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Ute Self-Determination in Setting Tribal Resource Development Policy

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UTE SELF-DETERMINATION IN

SETTING TRIBAL RESOURCE DEVELOPMENT

POLICY

by Herbert H. Fullerton
Mac McKee
and Roger D. Hansen

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Utah State University
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ABSTRACT

The Ute Indian Tribe of northeastern Utah has large land holdings rich in water and energy resources. Revenues from these sources have created capital that can potentially be used by the Tribe to further develop its resources and expand its agricultural and business enterprises. Realities, however, complicate this simple scenario in that the Tribal goals are broader than pure economic gain and that increased incomes may mean sacrifices in terms of these other goals. The Tribe faces the problem of how best to develop its water resources in a way that best meets its multiplicity of needs.

The research team worked with the Utes to articulate their resource development goals, to operationalize those goals through the identification of measureable indicators, to identify promising development policies, to predict what those policies would achieve through changing the indicators, and to set before the Utes the trade offs among the goals. The procedures used in working with the Indians are described. The results were used to construct and use a linear programming model to identify Ute-specific development policies with their impacts and the trade offs among them. The model provides a framework that the Tribe can use to assess the alternatives for developing its water resources.

1.0 INTRODUCTION

1.1 The Problem

Historically, incentives and opportunities to improve living conditions on Indian reservations have been severely constrained, albeit largely inadvertently so, by non-Indians. The institutional framework and technical expertise available to the Indians in their efforts to advance their economy or improve housing, educational, or health situations are largely determined by policies and decisions made in agencies of government and private organizations located outside the boundaries of reservations. Almost without exception, private and public organizations have sought in good faith to help native Americans. However, their efforts have been largely counterproductive and, in some instances, have fostered an increased dependency on the helper agency and a deepening sense of frustration for all concerned.

This situation raises some very fundamental questions as to what policies, for both the outside organizations and the Indians, will be most productive in stimulating a climate for interactions that will contribute to enhanced Indian welfare. This study examines the issue from the viewpoint of what can be done to help the Ute Indian Tribe of Utah improve itself through development and better management of its natural, and particularly its water resources.

The target of self improvement suggests the need to begin by selecting specific goals and that choice belongs to the Indians. In applicable jargon, the problem is best addressed by enhancing opportunity for "Indian self-determination." The concept is very important; however, efforts of outsiders in its pursuit are also very risky. While the opportunity for self-determination is key to improving Indian living conditions, the pursuit of self-determination through non-Indian influence can insidiously become subverted until the best intentioned outsider unwittingly falls into the role of an insensitive helper.

Self-determination is needed at two principal levels, individual and tribal. Individual Indians need to perceive opportunities for self improvement and experience the satisfaction of improved lives by pursuing them. Tribal self-determination occurs when and to the extent that a tribe succeeds in 1) articulating goals and aspirations which embody tribal well-being as seen from the perspective of basic tribal values; 2) understanding the conditions upon which the achievement of such goals depend; and 3) finding means of influencing the decisions of outside organizations and individual Indians so as to alter these conditions and facilitate tribal goal achievement.

With little risk of overstatement, the history of the American Indian over the past five centuries has been one in which a dominant

culture, brought by European settlers, has deprived native Americans of self-determination. The obvious difficulty that many tribes now encounter in articulating meaningful cultural goals and aspirations (a first in the above steps of tribal self-determination) suggests a degree of conditioned self-alienation. The hesitancy on the part of the Indians has resulted in overzealousness on the part of non-Indians to define "tribal" goals and proceed to implement inferred radical social and cultural changes, inadvertently reinforcing the Indian alienation and adding to the difficulties the tribes face in understanding, participating in, and deriving benefits from dominant American society.

To the extent that Indians can live independently from other Americans, the issue can be addressed by enhancing the opportunity of the Indians, individually and collectively, to work out their own future. However, water resources development and management cannot be independently arranged by the Indians because surface and ground waters flow across tribal boundaries. Indian actions affect non-Indians and vice versa. Since Indians are but one of many groups using common resources in our pluralistic society, they must coordinate their goals for water resource development and use with a framework in which from a national viewpoint resource development options are assessed in terms of national economic development and environmental quality objectives. While these may be satisfactory measures of project feasibility for decisions which affect a wide spectrum of the population, national criteria are less adequate for examining the impact of resource development on a narrow spectrum of the population with cultural preferences which may be at variance with the national and regional majorities. Certainly, the American Indian has found himself in this uncomfortable minority position in many instances in the past. It is a position leaving the Indians with no opportunity to identify, let alone pursue, options compatible with or serving the best interests of the tribe.

1.2   The Objectives

In this context of the need for Indian tribes to pursue water and related resources management that will best achieve their self-determined goals within the constraints imposed by national objectives, this project has sought to work closely with the Indians in developing a practical planning methodology. Specific elements sought within this methodology were:

1.   Formulation and prioritization of Ute Indian tribal goals, e.g.,

   •   environmental protection

   •   economic well-being

   •   preservation of tribal customs and traditions

2.   Operationalization of these goals,

   •   identification of indicators for measuring progress toward these goals

- analysis of the legal-institutional setting in which resource development decisions are now made

- specification of legal-institutional changes required to increase the effectiveness of tribal participation in the development decisions

3. Prediction of what selected resource development alternatives will do to change situations with respect to the goals from (1) as measured by the indicators identified under (2)

- definition of action options for the tribe

- development of alternative futures consequent to action options

- prediction of the changes associated with each option with respect to the goals as measured by the indicators

4. Utilization of the results of (2) and (3) to develop strategies for the achievement of tribal goals through tribal self-determination

- analysis of development-induced indicator changes in relation to goal impacts and trade offs

- identification of desirable development alternatives

- formulation of strategies for influencing development decisions

1.3 The Approach

Working from a definition of Indian self-determination that requires articulation of goals which express tribal values and examination of means that a tribe can employ to achieve them, the research team from Utah State University cooperated with the Ute Indian Tribe of the Uintah and Ouray Reservation in eastern Utah to examine alternatives for Indian resources development, to relate these alternatives to the achievement or nonachievement of Ute tribal goals, and to explore problems and prospects associated with the implementation of alternatives judged by the Utes to be in their best interest.

The research was conducted in five steps:

1. A modified Delphi technique was utilized to interact with members of the Ute Tribe to formulate and assign relative priorities to tribal goals.

2. These goals were operationalized through the identification of indicators of their achievement and through relating the conditions of goal achievement to the legal-institutional context.

3. The Delphi-derived Ute goals were tested by conducting a random survey of the Ute population in which goals were further identified and prioritized.

4. Alternative development futures were translated to changes
in the indicator sets and then to changes in the achievement or nonachieve-
ment of tribal goals.

5. The resulting goal impacts were used to identify policy and
development alternatives most compatible with the goal achievement.

1.4 The Overview

The presentation follows the chronologic sequence of project activi-
ties. Chapter 2 addresses procedures employed and results obtained in the
goal and indicator specification process. This includes the Delphi
panelists' identification of Ute goals, survey tests/comparison of panel-
identified goals, and determination of operational indicators for Ute
goals. It concludes with a brief discussion of the legal institutional
context of Ute goals and the operational indicators which were identified
and used in the study.

Chapter 3 provides a summary of the approach taken to generate
an initial set of alternative futures to be evaluated in terms of resource
constraints and their compatibility with Ute goals.

Chapter 4 provides a detailed discussion of the formal modeling
procedures used in evaluating resource constraints in terms of the
indicators of goal achievement. Different emphases depicted among
alternative futures in resource use were compared to determine their
relative merits vis-a-vis Ute goals.

The final chapter describes the potential benefits to be obtained
from maintaining and using the data base generated as a part of this
project in future efforts in resource planning and problem resolution for
the management of Ute water and related resources.

2.0 GOAL AND INDICATOR SPECIFICATION PROCESS

The Ute Indians inhabit an arid country where water is a valuable resource and one which if used wisely can do a great deal to advance the public welfare. Water is important for agriculture, for fossil fuel development, and for improvement of health and sanitary conditions. These perspectives are, however, those taken by non-Indians.

