project. (136)

Proposition: Communities which enjoy greater influence in their region and state will have more resources available to them for coping with social impacts of a boom. Such resources have to do largely with vertical relations with entities outside the community. (136)
History of Community: Previous Experience With Rapid Growth and Fluctuations or Historically Stable

Proposition: If a small community has been declining, it will welcome the arrival of a major project, though it may later regret that decision as impacts become evident. (72; 136)

Proposition: It would seem that a town which has experienced a good deal of fluctuation in the past would be less likely to suffer trauma from a given development than a town which has had a stable agricultural existence. (69, p. 19)

History of Community: Efforts to Attract/Avoid Growth

Proposition: A recent poll of small town leaders in the U.S. indicated that the majority felt that lack of industry was the major economic problem of their communities. (33)

Proposition: Many communities support growth to stop the outflow of young people but studies show young people continue to leave at about the same rates. (33)

History of Community: Economic Base

Proposition: Variations in economic and cultural factors are responsible for regional fluctuations in attitudes toward development. (2; 82; 120)

Proposition: Persons in agriculture are more concerned (negatively) about development than any other occupational group. (23, pp. 39-43; 132, p. 831)

Institutional Types and Development (Politics/Government, Economy, Education, Religion, Recreation, Helping Services, Family, Media)

Proposition: Roughly correlated with the size of a community is the level of institutional development. When a town experiences a boom period, the effect is to pressure the community into becoming more institutionally developed. (136)

Proposition: If other factors about communities near a major construction project are approximately equivalent, the more institutionally developed community will attract more newcomers. (51, p. 93; 136)
Institutional Types: Horizontal and Vertical Linkages

Proposition: Communities which enjoy greater influence in their region and state will have more resources available to them for coping with boomtown social impacts. Such resources have to do largely with vertical relations with entities outside the community.

(136)

Readiness to Change: Information Availability

Proposition: As the current era of rapid energy production continues, towns about to be impacted by major projects will take steps to deter negative social impacts before the project begins.

(66)

Readiness to Change: Capacity of Community Institutions to Deal With Rapid Change

Proposition: Anti-planning values in some small towns will impede efforts to cope with and/or prevent boombtown problems.

(61, p. 89; 72)

Proposition: Boombtown problems occur due to lack of concern (value differences) and to lack of knowledge and experience in dealing with such community issues.

(64, p. 69; 128; 150)

Social Impacts (19; 100; 25; 42; 49; 50; 67; 73; 94; 113; 144; 156; 203; 204)

Our model holds that the nature of social impacts is a function of the kind of community impacted and the kind of project being mounted. Impacts of a strictly sociological nature will occur in the community institutions—its local economy, government, helping services, and school system. As social institutions change, so do the ways in which people relate to one another—the social structure. Thus, one will see shifts in the roles people are playing, the ways roles relate to one another, and the way the community holds together, if indeed it continues to do so.

In addition, the community’s non-material culture—its beliefs, values and norms—also undergo alterations. Finally, with growth and new construction, the physical aspects of social life (material culture) also are modified.
General

Proposition: While quality of life does not always decline, the more rapid the growth rate, the more likely an area is to suffer degradation in the quality of life.

(51, p. 92)

Institutional Impacts (82; 97; 187; 136; 204)

Proposition: Newcomers tend to be less satisfied with local services.

(73; 136; 140)

Proposition: At a 15% annual growth rate, many service-providing institutions will start to break down and will be unmanageable without advance planning.

(51, p. 95; 66)

Family (31; 79; 136; 151; 180)

Proposition: The temporary nature of materials cultural items provided the newcomer family (mobile home, inadequate utilities and roads) will work to influence the family's perception of itself as (1) unwanted and (2) non-permanent.

(136)

Proposition: Friendship ties will be between individuals and not families, and these ties need not converge or overlap between family members.

(31, p. 13)

Family Cohesiveness

Proposition: When organization and industrialization appear with the promise of more jobs, the need for family communality decreases and nuclear families become the modal institution.

(31, p. 14)

Family: Conjugal Relationship:

Proposition: Both husband-wife and parent-child relationships will be affected by increasing individualism.

(31, p. 13)

Conjugal Relationship: Sex Roles

Proposition: Newcomer women appear to be particularly vulnerable to alienation and are thrown back on their own resources to cope with any or all of the following conditions: loneliness, inadequate shopping, entertaining and socializing opportunities, severe weather, and barren surroundings.

(51, p. 95; 180, p. 1)
Proposition: Personal impacts are differentially experienced by newcomer women and men. Women face a lack of viable community roles beyond familial ones and a lack of services. Men face job alienation and limited pursuits during non-work hours.

(61, p. 75; 136; 180)

Proposition: The increase in available services will free women from many home-making activities, allowing them to carry more weight in both economic and political sectors, eventually gaining a more substantial voice in the community.

(31, p. 8)

Conjugal Relationship: Employment of Women

Proposition: The number of roles open to women will increase as will the employment of women as new jobs become available. That increase will be countered by values against women working in jobs not traditionally held by women.

(22, p. 188; 180, p. 4)

Proposition: To the extent that men formally engaged in agricultural jobs take better paying jobs with the impacting industry, farm management tasks will be assumed by women.

(130, p. 133)

Economy

Proposition: Many personal and institutional decisions in a boom town will hinge on major corporate and governmental decisions about present and proposed major projects.

(135; 20)

Economy: Equity

Proposition: Impacts in the economic sector during boom times will be both positive and negative depending upon one’s economic role within the community.

(136)

Economy: Modernization

Proposition: Persons making the shift from agricultural to industrial employment may experience adjustment problems with the regimentation of industrial work.

(90, p. 22)

Proposition: As boontowns grow in physical size, they will annex adjacent land formally in agricultural use for new housing. As a consequence, the community’s economic base will be further altered.

(136)
Proposition: After mines close small boomtown communities will face a major problem of finding another economic base to continue their existence.

(E62, p. 34)

Economy: Economic Base

Proposition: Community residents become concerned about increasing economical dependence on one industry.

(51, p. 103)

Proposition: The role of agriculture in boomtown areas is sometimes diminished by the acquisition of prime agriculture land by the energy companies.

(82; 136)

Economy: Cost of Living

Proposition: Persons most likely to experience initial economic losses are:

1. Persons whose fixed incomes cannot keep pace with the boom-induced inflation.

(150, p. 133)

2. Small and/or marginal business people who cannot/will not expand and change fast enough, or cannot keep pace with the rising pay scales.

(51, p. 153; 136)

3. Two groups who do not generally benefit from industrial development in small towns: the elderly and female heads of households. In fact, industrial development usually has a negative impact on these groups in terms of a relative status and cost of living.

(37)

Proposition: Since oldtimers are less likely than newcomers to be employed in the new projects high paying jobs and are more likely to be on fixed incomes, they are more likely to feel they are paying a disproportionate share of the costs of growth.

(136)

Economy: Prosperity

Proposition: Persons most likely to make short-run economic gains are:

1. Local business people who provide needed goods and services and are financially and entrepreneurially capable of keeping up with changing needs;

2. Incoming well-capitalized and ambitious entrepreneurs; and

3. Workers whose skills are sought by both existing employers and the new project employers.

(136)
Proposition: One positive economic impact for oldtime residents lies in the ready availability of part-time supplemental employment with the impact industry.

(136)

Proposition: The opening of a wide commuting field results in "leakage" of wages to areas outside the host community.

(33)

Economy: Increased Competition

Proposition: Persons most likely to experience initial economic losses due to increased competition are:

1. Persons whose fixed incomes cannot keep pace with the boom-induced inflation;
2. Small and/or marginal business people who cannot/will not expand and change fast enough, or cannot keep pace with the rising pay scales.

(94, p. 5; 136)

Proposition: Ranchers and merchants (oldtimers) begin to reevaluate their relationships as the merchants begin to cater more and more to their new clientele.

(82, p. 41)

Increased Competition: Chains and Franchises

Proposition: During boom periods, small communities will experience the influx of national chain businesses which have the working capital to fill in the gaps between the new demands and the ability of the existing business to supply those needs.

(136; 181)

Increased Competition: Jobs

Proposition: Competition for employees will contribute to high turnover and subsequent losses in productivity.

(51, p. 93; 72)

Economy: Availability of Housing, Goods and Services

Proposition: Development of retail and service establishments lags behind population growth and demand.

(51, p. 93)

Proposition: Residents believe that normal free enterprise mechanisms will provide adequate supply of retail and service facilities to keep pace with increased demand.

(51, p. 95)

Government/Politics (51; 48; 93; 117; 136; 151)

Proposition: Negative municipal services impacts will be worsened if the impacted community does not lie within a county which is receiving the newly-generated tax revenues.

(62, s. 65; 150, p. 124)
Government: Provision of Services

Proposition: During times of rapid growth local governmental entities in small communities will face increased demands on existing services (quantitative changes) and demands for new services (qualitative changes).

(136)

Proposition: The urgency of providing basic municipal services such as water to rapidly growing areas of a community may lead to a lowering of health standards.

(200)

Provision of Services: Quantitative (provide more of something)

Proposition: Housing provided in terms of mobile homes on the edges of town make new demands on services but do not contribute to the city tax base.

(51, p. 93)

Proposition: One immediately evident law enforcement system impact in a boom-town is the increased need for traffic control, an increase brought about by home-work trips on the part of impact industry workers.

(94, p. 7; 150, p. 128)

Quantitative: More Funds

Proposition: Small communities which experience rapid energy-induced growth face a time lag between the time when new public expenditures are demanded and the time when the new population and industry start generating tax revenues.