In order to define goals determined by the Indians for themselves, extreme care was exercised to make certain the project team could identify and interact with a panel of Ute citizens who would faithfully convey the desires of the tribe as a whole. This was not an easy task. Numerous meetings were held with the Tribal Business Committee (the Ute's Tribal Council) in an effort to ascertain their willingness to be involved, to identify the issues over which they had concern, and to establish a working relationship.

2.1 Prepanel Planning and Panel Selection Process

The primary issues in the panel selection process were:

1. Could one representative set of Ute citizens be identified who could and would interact with the project staff?

2. What form would this interaction take?

3. What type of validation might be possible to determine if the panel responses were, in some sense, reflecting the attitudes of the Ute population in general?

4. How might the goal identification process be tied to the on-going management concerns of the Ute community as a whole without creating resentment on the part of those currently charged with managing Ute enterprise resources?

5. What type of representation of the project team would be most successful in interacting with the Utes?

The previous experience of the research team in dealing with Indian people has suggested that elected representatives often do not provide a true cross-section of Indian opinion. Often these people are elected because of their technical competence and/or communications skills in dealing with the non-Indian community. Therefore, it was felt imperative that individuals within the tribe be identified for the panel in addition to those elected to the Council from the various bands. Discussions with tribal leadership and technical staff suggested that many of these people

were communicating on a regular basis with the older individuals in the tribe.

How could the project team contact these people, many of whom would be inaccessible because of language and cultural barriers? After joint deliberation with the tribal leaders, it was decided that each member of the elected committee would appoint three individuals that he felt were representative of the cross-section of the tribe which he represented. Since two Council members are elected from each band, this gave equal representation to each of the three main bands within the Uintah-Ouray Indian Tribe. Since these bands are of unequal population, the representation in the panel was disproportional to the total tribal population.

Given this panel selection process, the project team recognized that the selections of the individual business committee members might introduce biases which were consistent to their own personal biases as opposed to reflecting a more general attitude of bands and the total tribe. Therefore, it was decided that in addition to the committee and their appointees, a random sampling of the total Ute population would be conducted so that goals and indicators, specified by the panel, could be compared with goals and indicators specified by a random sample of the Ute population. Close correlation between the two results would suggest that both were representative of the total Ute population. Discrepancies would need to be analyzed for their cause.

After careful deliberation by the project staff and consultations with the committee and technical staff of the Ute Tribe, it was decided that a Delphi technique would be utilized in interacting with the Tribal Business Committee and their appointees (panelists). Acting on the recommendation of the Business Committee and technical staff of the Utes, three senior faculty members and four of their advanced PhD and MS students were assigned to initiate and conduct the Delphi process. In order to maintain daily contact with tribal leadership and those appointed to manage Ute enterprises, an advanced student with training in both anthropology and economics was assigned to the tribal headquarters at Fort Duchesne in the Uintah Basin. This gave the project team daily contact with people, issues, and problems as they evolved for the tribe. Additionally, it was believed that the presence of this person in the community would reduce the implied threat of this project and hopefully gain the confidence of Indians who would be asked to provide data for the modeling effort.

Contrary to the expectations of the project staff, the Indian people appeared to prefer dealing directly with the project staff rather than with Indian people who were hired and trained by the project staff. One exception was in the selection of bilingual Ute interviewers who conducted all interviews in the survey test of panel-identified goals.

2.2 Panel Identification of Ute Goals

Ute tribal goals were first formulated with the help of a 24-member goal-identification panel. This panel consisted of six members of the

Tribal Business Committee (Ute Tribal Council) and three other members chosen by each Business Committee member. Table 2.2-1 contains the names of the people who served on this panel. All three bands were represented equally.

Table 2.2-1. Goal identification panel.

Lee J. Alhandra Ft. Duchesne, Utah	Max Chapoose Roosevelt, Utah	Alfonso Cuch Ft. Duchesne, Utah
Curtis Cuch Whiterocks, Utah	Henry T. Cuch Ft. Duchesne, Utah	Irene Cuch Ft. Duchesne, Utah
Willard Gardner Roosevelt, Utah	Ethel Grant Ft. Duchesne, Utah	Adrianna Ignatio Ft. Duchesne, Utah
James Murray Ft. Duchesne, Utah	Raymond Murray Ft. Duchesne, Utah	Harvey Natchees Ft. Duchesne, Utah
Wayne Pike Myton, Utah	Gary Poowegup Whiterocks, Utah	Marietta Reed Ft. Duchesne, Utah
Marjory Ridley Whiterocks, Utah	Vincent Sireech, Sr. Randlett, Utah	Floyd Wyasket Ft. Duchesne, Utah

Business Committee

Myron Accuttoroop Ft. Duchesne, Utah	Lester Chapoose Ft. Duchesne, Utah	Elwyn DuShane Ft. Duchesne, Utah
Albert Manning Whiterocks, Utah	Charles Redfoot Whiterocks, Utah	Floyd Wopsock Whiterocks, Utah

2.2.1 Panel Procedures

Prior to the first meeting of the panel, three subtasks for identifying and categorizing Ute tribal goals were established:

1. Identify the tribe's goals in words meaningful to the members of the tribe.

2. Rate each goal as very important, fairly important, or not very important.

3. Identify measurable conditions (indicators) which signify achievement of the goals.

To accomplish these subtasks, project staff met with the goal-identification panelists on three separate occasions. On each occasion,

panelists were given an orientation and at the second and third meetings summaries of the results obtained from previous meetings of the panel. Documents used in the initial orientation session are contained in Appendix A.

2.2.2 Results of the First Panel Meeting

The first panel meeting was held on Jaunary 30, 1976. Each panel member was given an explanation of his individual responsibilities as a panelist and a list of the group subtasks to be accomplished. Each panelist was given a questionnaire to identify what he thought were important tribal goals under the general headings of economic well-being, social and personal well-being, environmental quality, and Ute self-determination. Some possible answers were suggested by the investigators to promote thought, but in all cases, listings under the general headings were open-ended. All but one member of the 24-member goal identification panel completed his first questionnaire.

After carefully considering the goals that each panel member listed, investigators arranged the answers and organized them into appropriate groups or categories under the general goal headings. To carefully distinguish between panel inputs and those of the investigators, the results were listed under the two headings: "your answers" or "our summary and organization of your answer." Brackets were placed around goals which, for organizational reasons, were moved from the panelists heading; for example, from "economic well-being" to some other category such as "environmental quality." The results of the first panel meeting are summarized in Appendix B, and its organization, which was used as input to the second meeting with the panel, is shown in Appendix C.

2.2.3 Results of the Second and Third
Panel Meetings

The second panel meeting began on March 2, 1976, at a preliminary session with two objectives: 1) to review and revise the preliminary first-round results; and 2) to schedule personal interviews with each member of the panel. In both the preliminary session and the personal interviews, held March 30, 1976, panel members had the opportunity to 1) suggest other goals which might have been overlooked; 2) improve the way in which the goals were stated, using words which accurately conveyed the intended meanings; 3) comment on or change the summary and organization of the goals; and 4) rate the goals as very important, fairly important, and not very important.

The instrument used to record responses obtained in the personal interviews with the goal identification panel is contained in Appendix D. Table 2.2-2 contains the final goals and subgoals which were identified and considered important by the panel. The next two steps were to 1) survey a randomly selected sample of Utes to gain their reaction to a similar set of goals and subgoals, and 2) develop operational indicators of the goals which could be used as quantitative estimates of goal achievement.

Table 2.2-2. Ute tribal goals as formulated by the goal identification panel.

I. TRIBAL SELF-DETERMINATION

    A. Retaining Ute rights to resources

        1. Retaining/recovering Ute lands
        2. Retaining/protecting Ute water rights
        3. Retaining/recovering mineral rights

    B. Reducing unwanted interference of non-Utes in tribal affairs

        1. Utes having a voice in non-Ute decisions which affect the tribe
        2. Having qualified Utes in tribal management positions

    C. Economic independence for the tribe
    D. Opportunity for tribal members to review and have input into tribal decisions
    E. Adequate tribal planning

II. ECONOMIC WELL-BEING

    A. Economic well-being for individual Utes

        1. Income opportunity (from jobs, own business or self-employment, settlements, tribal investments, private savings and investments, and welfare)
        2. Fair distribution of tribal income among tribal members
        3. Job opportunity

            a. Ability to get a job
            b. Diversity of employment opportunities
            c. Opportunity for job advancement
            d. Good working conditions
            e. Job lasting as long as desired

        4. Opportunity for self-employment

    B. Economic well-being for tribe

        1. Self-sustaining (profit-making) Ute enterprises
        2. Development of Ute resources

            a. Investment of tribal funds to develop tribal natural resources

                (1) Land (farming, grazing, forests, etc.)
                (2) Water (agricultural, municipal, industrial)
                (3) Minerals (phosphate, gold, etc.)
                (4) Energy (oil shale, coal, uranium, tar sands, etc.)
                (5) Fish and wildlife

            b. Investment of tribal funds to increase tribal wealth (capital resource)
            c. Investment of tribal funds to develop professional and technical manpower skills (human capital)

Table 2.2-2. Continued.

    C. Availability of goods and services
    D. Reasonable taxes

III. SOCIAL WELL-BEING

    A. Educational opportunity

        1. Getting a good education
        2. Ute participation in administration of schools

    B. Preservation of Ute cultural traditions
    C. Community development
    D. Individual adjustment and well-being
    E. Minimizing discrimination against Utes
    F. Adequate services

        1. Public services
        2. Social services (medical/dental, hospital facilities, counseling, recreation, elderly care, legal aid)

IV. ENVIRONMENTAL QUALITY

    A. Air quality (good visibility, good smelling air, air without irritants and contaminants)
    B. Water quality

        1. Good drinking water (good tasting and smelling water, clean water, water without contaminants)
        2. Good water in rivers, streams, and lakes (for recreation and fish and wildlife)
        3. Water of adequate quality for industrial use

    C. Adequate water supply

        1. For drinking
        2. For recreation
        3. For industrial and other uses

    D. Protecting fish and wildlife

        1. Protecting fish
        2. Protecting big game
        3. Protecting small game and upland fowl
        4. Protecting other wildlife

    E. Protecting natural vegetation (plant life)

        1. Forests
        2. Grasslands
        3. Desert rangelands
        4. Stream vegetation
        5. Marshlands

Table 2.2-2 Continued.

F. Not despoiling the landscape

    1. Keeping the land free of litter and waste
    2. Restoration of altered (mined, excavated) land
    3. Keeping land in a natural state

2.3 Survey Test of Panel Identified Goals

Three bilingual (Ute/English) interviewers were hired to interview a randomly selected sample of Ute citizens during early 1977. Advertizing, interview, and hiring of these interviewers was done by the Ute Tribal Personnel Office in Ft. Duchesne. Interviewers were oriented to the project in a one-day training session with the project staff before beginning their assignment.

Because variances in the responses to questions of the type being asked in these interviews were not known in advance, the size of the sample was selected arbitrarily. It was decided to draw a random list of 100 interviewees from the Ute tribal membership role. Further, it was decided to restrict this list to Utes residing in the Uintah Basin and at least 16 years of age. The number of the 100 remaining after netting out deaths and those who had changed residence was 81. Interviewees were divided in approximately equal numbers among the interviewers with some consideration allowed for ease of access and keeping time and travel costs as low as possible. A copy of the survey instrument used is contained in Appendix E.

2.3.1 The Survey Instrument

The survey instrument was basically a restatement of the goals and first level subgoals obtained from interviews with the goal-identification panelists. Also, it contained a listing of 15 Ute projects and potential developments and six questions aimed at obtaining the respondents' attitudes toward living on the reservation.

The respondents were asked to consider whether or not they thought a given goal-subgoal was important for the Ute Tribe and its members. If a given goal would improve what the respondent would like life to be like on the reservation, then it was to be scored as an important goal. If not, then it would be scored as unimportant. The intensity of response was subdivided over a 7-point scale between 7 (highly desirable/of great value) and 1 (highly undesirable/of great disvalue).

Past and potential developments were ranked similarly but in terms of their consistency with Ute goals (FDEV) and Ute tribal traditions (HDEV). Respondents were asked to indicate for each of 15 developments whether initiation or expansion of that activity would be completely compatible or

completely incompatible with Ute goals and Ute tribal traditions, respectively.

2.3.2 Results of the Survey

The response obtained in the survey of the goals and subgoals was consistent with the results obtained from the panelists. Table 2.3-1 lists 24 goals rated important by the panel. For 21 of the 24, more than 90 percent of those surveyed also believed these goals and subgoals to be desirable. The three exceptions were 1) decreasing alcoholism at 79 percent; 2) reducing the role of non-Utes at 89 percent; and 3) improving recreation at 90 percent. Only two goals identified by the panel were considered undesirable by as many as 2 percent of those surveyed. These were the goals of reducing non-Ute roles and increasing Ute participation in local schools.

Table 2.3-1. Survey response to goal identification questions.

Goals	Desirable (percent)	Not Significant (percent)	Undesirable (percent)
		Responses	
Retaining rights to resources	98	2	0
Reducing roles of non-Utes	89	9	2
Increasing economic independence	95	5	0
Increase individual participation in tribal decisions	96	2	1
Increase planning and management capabilities	98	2	0
Increase income opportunities	99	1	0
Create job opportunities	98	2	0
Increase economic well-being	95	4	1
Increase educational opportunities	97	2	1
Increase Ute participation in local schools	92	6	2
Preservation of Ute culture	98	1	0
Maintain sacred ceremonial places	96	4	0
Decrease alcoholism	79	20	1
Eliminate discrimination	98	3	0
Provide medical services	99	1	0
Provide adequate housing	98	2	0
Improve recreation	91	10	0
Provide elderly care	98	2	0
Provide legal aid	98	2	0
Maintain air quality	96	4	0
Maintain water quality	96	4	0
Protect fish and wildlife	99	1	0
Protect natural vegetation	98	3	0
Protect landscape	99	1	0

Based on these results, it was decided that goals and subgoals identified by the panelists provided a sufficiently accurate representation of Ute tribal goals to proceed with the identification of operational indicators.

Responses to other survey questions not pertaining to the goals and subgoals are contained in Appendix F.

2.4   Identification of Operational Indicators
for Ute Goals

The goal statements developed through interaction with the Ute Indian Tribe presented in Table 2.2-2 provide an excellent overview of Indian concerns, but they are not the quantitative indicators required for detailed planning. The project team identified over 130 items that might be measured as expressions of progress toward these goals. This number, of course, is far too many to incorporate in any sort of modeling objective function and had to be reduced, partly on the basis of data collection difficulties and partly on the basis of eliminating information redundancy.

Judgments based on these principles were used to reduce the total set of goal indicators to the 23 shown in Table 2.4-1. Team qualitative judgments on probable interactive causal relationships among them are presented in Table 2.4-2 and shown to cover more than half of the possible combinations.

The lack of precision in this procedure for reducing the Indian goals into quantitative planning indicators has several weaknesses. Foremost among these is that event, time, and place specificity are lacking from a simple cross-impact matrix. As an example, the water quality may be satisfactory over a large body of water as a whole. However, one small stream entering the body may contain a concentration of one pollutant that is totally unsatisfactory. Likewise, the timing of a given measurement may be critical in determining its importance as an indicator of goal achievement. Time frame differences are particularly evident when comparing environmental and economic variables; the former tend to be very time- and space-specific while economic variables tend to be measured in annual or quarterly increments over relatively large geographic spaces.

Another serious constraint is indivisibility among indicators or the difficulty of finding real-world measurements. In many instances, data on important indicators are not available, either because of the cost of gathering it or because of lack of interest prior to the emergence of the issue calling for the information.