(62, p. 34; 94, p. 8)

Provision of Services: Qualitative (provide something new)

Proposition: New local governmental functions demanded of boomtown governments will most likely be ones involving vertical relations with other entities outside the community.

(136)

Government: Political Alterations

Proposition: Traditional rivalries between nearby communities will result in competition to serve newcomers and may result in duplication and waste.

(51, p. 94)

Proposition: Some newcomers will become involved in the local political arena, thus altering the arrangement and distribution of power.

(150, p. 134)
Proposition: The number of voluntary associations will increase in size and importance, and the composition of these groups will not be family-oriented. (29, p. 13)

**Helping Services** (31; 61; 79; 136)

Proposition: Helping services agencies and organizations in small boomtowns will face increased demands for existing services (quantitative changes) and demands for new social services (qualitative changes). (136)

Proposition: One service for which small boomtown communities will experience increased need, but will have difficulty obtaining, is medical care. (136)

**Helping Services: Qualitative Changes**

Proposition: Health care impacts often include increases in communicable social diseases brought about by increased population transience and poor living conditions. (150, p. 129)

**Recreation** (31; 76; 79; 136)

Proposition: Although small boomtown communities will face increased demands for recreational opportunities, this need will receive less public attention than needs in other community institutions. (109)

Proposition: Demand for an increase in organized recreation occurs with the influx of newcomers. (51, p. 95; 94, p. 7)

**Religion: Growth**

Proposition: Churches can be expected to increase in size, number, and variety during boom periods in small communities. (136)

**Religion: Importance**

Proposition: Church (denominational) rivalries become more subtle as competitive building programs are initiated. (31, p. 25)

**Religion: Functions** (31; 109)

Proposition: Religious organizations in boomtowns find themselves faced with new needs and may begin engaging in new and varied forms of social ministry, in some cases for the first time. (136)
Education (31; 61; 79; 136)

Proposition: A severe impact on a boomtown school system will be the lack of adequate, accurate, and timely information about the school-aged children of newcomer families. (136)

Education: Physical Facilities

Proposition: The first impact a boomtown school system will face will be overcrowding of facilities. (136)

Proposition: School construction will lag behind residential construction by 1-2 years. (105, p. 70)

Education: Turnover of Students

Proposition: High school students will be attracted to high-paying employment with the impact industry and some will drop out of school to work full-time. (72; 136)

Proposition: School teachers in boomtown school systems will experience difficulties in establishing a sense of continuity among their classes due to the transiency of children of construction workers. (136; 180, p. 5; 200)

Education: Turnover of Teachers and Administrators

Proposition: Lack of basic community services and facilities in small boomtowns make it difficult for municipalities and school districts to attract the personnel they need. (61, p. 88; 94, p. 5)

Education: Programs

Proposition: If newcomer families are from larger and/or more cosmopolitan communities, they will place new demands on boomtown school systems for a more varied curriculum and the accompanying services and facilities. (51, p. 92; 94, p. 7; 136)

Social Structural Impacts

Proposition: The rapid population influx and rapidly changing demands placed on boomtown institutions create various kinds of role changes, such as: (1) the creation of new roles; (2) the creation of more positions within existing roles; (3) the redefinition of old roles; (4) the replacement of oldtimers by newcomers in existing roles; and (5) the elimination of some old roles. (136)
Proposition: The social structure of boomtowns is overwhelmingly male-oriented. (180, p. 5)

Social Structural Impacts: Community Integration

Proposition: Oldtimers in a small boomtown community are likely to experience less sense of community as they find themselves knowing a decreasing proportion of residents, witness poor inter-group relations, and see newcomers' difficulty integrating into the community. (136)

Proposition: Social integration of newcomers is unlikely to occur without outreach programs and volunteer activities. (51, p. 95)

Proposition: The gradual introduction of racially heterogeneous newcomers contributes to minimizing local racial problems and breaking some stereotypes. (51, p. 100)

Proposition: Achieving stable lasting friendships is difficult in the face of rapid population turnover. (180, p. 4)

Proposition: The major cause of population turnover in boomtowns is the unhappiness experienced by wives of male employees of the impacting industry. (180, p. 1)

Social Structural Impacts: Social Stratification

Proposition: Subsidies and fringe benefits supplied by impacting industries to their upper-level executives will become evidence of increasingly delineated social stratification in boomtowns. (136; 156)

Cultural Impacts

Proposition: When a population boom occurs in a small community it usually has the effect of bringing in people who are culturally different from the native population. (136)

Proposition: The movement toward modernization/urbanization in small boomtown communities is a condensed one with changes normally taking decades occurring within a few years. (136)
Cultural Impacts: Non-material Culture (31; 61; 106; 136; 144; 151; 204)

Proposition: The prevailing cultural shift in small boomtown communities will be in the direction of modernization and urbanization. Some manifestations of this are increases in: (1) cultural diversity; (2) cosmopolitanism; (3) professionalism and respect for expertise; (4) specialization and bureaucratization; (5) the valuing of "bigness"; (6) centralization; (7) the profit motive; (8) reliance on institutions; and (9) demands placed on institutions.