The operational indicators presented in Table 2.4-1 are probably as explicit a list as can be developed in the absence of real-world data and explicit management or development questions to be evaluated in a more formal modeling approach. Appendix G contains an extensive list of potentially measurable indicators arrayed within the goal and subgoal areas, which were developed in the previous section.

Table 2.4-1. Operational indicators of Ute goal achievement.

Tribal Self-Determination

1. Percent of total acreage on reservation over which Utes (individuals and tribe) maintain control [control = land owned or leased by Utes]
2. Percent of total Ute water rights (based on irrigable acreage) over which Utes maintain control [control = present and deferred beneficial water use]
3. Percent of total Ute mineral and energy resources developed or leased by Utes
4. Percent of Ute management positions held by Utes
5. Percent of total tribal income from tribal investments and resource leases

Economic Well-Being

6. Total gross tribal income
7. Total net tribal income
8. Unemployment rate (number of people out of work and actively seeking work per capita income)
9. Per capita income
10. Total tribal net worth
11. Gini coefficient (measurement of the inequality of the distribution of income)
12. Percent of Utes in unskilled occupations

Social Well-Being

13. Median Ute educational level
14. Percent of Utes graduating from high school
15. Percent of total gross tribal income spent on social services
16. Ute life expectancy versus national life expectancy
17. Ute arrest rate versus national rate [includes drinking-related arrests]
18. Ute suicide rate versus national rate
19. Percent of Ute homes with indoor plumbing and electricity
20. Percent of Utes who speak Ute

Environmental Quality

21. Water quality (as measured by an appropriate CEQ water quality index)
22. Air quality (as measured by an appropriate CEQ air quality index)
23. Percent of total gross tribal income spent on environmental control

Table 2.4-2. Cross-impact matrix for identifying direct cause-and-effect relationships among the critical goal achievement indicators.

Impacted Variables (Impactees)

Impacting Variables (Impactors)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X	X	X	X	X	X	X	X	X	X	0	X	0	0	0	X	X	X	0	0	X	X	0
2	X	X	X	X	X	X	X	X	X	X	0	X	0	0	0	X	X	X	0	0	X	X	0
3	X	X	X	X	X	X	X	X	X	X	0	0	0	0	0	0	0	0	0	0	X	X	X
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	X	X	0
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	0	0	X	X
6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	0	0	X	0
7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	0	0	X	0
8	0	0	0	X	0	X	0	X	X	X	X	X	X	X	X	X	X	X	0	0	0	X	0
9	X	X	X	X	0	0	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	0	0
10	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X
11	X	X	0	X	0	0	0	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0
12	X	X	0	X	0	0	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0
13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0
14	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0
15	0	0	0	0	0	0	0	X	X	X	X	X	X	X	X	X	X	X	0	0	0	X	X
16	0	0	0	X	0	0	0	0	0	0	X	0	0	0	X	0	0	0	0	0	0	0	0
17	X	X	0	X	0	0	0	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	X	0	X	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	X	X	0	0	0	0	0
20	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	?	?	0	X	0	0	0
21	X	X	X	0	X	X	X	0	X	X	0	0	0	0	0	0	0	0	0	0	0	X	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	X	X
23	X	X	X	0	X	0	0	0	X	X	0	0	0	0	X	0	0	0	0	0	X	X	X

X denotes a direct causal relationship

0 denotes no causal relationship

3.0 ALTERNATIVE FUTURES FOR UTE RESOURCE DEVELOPMENT

3.1 Inventory List of Resource Development Possibilities

An extensive list of alternative Ute resource development possibilities has been suggested at one time or another in the past 20 years. Proposals vary widely in likelihood and importance to the tribe; and, therefore, selection of a reduced set of the more promising and important, before proceeding with a more formal analysis, will save considerable time. The reduction process is rendered more difficult by the weak documentation for most suggested development possibilities. Specific lacks include no quantitative specifics on the location and extent of the resource, demand for its use, or other details relating to technical, economic, and social feasibility. Even in those cases where developments were deemed feasible, the interests and concerns of the Ute Tribe were not known.

In an effort to obtain a more manageable inventory, members of the project team held a series of discussions over a period of two and a half months with the Ute's Resources Director and other members of the tribe's technical staff. This resulted in a list of more than 60 potential developments. An edited version appears on the left margin of Table 3.1-1 categorized under the headings of agriculture, energy resources, other minerals, water resources, wildlife resources, tourism and recreation, manufacturing and retailing, capital investments, and government. Categorization in this manner helped to identify potential sources of data and technical staff within the tribe and the Bureau of Indian Affairs (BIA) which could facilitate access to data and enhance the investigator's understanding.

The 60 alternatives were still too many for a formal modeling effort. In order to reduce the range and/or sets of developments to be considered, members of the team, in conjunction with Ute technical staff, developed a matrix (Table 3.1-1), where developments are arrayed against alternative futures for the Ute Tribe. These alternative futures express different developmental emphases and reflect varying degrees of self-determination on the part of the Tribe. They are presented in Table 3.1-1 as column headings starting with 1) a continuation of the Central Utah Water Project, 2) full tribal development, 3) minimal tribal development, and 4) tribal baseline/historical trends. Definitions of these emphases in resource development evolved through discussions with the panelists and the later survey results giving attitudes on 16 development alternatives in degrees of intensity varying between fully compatible to incompatible with Ute traditions and culture.

The exercise facilitated reducing the list by giving combinations of changes in resource use which were closely related, had higher potential

Table 3.1-1 Alternative futures and potential Ute resources development.

Developments	Central Utah Project (1)	Full Tribal Development (2)	Minimal Tribal Development (3)	Tribal Baseline/ Historical Trends (4)	Tribal Development Compatible with Ute Traditions (5)	Full Basin-Wide Development* (with both full & minimal Tribal development)
Agriculture						
Cattle Enterprise	2	2	0	1	1	*These futures ((6) and (7)) will be defined subsequently
Leasing of already Dv'd Land to Utes	1	2	0	1	2	
Leasing of already Dv'd Land to Non-Utes	1	2	0	1	0	
Leasing of Leland Bench Land to Utes	1	2	0	1	0	
Leasing of Leland Bench Land to Non-Utes	2	2	-1	2	0	
Leasing of Other CUP-Developed Land to Utes	2	2	0	1	0	
Leasing of Other CUP-Developed Land to Non-Utes	2	2	-1	1	0	
	2	2	0	1	0	
Leland Bench Tribal Enterprise	2	2	0	1	0	
Individually-Owned Allotments	2	2	0	1	1	
Timber Leasing to Non-Utes	1	2	-1	1	0	
Energy Resources						
Joint Venture Oil & Gas Development	0	2	0	0	0	
Oil & Gas Leases	1	1	-1	1	0	
Ute-Financed Oil & Gas Development	0	2	0	0	0	
Joint Venture Oil Shale Development	2	2	0	0	0	
Oil Shale Leases	1	1	-1	0	0	
Ute-Financed Oil Shale Development	2	2	0	0	0	
Joint Venture Tar Sands Development	1	2	0	0	0	
Tar Sands Leases	1	1	-1	0	0	
Ute-Financed Tar Sands Development	1	2	0	0	0	
Joint Venture Uranium Development	1	2	0	0	0	
Uranium Leases	1	1	-1	0	0	
Ute-Financed Uranium Development	1	1	0	0	0	
Joint Venture Coal Development	2	2	0	0	0	
Coal Leases	2	1	-1	0	0	
Ute-Financed Coal Development	2	2	0	0	0	
Joint Venture Coal-Fired Steam Production	2	2	0	0	0	
Ute-Financed Coal-Fired Steam Production	2	2	0	0	0	
Other Minerals						
Joint Venture Phosphate Development	0	2	0	0	0	
Phosphate Leases	0	1	0	0	0	
Ute-Financed Phosphate Development	0	2	0	0	0	
Joint Venture Gilsonite	0	2	0	0	0	
Gilsonite Leases	0	1	0	0	0	
Ute-Financed Gilsonite Development	0	2	0	0	0	
Sand & Gravel Leases	1	2	1	1	0	
Ute-Financed Sand & Gravel	2	2	2	0	0	
Joint Venture Exotic Minerals (Copper, Gold, Iron) Development	1	2	0	0	0	
Exotic Minerals Leases	1	1	0	0	0	
Ute-Financed Exotic Minerals Development	1	2	0	0	0	
Water Resources						
Surface						
Municipal (Uintah Unit)	1	2	0	1	0	
Agricultural (Uintah & Upalco Units; Starvation)	2	2	0	1	0	
Industrial (Uintah Unit)	1	2	0	1	0	
Groundwater (Uriah Heaps, Big Springs, Uriah Heaps Supplemental Well)	1	2	0	1	0	