(136)

Proposition: Oldtimers often perceive the influx of engineers, technicians, and their families as potentially bringing more sophistication and culture into the community.

(51, p. 100)

Proposition: Newcomers, regardless of group affiliation, will bring trans-local perspectives with them, threatening the oldtimers' perspectives.

(31, p. 17)

Cultural Impacts: Material Culture (Physical Impacts) (11; 61; 136; 182)

Proposition: As a small town grew during a boom period, more behavior settings are created, constituting more interaction opportunities.

(136)

Proposition: Physical changes occurring in small boomtown communities which are experienced by oldtimers as signs of urbanization are increased ambient noise levels and overcrowding (relative).

(136)

Proposition: Due to the rapid population growth and unique institutional arrangements for the provision of housing (highly centralized control), the physical aspects of such communities start to resemble suburban communities.

(136)

Proposition: One of the most common consequences of the construction of a new plant in a small town is the emergence of an extremely wide commuter field. In every case the auto was the major mode of transportation and car pools were uncommon.

(33)

Proposition: As small communities undergo boom type growth, the loosely controlled sprawl growth pattern encourages a high car-oriented land use pattern with many drive-in facilities, suburban-type shopping centers, and strip commercial developments.

(136)
MODES OF RESPONSE

During and after the social impact phases, some forms of response—whether adequate or not—start to emerge. This section looks at what resources are available for responding (informational, legal, financial). The resources may lie with governments (e.g., new taxation schemes, special impact funds) or with the impact companies themselves (e.g., new construction, financial assistance). The response itself occurs within the community as individuals, organizations, and community institutions try to cope with the new social reality. However, some response may also come from outside the community in the form of state or federal governmental actions or corporate actions.

Resources Available: Corporate

Proposition: Community leaders in small boom communities will seek, and generally gain, some assistance from the impacting industries such as buildings, funds, and technical expertise.

(94, p. 8; 136)

Proposition: Despite increased payrolls and other increases in local economic activity in a boontown, the largest source of wealth created, the profits of the impacting industry, does not stay in the local area to become available for dealing with social impacts, but rather returns to corporate headquarters.

(38, p. 3)

Resources Available: Local

Proposition: One person to whom impacted (or to-be-impacted) communities may turn for assistance is the cooperative extension agent, a person with local sensitivities and extra-local contacts and experience.

(150, p. 124)

Resources Available: Federal (Public)

Proposition: Present federal legislation has no provision for dealing with social problems in boontowns (new or existing) created by rapid energy development.

(63, p. 46)

Non-Local Response: Corporate (179, p. 5)

Proposition: Community leaders in small boom communities will seek and generally gain some assistance such as buildings, funds, technical expertise
from the impacting industries.  

(136)

Proposition: One area of boontown relief in which the impacting industry will become active is housing. The companies will often build or will have built hundreds of temporary and sometimes permanent housing units.  

(136)

Proposition: In an effort to cut costs and ease the process of clearing land after initial use, the impacting industry may choose not to own trailer homes but rather to rent trailer spaces on land they own.  

(166, p. 126)

Proposition: If the impacting industry chooses not to run the construction worker camp themselves but to contract out to another firm, this compounds impacts by introducing yet another set of actors into the boontown.  

(150)

Proposition: The ameliorative actions of a project industry can create a modernized, less heavy-handed company town atmosphere. In company-built boontowns that atmosphere is more readily visible.  

(136; 20)

Proposition: The scale, design, and quality of housing built by the impacting industry will become a constant reminder of sociocultural changes for the longtime residents.  

(136)

Non-Local Response: Regional

Proposition: Traditional rivalries between communities inhibit timely cooperation in meeting common problems associated with the boom.  

(51, p. 94)

Local Response

Proposition: An increasing number of boontown residents resent the publicity their towns are receiving.  

(179, p. 1)

Local Response: Personal (94, p. 6)

Proposition: Increases in personal alienation and isolation will be seen in boontowns—both on the part of unassimilated newcomers and disrupted oldtimers.  

(72; 176)

Proposition: Personal responses to boontown social impacts take one of four forms: (1) making the adjustment to the changing community; (2) maintaining life style as it was in the pre-boom period;
(3) attempting to deny the social and cultural changes that are occurring; or (4) withdrawing (physically) from the community.

(136)

Proposition: Personal responses to impacts upon the community are heavily influenced by financial situation; a good, high-paying job may offset many hardships.

(136)

Proposition: Lower socioeconomic class persons seem more likely to suffer psychological stress from changes due to boomtown growth.