Wildlife Resources	Ute	Non-Ute								
Big Game	1	1	2	0	0	-1	1	1	2	-1
Small Game	1	1	2	1	0	0	1	1	2	0
Upland Fowl	2	2	2	1	0	0	1	1	2	0
Fisheries	2	1	2	1	0	0	2	1	2	0
Pheasant Farm Enterprise	0	0	2	2	0	0	0	0	1	0

Tourism & Recreation						
Water-Based (Boating, Fishing, Camping)						
Twin Pots	2	2	0	1	1	
Cedar View	1	2	0	1	1	
Midview	1	2	0	1	1	
Bottle Hollow	2	1	0	1	1	
Taskeetch	2	2	0	0	1	
Uintah	2	2	0	0	1	
Lower Stillwater	2	2	0	0	0	
Weaver	1	1	0	1	1	
Towave	1	1	-1	1	1	
Big Springs	1	2	-1	1	1	
White River	0	2	0	0	1	
Facilities-Based						
Bottle Hollow	1	1	0	1	1	
Golf Course	0	2	0	0	0	
Florence Creek Lodge	1	1	0	1	0	
Bowling Alley	1	1	-1	1	1	
Campgrounds (Lower Stillwater, Taskeetch, Uintah, Other)	2	2	0	0	1	
Fort Duchesne Circle	1	1	0	1	1	
Rodeo Grounds & Racetrack	1	2	0	1	1	
Land-Based (Hunting, Hiking, Horseback, Riding, Camping, Snowmobiling)						
Youth Camp in Uintah Canyon	1	1	0	1	1	
Nu-Tuweep Hunting Lodge	0	1	-1	-1	1	
Other	1	1	0	1	1	

Table 3.1-1 Continued.

Developments	Central Utah Project (1)	Full Tribal Development (2)	Minimal Tribal Development (3)	Tribal Baseline/ Historical Trends (4)	Tribal Development Compatible with Ute Traditions (5)	Full Basin-Wide Development* (with both full & minimal Tribal development)
Manufacturing & Retailing						
Ute Fab	1	1	0	1	1	
Ute Lab	1	1	0	1	1	
Ute Tannery	0	2	0	0	1	
Ute Casting	1	1	0	1	1	
Shopping Center on Reservation	1	2	0	1	1	
Capital Investment						
Savings	1	2	0	1	1	
Stocks & Bonds	1	2	0	1	1	
Government						
Tribal						
Facilities	0	2	0	1	1	
Services						
Education	0	2	0	2	1	
Public Services	0	2	0	2	1	
Social Services	0	2	0	2	1	
Community						
Facilities	0	2	0	1	1	
Services	0	2	0	2	1	
Related Developments						

impact (importance to) on the tribe, and were of a more critical nature in terms of near term decision points in the management of tribal affairs. Special concern was attached to those which 1) involved negotiation with the surrounding white community, the State of Utah, and petroleum companies seeking access to the Ute's water supplies; and/or 2) appeared to have unusually high impact on goal areas which had been identified earlier.

Obviously, not all interesting combinations of developments could be evaluated in a formal treatment of alternative futures. Tribal interest, limitations of time and budget, data availability, and the willingness of the Ute's to allow data to be used all influenced the set of alternative futures finally chosen. Additionally, members of the project team felt that near-term supply and demand conditions for resources and/or commodities and services generated with Ute resources should figure prominently in their choice. Finally, known constraints to development, if not preemptive, were included as a part of the description of each alternative future chosen for analysis.

3.1.1 Demand Conditions

The Uintah Basin, where the Uintah and Ouray Reservation is situated, is located in a relatively remote, sparsely settled, and low average income portion of Utah. Markets for most commodities and services produced in the area are extremely limited. In the past, the primary source of income was from agriculture and ranching enterprises. Since 1950, regional income has been augmented by exploration, discovery, and extraction of oil, natural gas, and related petroleum.

The pattern of demand for Ute resources is very similar. The Indian population is too small to be an attractive market, even including the outside white community, for large-scale retailing operations, manufactured goods and/or services. Primary sources of revenue to the Utes have traditionally been from land settlements, rental of farm and ranch lands, and, more recently, from royalties and leases associated with the development of oil and gas and water resources. Additional income requires export to regional and national markets where Indian production must compete with products and resources derived from the full gamut of state, federal, and private sources. There is little hope of expansion of the local, or even regional, markets to increase prices for Ute resources and products above national and world market prices, less the transport and marketing costs associated with gaining access to and maintaining a share of these markets.

3.1.2 Supply Conditions

The potential supply of Ute resources and products is not well known, and considerable effort and expense would be required for a thorough evaluation. Tribal land area, mineral rights, water rights, fishing and hunting rights, etc., continues as subjects for litigation and negotiation with surrounding political entities. The extent of minerals exploration is limited, and, even where significant exploratory work has been completed, only limited effort has been made to utilize that information for maximizing the value of oil and gas yields or mineral development for the Tribe or to trace implications on water availability or use.

Numerous jurisdictional problems follow any suggestion for changing the status quo in resource use. Many changes introduced in the surrounding communities and nation over the past 90 years have had unexpected and, sometimes, very adverse impacts on the Indian people. Therefore, an Indian attitude which includes passive and, sometimes, very active resistance to suggested changes in resource use is understandable and predictable.

Increasing production from Indian sources typically requires large quantities of investment capital. Although the Utes have initiated enterprises with tribal funds, most have involved some combination of Ute plus federal, Ute plus federal and state, and Ute plus federal and private industry funding. The magnitude of capital expenditure, technical and management expertise, and market information that is required for most types of development, are quite beyond those resources and capabilities which currently are maintained by the Ute Tribe. Hence, resource development is further complicated by the necessity of forming workable legal and contractual linkages with outside entities which can provide the capital, expertise, training, and market access that is required for success. The sections which follow examine some of these constraints explicitly as a part of modeling the impacts of alternative futures on indicators of Ute goal achievement.

3.2 Alternative Ute Resources Development Futures

3.2.1 Overview

The Ute Tribe controls a wide range of undeveloped natural resources. As a consequence, the tribe is faced by a complex array of sometimes-competing alternatives for developing those resources. In an initial attempt to identify realistic alternative futures for the development of Ute resources, a comprehensive list of options was constructed (see Table 3.1-1). For each option, qualitative estimates were made of the level of activity expected to occur under each of four alternative futures (designated in Table 3.1-1 as the historical trends/baseline future, the full Tribal development future, the minimal Tribal development future, and the Central Utah Project future). The developmental options facing the tribe are highly varied and become further complicated when one considers not only the potential levels of development activity, as listed in Table 3.1-1, but also timing of development and the complementarities and competition among alternative development options in the use of natural, fiscal, or human resources.

In addition, the options for development of tribally-held resources cannot be projected or assessed without regard to the surrounding non-tribal development and economic activity. That is, development of tribal resources will, in many instances, be driven (or limited) by demands for those resources which originate in the surrounding non-Indian community locally, regionally, and nationally.