(54; 136)

Proposition: The old timers long for "the good old days" and the in-migrants miss their previous homes.

(31, p. 9; 136)

Proposition: Among the modes of response to alienation taken by newcomer women are retreat into traditional female activities (child-rearing and family care), involvement in social clubs or community activities, mental illness in mild forms, and leaving the community.

(180)

Proposition: There is a slight trend for residents to be more unfavorable toward industrial development after such development has taken place. In general, however, more people express satisfaction with industrial development than express dissatisfaction.

(3)

Local Response: Institutional

Proposition: In an effort to provide facilities for a growing population, town officials (e.g. city council, school board) will expand physical facilities. However, if the growth falls short of its expected levels the community will find itself overextended. Though it will have better facilities, it will also have a higher tax burden.

(150, p. 25)
CONCLUSIONS

Our purpose has been to identify some of the social impacts pertaining to energy boomtowns that appear in the less widely available literature. Moreover, we have attempted to organize this information within a framework or model that identifies many of the factors upon which differential impacts depend. At this point we are not able to summarize within a few paragraphs the many propositions we have listed. As mentioned earlier, many of these propositions are awaiting better data to support or reject them. From an evaluative perspective, many of these identified impacts have both positive and negative attributes. Some propositions can be seen in direct conflict with others. Obviously the real work lies ahead and whatever we have accomplished here will hopefully constitute a beginning.

Still, we feel that we have found that a great deal more is known about the boomtown aspect of energy development than is generally acknowledged. "The town has been studied to death" is a lament heard in every booming community in the West. Every planning official in these towns, likely to know full well what the impacts are, can point to a foot-high stack of "worthless" documents on the office table while the researcher is often unaware of their contents. We have found these documents contain considerable information on what the impacts are although little is available within them in the way of the solutions which the planning official seeks. There is little reason for the continuation of an unending series of case studies to "determine what the impacts might be."

We feel it is time to make what is known more widely available and to begin a rigorous analysis of the net effects of boomtown impacts. Is the net social effect of the boom in Craig, Colorado to be found in the thousands of people who have moved to Craig and found employment or is it to be found in those like the former mayor who sold his business and left town? Before moving, this ex-mayor in testimony before a state legislative committee said, "The highest toll exacted
from boomtowns is the literal destruction of a community which in the past sustained and nurtured its people. The decline in the quality of life has stolen a community from its people." It remains to be seen whether social scientists can assign appropriate weights to these two examples and whether such analyses can influence policy.
Belli, Colin and Howard Newby

Carnes, Sam and Paul Friesema

Cortese, Charles F., and Bernie Jones

Finsterbusch, Kurt

Freudenberg, William

Gold, Raymond

Griswold, Don and Jean Griswold

Jones, Bernie and Charles F. Cortese

Killian, Lewis
1953 "The adjustment of southern white migrants to northern urban norms." *Social Forces* 32:66-69.

Leistritz, F.L.
Olsen, Marvin and Donna J. Herwin

Rocky Mountain News

Stauffer, Walter J.

Wolf, Charles P.

   A background study which deals with the historical growth of Denver.

2. Ahlstrom, A. M. Speeches from the Seminar on Urban Environment, Denver, 

   A collection of public relations speeches which include material on 
   new towns and energy.

   "Pipeline Impact: A Report on State Findings, Assumptions and Pro- 
   jections Regarding Construction of the Trans-Alaska Oil Pipeline." 

   Brief report touching upon anticipated problems of boom growth 
   especially in the small community of Valdez.

4. Albrecht, Stan L. "Environmental Issues: Power Plant Development in the 

5. __________. "Legacy of the Environmental Movement." Environmental Concern, 

6. __________. "Sociological Aspects of Power Plant Siting" in Proceedings of 
   Intermountain University's Conference on Policy Formulation and the 

   tion Areas. For the Conference of EUIPR, Snowbird, Utah. August 

   Background paper which deals with socioeconomic needs and capital 
   requirements. Comparative analysis uses Exxon figures.


   A social history of company towns in the early mining periods of the 
   Western United States.


The social responsibility and financial implications of alternative courses of action in resource development.


Contains chapters on land use, economy, population, governmental structure, housing and municipal services. Volume Two emphasizes the impacts and projections for a certain oil shale area.


A description of the development and growth changes surrounding the Colony areas in Colorado.


In the past few years the population in non-metropolitan areas, for the first time, has grown faster than that in urban areas. Reasons for this are discussed. While energy development is not included insights are provided into the current rural context.


The outcome of this research is the identification of the four types of information research necessary to measure the extent of social impact on Atlantic Richfield Company mining operations. This report includes a summary of research findings and recommendations, contains a description of the methodology used, a demographic profile, attitude survey, and a bibliography.


Contains very little concerning the socio-political factors. Deals primarily with the methods of funding improvements, public services, and housing.