In order to deal with the many complexities of defining alternative futures in terms of the many Indian and non-Indian development opportunities in the Uintah Basin, it was decided to focus the modeling effort on optimizing a particular quantity or set of quantities (that are of interest to Ute planners and decision makers) subject to a set of general resource development constraints. That is, rather than prespecifying levels for a list of development options, alternative futures were defined by specifying a set of general resources development constraints and letting a computer model select the "best" development options to maximize selected Ute social or economic variables thought to be important by the tribe.

3.2.2 Definition of Alternative Futures

The constraints defining a range of alternative Ute resources development futures, were specified by the project staff in conjunction with Ute tribal planners on 1) future investments in Ute tribal enterprises, 2) future water availability, and 3) anticipated future income from oil and gas leases. Combination of these specifications yields three broadly stated alternative futures, called the "no-growth," the "moderate-growth," and the "maximum-growth" futures. These represent, respectively, futures in the region and the Uintah Basin which would see 1) no increase in the demand for tribal goods and services and require a gradual decline in expected Ute income from mineral leases, 2) moderate growth and expansion in tribal enterprises coupled with a decrease in expected revenue from mineral resources, conditions which the tribal planners believe to be reflective of a continuation of historical trends, and 3) substantial growth in tribal investments in enterprises, in water availability (due to augmentation from the Central Utah Project), and in

potential revenue in oil and gas leases. The limits on investment, water, and mineral lease income that were assumed for each future are listed in Tables 3.2-1 through 3.2-3.

Under the no-growth future, no additional economic investment was allowed in any of the Ute enterprises above the 1976 levels except for the tannery, which was not complete in that year. Under the moderate-growth future, only moderate investments were allowed in the Ute enterprises over the next several years. Finally, under the maximum-growth option, additional investments were allowed in tribal enterprises that amounted to three to five times the estimated 1976 net worth values. It should be noted that, in general, the water available to the tribe is the same for each of the three Ute-specific alternative futures. The only exception to this is that in the final years of the maximum-growth future, the constraint on available water was increased from 318.3 to 386.3 thousand acre-feet. This difference in water availability was designed to allow for the possibility of agricultural development on Leland Bench.

Table 3.2-1. Allowable maximum investments by Ute future.

Enterprise	Estimated 1976 Net Worth (10^3)	Maximum Allowable Additional Investment		
		No-Growth	Moderate-Growth (10^3)	Maximum-Growth
Bottle Hollow	3,322	0	1,000	6,600
Bowling Alley	365	0	365	650
Water Enterprise	1,276	0	1,276	5,000
Ute Lab	149	0	150	350
Ute Fab	939	0	100	5,000
Tannery	521	521	521	1,000
Agricultural Enterprise	781	0	780	4,000
Recreational Enterprise	50	0	100	950
Leland Bench Development	0	0	8,000	8,000

Table 3.2-2. Available water by Ute future.

Year of Simulation	Water Available (1,000 af)		
	No-Growth	Moderate-Growth	Maximum-Growth
1	273.1	273.1	273.1
2-3	276.5	276.5	276.5
4-7	318.3	318.3	386.3

Table 3.2-3. Maximum oil and gas lease income by Ute future.

Year of Simulation	Oil and Gas Lease Income (10^3)		
	No-Growth	Moderate-Growth	Maximum-Growth
1	5,500	5,500	5,500
2	5,000	5,000	6,000
3	4,500	4,500	6,500
4	4,000	4,000	7,000
5	3,500	3,500	7,500
6	3,000	3,000	8,000
7	2,500	2,500	8,500

4.0 EVALUATION OF ALTERNATIVE FUTURES

4.1 Model Development

Seven steps were followed in applying a linear programming approach in identifying developmental policies and their impacts and trade offs. These steps, in the order in which they were conducted, are: 1) identification of goals; 2) identification of indicators; 3) identification of critical indicators and model variables; 4) collection of historical data; 5) estimation of model coefficients; 6) formulation of the linear programming model; and 7) utilization of the linear programming model to identify development policies, impacts, and trade offs. The preceding chapters documented the first three of these steps. This chapter deals with steps 4 through 7.

4.1.1 Overview of Linear Programming and Policy Identification

Formulation of an overall Ute resource development policy requires aggregation of information contained in a large number of exogenous or control variables. The approach used for this project to develop policies that are in some sense optimal utilized linear programming in the framework of Figure 4.1-1. The principle was to search the reasonable range for each variable to find a set of variable values that best promotes the identified Ute goals (Table 2.3-1) as measured by the operational indicators (Table 2.4-1). In the linear programming formulation, each variable is represented in one or more constraint equations, and a tribal goal is represented by an objective function.

The best or optimal policy depends on the tribal goal. The optimal policy for a given goal is expressed in the set of control variable values that maximizes the value of the objective function formulated for that goal. Once an optimal policy has been formulated with respect to a given goal, one can use the objective functions formulated for the other goals to quantify the impacts with respect to those goals. Therefore, as shown at the bottom of Figure 4.1-1, each policy optimized with respect to a given goal has a set of associated impacts with respect to other goals.

The focus of this project, as illustrated in Figure 4.1-1 and the above discussion, has been to combine a linear programming model with information about tribal developmental opportunities to identify "best" policies for achieving alternative tribal goals and the social and economic trade offs among those policies. Tribal input was used to insure accurate portrayal of the tribe's goals and present developmental and social and economic situation. In addition, much time and effort was directed at supplying data and information generated by the project to the tribal planners for their use in managing tribal resources.
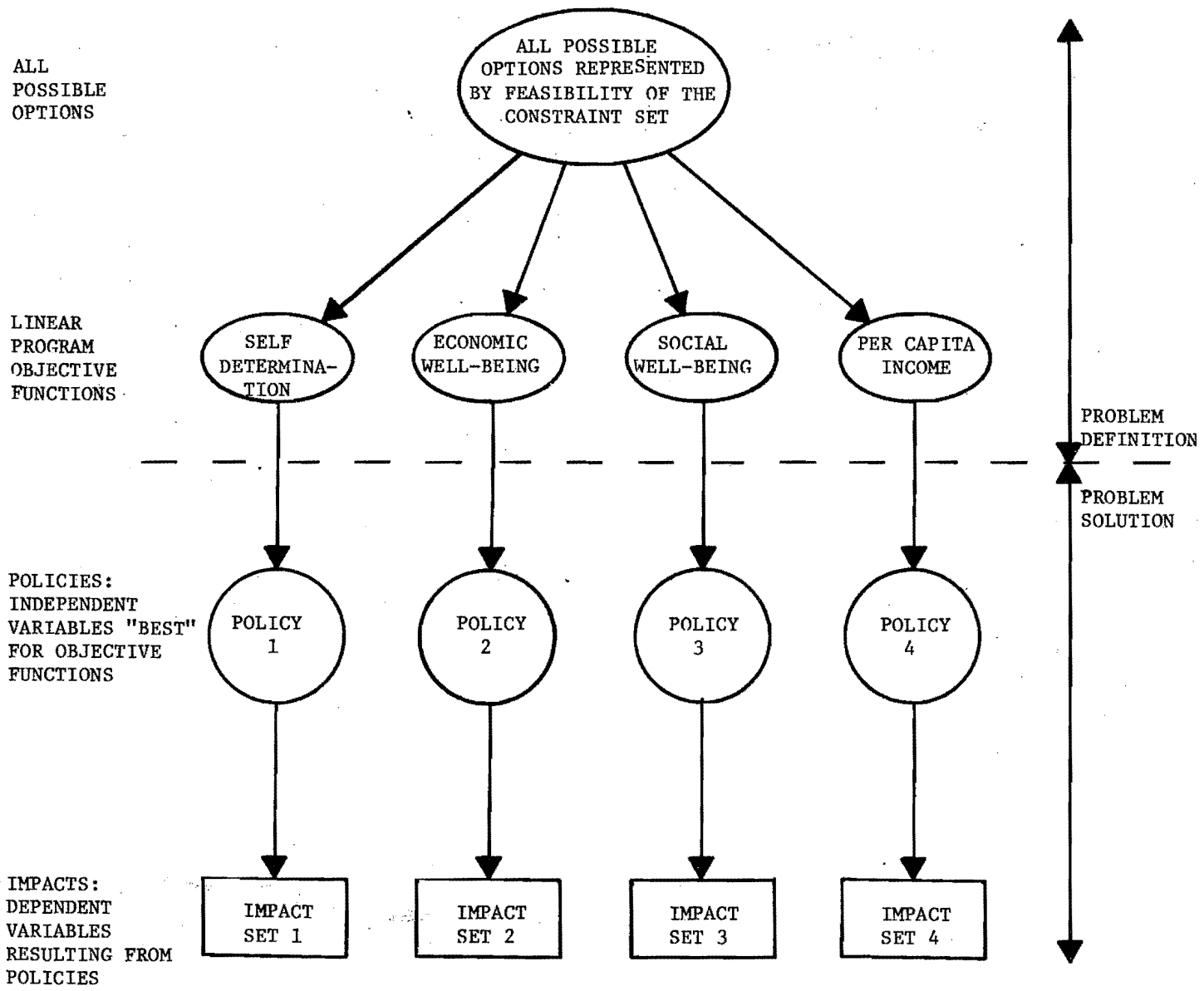
Figure 4.1-2 Policy and impact identification using a linear programming model.

Table 4.1-1. Variables for the cross-impact model.

Variables	Acronym	Not in Original Model	Endogenous	Exogenous	Ute Decision Variables	Dropped Due to Lack of Data	Dropped Due to Lack of Significant t-Regressions
Tribal Self-Determination							
1. Total acreage over which Utes maintain control	ACRE01		X				
2. Total water rights controlled by Utes (acres of irrigated land)	IRRI02			X			
3. Total mineral resources developed or leased by Utes	LEAS03		X				
4. Percent of Ute management positions held by Utes	MGMT04		X				
5. Tribal income from resources leases	INCM05			X			
6. Internal investments: agricultural capital and M&O	AGRI06	X		X	X		
7A. Internal investments: commercial capital	COM07A	X		X	X		
7B. Internal investments: commercial M&O	COM07B	X	X				
8A. Internal investments: industrial capital	IND08A	X		X	X		
8B. Internal investments: industrial M&O	IND08B	X	X				
9. Internal investments: recreational capital and M&O	RECR09	X		X	X		
10. Tribal income spent on environmental control	ENVT10	X		X	X		X
11. Internal investments: cultural (such as museum and land purchases)	CULT11	X		X	X		
12. External investments (in stock)	EXTN12	X		X	X		
13. Income from interest	INST13	X	X				
14. Income from grants and other sources	GRNT14	X			X		
15. Water use: agriculture	AGWT15	X	X				
16. Water use: culinary (for tribal members)	CUWT16	X	X				X
17. Water use: industrial (such as sales to energy companies)	INWT17	X		X	X		
18. Water use: commercial (such as sales to towns in the Basin)	CMWT18	X		X	X		

Table 4.1-1. Continued.

Variables	Acronym	Not in Original Model	Endogenous	Exogenous	Ute Decision Variables	Dropped Due to Lack of Data	Dropped Due to Lack of Significant t-Regressions
Economic Well-Being							
19. Total gross tribal income	GROS19		X				X
20. Net tribal income	NETI20		X				
20A. Other tribal expenses	TXP20A	X	X				
20B. Estimated balance in external investments	BNK20B	X	X				
21. Unemployment rate	UNEM21		X				
22. Per capita income	PCAP22		X				
23. Enterprise income (net)	ENTI23	X	X				
24. Local tribal income	LCLI24	X	X				
25. Percent of Utes in unskilled occupations	UNSK25		X				
Social Well-Being							
26. Median Ute educational level	EDLV26		X				
27. Percent of Utes graduating from high school	GRAD27		X				
28. Tribal income spent on social services	SOCS28			X	X		X
29. Ute life expectancy (death rate)	DETH29		X				
30. Ute arrest rate	ARST30		X				
31. Ute suicide rate	SUIC31		X				
32. Percent of homes with indoor plumbing and electricity	PLUM32		X				
33. Percent of Utes who speak Ute	UTEL33		X				
34. Alcohol-related arrests	ALCO34	X	X	X			
35. Ute population	POPU35		X				X
36. New housing units (annual)	HOUS36	X	X				

Table 4.1-1. Continued.

Variables	Acronym	Not in Original Model	Endogenous	Exogenous	Ute Decision Variables	Dropped Due to Lack of Data	Dropped Due to Lack of Significant t-Regressions
Environmental Quality							
37. Water quality	WAQU37		X			X	
38. Air quality	ARQU38		X			X	
39. Acres of recreational and wildlife habitat	WILD39	X	X				
Additional Necessary Accounting Variables							
40. Commercial investment: Bottle Hollow capital expansion (annual)	BOHO40	X		X	X		
41. Commercial investment: Water enterprise capital expansion (annual)	WATR41	X		X	X		
42. Commercial investment: Ute lab capital expansion (annual)	ULAB42	X		X	X		
43. Commercial investment: Bowling alley capital expansion (annual)	BOWL43	X		X	X		
44. Agricultural investment: Cattle enterprise capital expansion (annual)	AGRI44	X		X	X		
45. Industrial investment: Ute fab capital expansion (annual)	UFAB45	X		X	X		
46. Industrial investment: Tannery capital expansion (annual)	UTAN46	X		X	X		
47. Recreational investment: Florence Creek capital expansion (annual)	RECR47	X		X	X		
48. Net worth: Bottle Hollow (cumulative investment)	BOHO48	X	X				

Table 4.1-1.   Continued

Variables	Acronym	Not in Original Model	Endogenous	Exogenous	Ute Decision Variables	Dropped Due to Lack of Data	Dropped Due to Lack of Significant t-Regressions
49. Net worth: Water enterprise (cumulative investment)	WATR49	X	X				
50. Net worth: Ute lab (cumulative investment)	ULAB50	X	X				
51. Net worth: Bowling alley (cumulative investment)	BOWL51	X	X				
52. Net worth: Cattle enterprise (cumulative investment)	AGRI52	X	X				
53. Net worth: Ute fab (cumulative investment)	UFAB53	X	X				
54. Net worth: Tannery (cumulative investment)	UTAN54	X	X				
55. Net worth: Recreation enterprise (cumulative investment)	RECR55	X	X				

4.1.2 Variable Specification

A cross-impact model was constructed to simulate the social and economic consequences of alternative Ute resources development activities. The cross-impact model contains a number of important social and economic variables (sometimes referred to as indicators or indicator variables) that relate to or describe the major social and economic conditions prevailing on the Uintah and Ouray Reservation. These variables are defined in Table 4.1-1 along with their identifying acronyms. Since the acronyms are used liberally in the text of this report, Appendix B has been supplied to aid the reader in matching acronyms with definitions. In Appendix B, the variables are listed in alphabetical order of their acronyms.

4.1.2.1 Variables identified. Two very important tribal resources are capital and water. These resources can be allocated in different ways to respond to improve the lives of tribal members. Variables representing potential dollar investment categories and water allocation categories (variables 6 through 18 in Table 4.1-1) are included in the model. Since these variables represent decisions of the tribe for its future, they were placed in the "tribal self-determination" category in Table 4.1-1.

Other variables were included at the request of the tribal planners. Examples are "34 alcohol-related arrests" and "36 new housing units (annual)," which were placed into the "social well-being" category of Table 4.1-1.

In order to assure consistent dollar accounting at a sufficient level of detail in the linear programming formulation, the "accounting-type" variables listed in the last major category in Table 4.1-1 were added. These variables were used in the linear programming model to "balance the books" in terms of tribal income, investments, and expenditures.