Attempts to identify impact patterns and the devices for anticipating related events and issues concerning the impact of large installations on nearby areas. Five case studies are included: U.S. Steel in Lower Bucks County, Pa.; Naval Industrial Shore Establishment, Long Island, N.Y.; Dover Air Force Base Complex, Dover Del.; U.S. Naval and Air Force Establishment, Seneca County, N.Y.; Atomic Energy Commission, Savannah River Area. The summary includes recommendations for dealing with the impact of such installations.


An introduction to the environmental impact statement requirements under the National Environmental Policy Act of 1969.

An overview of current economic and social developments in two Colorado counties.


Evaluates the marketability, economic feasibility and socio-economic impact of the proposed Kaiparowits new town in the Four Corners area. Includes an analysis of the socio-impact of new town development in the area and an evaluation of alternative town sites.


Social, economic, political and cultural impacts of coal mining developments with emphasis on the individual, the family, subgroup and subculture relations, and religion. Media, crime and social disorder, power and politics and a changing economy are discussed. Applies classical sociological theory and early community studies to predict the impacts of coal development.


Based on a review of studies of 178 different instances of industrialization in rural areas, the author discusses generalizable impacts in the areas of population, economic, and psychological change.


This study of Sweetwater County, Wyoming covers the area's history, boom period, and present situation. Special attention is given to the social impacts stemming from a one-year delay in the construction of the fourth unit of the Jim Bridger power plant.


Contains a detailed analysis of the interlocking ownership patterns among major corporations which hold leases for coal mining on public lands in Colorado. Explains the implications in terms of the amount of control over energy development which resides in the state vs. the control which rests in the headquarters of multinational corporations. The major decisions concern what energy source will be developed, where, and when. There are also implications regarding what amount of the created wealth is likely to remain in the impacted area to help alleviate social impacts.


The objective of this report is to summarize economic impacts and provide information useful in formulating a policy to guide coal resource development. Population, employment, income and trade areas are included.


Concerns development of the Rocky Mountain Energy Co. surface mining and milling or uranium ore and associated impacts. Specifically oriented toward technical questions but does include social and eco-political aspects as well.


Includes a description of a coal-oil-gas complex, an overview of impact area (Montana and the Dakotas). Illustrates typical economic, social, and land use impacts. Positive and negative aspects of economic, social, and land use consideration; the impacts on present financial, institutional, and growth management structures are discussed.


Discusses boom problems faced by Rock Springs in "overcoming boom-town shock" and the means Rock Springs used to cope with growth problems.


A study of 473 ninth through twelfth grade students in the high schools of Glenrock and Douglas attempting to identify how youth would view the effects of coal development impact on their lives. The following areas are emphasized: leisure time, jobs and career planning, authority and community activities. "The students generally predicted changes in their life styles consistent with known transpositions in "boom-town" situations." Identifies "contemporary youth problems as well as probable future resource needs and problems subsequent to impact."


Section VII is devoted to boom areas. Includes an overview of the problem, papers concerning health problems, effects on local Indian tribes, public education, the situation in Forayth and Colstrip, social services, energy problems, housing, and community planning.


Hypothetical case which shows changes in an area of the Rocky Mountains due to energy development. Includes scenario of problems caused by rapid growth in housing, marketing and labor, transportation, health and social problems, planning and finance.


Deals with the local region and makes growth projections.


A small portion of findings from more extensive research in 1971 and 1972. The main focus is upon the general area of the sociology of recreation and leisure. Data were not collected with emphasis on the impending industrial development in the area in mind but there is relevant background material.


A draft literature review of recent and classic work on community social change, especially from energy related projects. Propositions are offered. Concludes that human aspects of boomtown problems have been neglected.


A comprehensive town plan necessitated by growth due to building of AFB base. Includes descriptive sections on land use, economics, and demographic characteristics.


75. "Policy Concepts and Institutional Design for Boom Towns."

The purpose of this research is to analyze the future of the mining and construction boom in Rock Springs-Green River, Wyoming. The purposes are to categorize problems such as degraded quality of life, reduced industrial productivity and the threats to local government's ability to cope, and to suggest new institutions and new legislation.

76. "The Evolving Economy of Pitkin County: Growth Management by Consensus in a Boom Community, Aspen."
Pitkin County Board of Commissioners. 1974.
Concerned mainly with growth in a recreational area. However, materials on social consequences of growth and suggestions for means of managing the growth are applicable. Includes quality of life and population growth.

77. "Getting a Handle on Rural Development: The Colorado Approach."

Proposes State of Colorado policy for dealing with problems of decline and growth in different counties. Not specifically boom town oriented but contains pertinent information.

78. Social and Economic Impacts of Oil Shale Development and Accelerating Federal Actions to Accelerate Development.

79. The Sweetwater County Boom: A Challenge to Growth Management.
Denver: Denver Research Institute, 1974.

Includes material on boom problems: housing, health services, recreation, education, women, productivity and profitability, and municipal government. Discusses existing problems and their possible solutions.


Discusses various western communities and the financial problems these energy boom communities have faced. Two federal programs for financial problem solving are discussed.


Includes characteristics of impacts in Sweetwater, Meeker, Sheridan and Emery Counties, Wyoming. Public finance problems are discussed as are
other problems in boom communities: housing shortages, shortages of commercial facilities and professional services, and the need for new institutions.


An ethnographic study of the background of the present situation, reactions of local citizens, and the social effects. Has data concerning educational, health, and welfare services.


84. __________. "How Southeastern Montanans View the Coal Development Issue." Western Wildlands, Vol. 1. 1964.


A brief, descriptive case study of a community in the Kiparowits plateau.


While basically a study of the economic aspects of rural industrialization, the study contains some useful discussion of the social impacts (institutional and personal) of a community changing its economic base.


Pertains to new towns by analysis of "front end" money in community development process is useful.


Complete issue devoted to Rock Springs, Gillette, Hanna, Colstrip, Lame Deer. Boom problems are discussed. Includes interviews with townspeople, statistics, impacts.

Briefings on such subjects as coal conversion, water availability, and energy conservation and the manpower needed to meet the needs of these growing areas. A collection of presentations from people active in the field; Leistritz, McCool, Baker, Gilmore, Glimmer, etc.

Report of November 1973 survey sponsored by Lions Club in a North Dakota impacted county. Included are data on needed public and private community services, as well as evaluative measures of such existing services. Data are from residents of impacted town (Center), residents of surrounding rural area, coal mine employees, and power plant employees.

A detailed analysis of existing facilities and services and the demands made on them. Information should make it possible for methods to be developed and information obtained that will help community leaders in the Powder River Basin. Includes material on schools, libraries and the net fiscal impact of projected projects.


Examines the regional housing impact and suggests a number of policies designed to enable the region to cope with projected growth. The region includes Garfield, Mesa, Moffat and Rio Blanco Counties, Colorado.

An individual case study of the boom area in Moffat County, Colorado.


104. This paper is based upon data from one section of the Construction Worker Profile, consisting of detailed community studies in three towns in an effort to identify cross-community generalizations. Findings relate to impacts upon social institutions, social structure, local culture, physical community, and personality. Factors determining variations in patterns are also discussed.


An early social impact study based upon interview and observation data on changes in a small community stemming from construction of an army base.


"Creating communities, not just developing energy." Use of front-end money for capital facilities.

Concerns taxation, but in so doing covers many of the social and political problems involved in booms and busts.


Contains a "model" which reflects the interrelationships of business, household and government sectors. Also considers cost and revenue timing. The model has two components: regional input-output analysis and a set of cost and revenue estimators. Contains a bibliography.


Statistics profiles and scenarios of change in areas related to North Dakota's coal and electric power generating areas. "The purpose of this study is to provide a detailed analysis of Mercer County, North Dakota and the surrounding area in an effort to reveal the nature and magnitude of development impacts which will be experienced by local communities from various levels of coal development."


A preliminary report done without time for top quality research according to the author. Does include pertinent and worthwhile sociopolitical information. Study is concerned with "What happens to a coal town when the mines and/or power plants close?"

A series of public relations speeches.


A paper for the Natural Resources Council. Basically a public relations piece.

120. Little, Ron. "Rural Industrialization: The Four Corners Region." Logan, Utah: Lake Powell research Project. 1976.


Case study complete with growth projections - emphasizes the advantage of planning.


Includes energy conversion, environmental effects effects on water resources, transportation and socioeconomic effects.


This report contains an assessment of the population and employment impacts in the Powder River Basin of Wyoming due to energy development. The report is based on Northern Great Plains Resources Program specifications. Topics included are population, direct employment effects and indirect employment impacts.


Deals with citizens' attitudes toward development of Westmoreland mine in North Fork Valley, Colorado. Asks the question, "Is Coexistence of
mining and farming possible?"—e.g., can water needed by agriculture be kept clean by the mining industry?


Deals mainly with economic growth and the resulting social problems.


Concerns problems of wives of corporate executives and international scholars in adjustment to transiency and living in a foreign environment. While not specifically a boomtown study the problems faced by women are pertinent.


Deals with conflicts between the old and the new and includes suggestions regarding how financing can help solve these problems.


An analysis of the impacts generated in small western communities by large influxes of construction workers associated with large-scale energy projects. Data are from surveys with residents, officials, impact industry employers in over a dozen western communities. Includes mathematical models of economic impacts as well as of social impacts.
A theoretical paper which defines social impact within a socioeconomic perspective.

Largely oriented to land use considerations but includes data from a community survey of residents' views about likely impacts from rapid growth.


A hypothetical study of an area in which rapid growth occurs. The study contains population estimates and attempts to deal with land use and other problems. Very general.


In this report Part V (The Economic, Social and Cultural Impacts of Coal Development in the Northern Great Plains) is most applicable.

Issues dealt with include: coal mining, socioeconomic development, population, economic models, environmental impact, revenue, social change, local government, housing shortages, project planning. Socioeconomic and cultural aspects in parts of Montana, Nebraska, North Dakota, South Dakota and Wyoming are analyzed. Models of population growth that may result from alternative levels of coal development are presented. The impacts of each alternative on social conditions, shifts in power structure, government revenues, public service facility and funding needs, non-governmental services and labor competition are discussed. Specific problems addressed include revenue
needs, tax revenues time gap, jurisdictional problems of assuring that revenues are returned to impacted areas, housing needs, ability of local governments to cope with problems. Methods of alleviating these are discussed.


A film documentary about the social impacts resulting from the construction of a new coal mine and coal-fired generating plant in a small Ohio community.


Bibliography of ongoing research projects. Includes abstracts of projects.


A study of likely social and economic impacts that can be expected in the Back Creek, Virginia area in the wake of the construction of a dam and hydro-electric power plant. Projections are based upon analysis of a similar project in Oregon. An effort is made to identify the public and quasi-public expenditures created by the entrance of the construction worker community and to identify possible tax increases.


Socioeconomic impacts on tribes, inter-cultural relationships, Indian family. Anticipated social effects are included.


This study contains background data concerning population, employment and income for current residents in a seven-county area in southeastern Montana. Indians, as well as other residents of the area, are included. Economic changes which will take place resulting from coal-related employment are projected for 1980, 1985, and 2000.


Major article written following research done in the area by the Denver Research Institute and Bickert, Browne, and Co. Discussion of research procedures and results of research done in Rock Springs. Housing, income, women, and local services are mentioned.


A listing of current legislation which governs the various activities in boom communities. Covers housing, health, schools, transportation, employment, convenience shopping, utilities, local government, fire protection, law enforcement, recreation, religious organizations and institutions, environmental concerns, communications, and social services.


This study of socioeconomic impacts in McLean County, North Dakota deals with changes in population, public revenues, local public costs (education, highways, water, law, fire, libraries, recreation.)


A short account of the history of the boom in Jeffery City, Wyoming and the role of the impact industry in trying to alleviate social impacts.


First hand account of severe social psychological problems faced by women, particularly newcomers, in small boomtowns. Includes many short "case histories" of the plight of particular women in Jeffery City, Wyoming.


A descriptive study of the Powder River Basin. Includes demographic characteristics, employment, migration histories, community facilities, attitudes of newcomers and long term residents.


Comprehensive inventory of the happenings in Colorado coal country.

This is a standard federal EIS which contains a baseline description of Navajo reservation life styles and anticipated social impacts upon those life styles.

Summary version of a research report concerning impact of coal development on public services in the Northern Great Plains area.

Concerned with how these regions' economic view developed over time and how they are expected to change in the years to come. The projections do not reflect potential major developments of the regions' coal resources. The analytical framework and an analysis of historical and projected economies of the Northern Great Plains comprise the bulk of the report.

Designed to aid in "planning for and responding to energy project impacts." Includes sources of assistance, names, addresses and type of information available.

An ERDA document which outlines the Ford administration's view of the energy problem and what must be done to cope with it. Specific energy sources are outlined.

A review of the status of various forms of energy research and development projects considered solely from a technological perspective. Short and long term recommendations are included.


Includes eight papers presented at the 65th annual meeting of the North Dakota Academy of Science. Main areas include pollution and health effects and aesthetic disruption.


Includes a section on each county and deals with education, health, transportation, etc. Lists of figures and tables dealing with the actual situations in each county.


Nebraska faces a unique set of socioeconomic impacts which are discussed in relation to the principal impact area--Powwow, Keith and Lincoln Counties in west-central Nebraska. The area has a population density which is lower than the state and national averages, and is rural in nature. Scenarios present possible impacts.


Entire issue (7 papers) is devoted to special impact assessment. Most relevant to boomtown analysis are articles by Shields (an overview of the content of social impact studies) and Krebs (an analysis of different social impacts from deep and strip mining of coal).


In addition to the EIS, this report contains the results of "extensive interchange between the owner, the engineer and the environmental consultant." Section V, The Assessment of Potential Impacts, includes material on socioeconomic impacts, demography, social conditions (e.g. housing, medical services, education) and human interests.


Concentrates on four Wyoming Counties: Campbell, Converse, Johnson and Sheridan. Collects and consolidates plans of all energy companies with an interest in the area; develops a methodology for evaluating the implications of possible alternative development patterns. The purpose of the study was to help citizens deal with expected growth and the socioeconomic problems which will accompany it.


Contains a selected bibliography.