4.1.2.2 Types of variables. As shown in Table 4.1-1, the variables in the model have been classified into endogenous, exogenous, and Ute decision variables. The endogenous variables are those whose values can be simulated over time given information about the exogenous variables. The exogenous variables can be thought of as choices which the Indians can make and become the driving forces that cause the other variables to change through time. Some changes in the exogenous variables are due to economic conditions in the Uintah Basin, some relate to construction and operation of the Central Utah Project, and some are due to decisions of the Ute Tribe. Those exogenous variables controlled by Ute tribal decisions are called Ute decision variables in Table 4.1-1. The linear programming model was used to compute the values of decision variables over time necessary to optimize some combination of the endogenous and exogenous variables.

4.1.3 Data Collection

A tremendous effort was required to collect historical data on the variables used in the model. The process was complicated by a number of factors. First, the data available from the various tribal offices (and to an extent from the Bureau of Indian Affairs) are frequently spotty.

Sometimes data which one expects to be available do not exist at all. Second, an inherent mistrust of non-Indians makes many tribal members reluctant to supply even the most mundane demographic data without formal clearance from the Business Committee. Finally, the tribe is very concerned, and rightly so, about making historical financial data available to outsiders.

The major source of financial data was the annual tribal reports. These supplied information on annual capital investments, maintenance and operation costs, profit and loss figures for some enterprises, and income figures for grants, oil leases, etc. Confidential data on enterprise profits, losses, expenses, etc., were obtained from another source.

Overall, 11 consecutive years of data (1966-1976) were assembled for most of the variables. As noted in the next-to-last column of Table 4.1-1, data were insufficient for a few of the variables, and these were, therefore, dropped from the model.

4.1.4 Model Estimation

4.1.4.1 Methodology. The linear model used in the study can be formulated in difference equation form as:

$$\vec{X}_n = \vec{X}_{n-1} + \vec{A} \; \Delta X_{n-1} + \vec{B} \; \Delta Y_{n-1}$$

where $\vec{X}_n$ is the vector of endogenous variables in the system at time n; $\vec{Y}_n$ is the vector of exogenous variables at time n; $\vec{A}$ and $\vec{B}$ are matrices of constant coefficients; and ΔX_n and ΔY_n are changes in the endogenous and exogenous variables, respectively.

The model is calibrated by using historical measures of the annual changes in the endogenous and exogenous variables to estimate A and B. Estimation of these coefficients for the accounting variables (40 through 55 on Table 4.1-1) is a matter of definition. For example, net tribal income is defined as

Net tribal income = gross tribal income - total tribal expenditures

In this case, the coefficients for calculating net tribal income from gross tribal income and total tribal expenditures are 1 and -1, respectively, or:

Net tribal income = (1) x gross tribal income + (-1) x total tribal expenditures

For the nonaccounting variables, the task involves utilizing historical data to obtain statistically meaningful estimates of hypothesized causal connections between the variables in the model. This was done for the cross-impact model by completing the following steps:

1. Arranging the historical, annual data on each of the model variables in the order of their observed annual changes.

Table 4.1-2. Summary of regression statistics for the cross-impact model.

Dependent Variable	Independent Variable Definition	Significant Independent Variables	Estimated Coefficients	t- Statistics	Probability Level	R^2
ACRE01	Total acreage over which Utes maintain control	ACRE01	0.205026E+01	4.786	0.995	0.897
		IRRI02	0.544771E+01	2.865	0.95	
		AGRI06	0.643101E+00	5.476	0.995	
		ENVT10	-0.711401E-01	-1.726	0.8	
LEAS03	Total mineral resources developed or leased by Utes	LEAS03	0.650226E+00	2.188	0.9	0.560
		RECR09	-0.102614E+00	-2.573	0.95	
		INDO8B	0.176214E+00	2.716	0.95	
MGMT04	Percent of Ute management positions held by Utes	IRRI02	0.229417E+01	1.769	0.8	0.802
		AGRI06	0.148833E+00	4.190	0.99	
		RECR09	0.788899E-02	-2.344	0.9	
COMO7B**	Internal investment: commercial M&O					
INDO8B**	Internal investment: industrial M&O					
INST13**	Income from interest					
AGWT15	Water use: agricultural	IRRI02*	0.987586E+00	33.835	0.999999	0.9921
CUWT16	Water use: culinary (for tribal members)	COMO7A	0.194899E-05	6.718	0.999	0.945
		CULT11	-0.373701E-05	-1.892	0.95	
		LCLI24	-0.880645E-05	0.897	0.5	
GROS19**	Total gross tribal income					
NETI20**	Net tribal income					
TXP20A	Other tribal expenses	INCM05	0.484368E+00	2.074	0.9	0.843
		COMO7B	-0.256471E+01	-3.526	0.98	
		INDO8B	-0.173132E+01	-2.016	0.9	
		SUIC31	0.849323E+02	2.960	0.95	

Table 4.1-2. Continued.

Dependent Variable	Independent Variable Definition	Significant Independent Variables	Estimated Coefficients	t-Statistics	Probability Level	R^2
BNK20B**	Estimated balance in external investments					
UNEM21	Unemployment rate	GRNT14	-0.122270E-02	-1.621	0.8	0.898
		UTEL33	0.868517E+00	3.696	0.98	
		ALCO34	-0.213741E-01	-7.361	0.999	
PCAP22	Per capita income	COMO7B	0.204538E+00	3.148	0.95	0.851
		INDO8A	0.233902E+00	3.173	0.95	
		PCAP22	0.859272E+00	6.148	0.998	
		UNSK25	0.934870E+01	2.304	0.9	
ENTI23**	Enterprise income (net)					
LCLI24	Local tribal income	ACRE01	-0.105118E+01	-2.170	0.9	
		MGMT04	0.347884E+01	4.398	0.99	
		NETI20	0.316174E-02	0.752	0.5	
		ENTI23	0.027876E-02	0.372	0.2	
UNSK25	Percent of Utes in unskilled occupations	COMO7A	-0.381164E-02	-4.619	0.99	0.974
		COMO7B	-0.418660E-02	-3.687	0.95	
		INDO8A	-0.112869E-01	-5.180	0.99	
		RECR09	0.406512E-02	2.914	0.95	
		UNSK25	0.887979E+00	14.010	0.999	
EDLV26	Median Ute educational level	PCAP22	-0.435837E-03	-3.748	0.99	0.881
		ENTI23	0.118077E-03	3.718	0.99	
		EDLV26	0.534063E+00	4.872	0.995	
GRAD27	Percent of Utes graduating from high school	UNSK25	0.651162E-01	2.337	0.9	0.648
		EDLV26	-0.535346E+01	-5.946	0.998	
DETH29	Ute life expectancy (death rate)	LEAS03	-0.439152E+00	-3.710	0.99	0.726
		ENTI23	0.578914E-01	1.667	0.8	
		ALCO34	-0.132478E+00	-2.518	0.95	

Table 4.1-2. Continued.

Dependent Variable	Independent Variable Definition	Significant Independent Variables	Estimated Coefficients	t-Statistics	Probability Level	R^2
ARST30	Ute arrest rate	COMO7A	0.168492E-01	6.200	0.999	0.867
		COMO7B	0.432042E-01	4.194	0.99	
		INDO8A	0.701664E-01	5.951	0.998	
SUIC31	Ute suicide rate	COMO7A	-0.980729E-02	-5.248	0.995	0.953
		COMO7B	-0.516439E-01	-7.022	0.999	
		INDO8A	-0.434144E-01	-5.413	0.995	
		ARST30	0.841891E-00	8.051	0.999	
PLUM32	Percent of homes with indoor plumbing and electricity	GRNT14*	0.822850E-02	3.406	0.98	0.715
		HOUS36*	0.616135E-01	2.331	0.9	
UTEL33	Percent of Utes who speak Ute	AGRI06	-0.119967E-01	-4.290	0.99	0.924
		INDO8A	0.228101E-02	4.131	0.99	
		RECR09	0.618483E-03	2.442	0.9	
		UTEL33	0.920532E+00	13.070	0.999	
ALCO34	Alcohol-related arrests	COMO7B	0.394734E+00	2.860	0.95	0.656
		INDO8A	0.613228E+00	3.851	0.99	
HOUS36	New housing units (annual)	INCM05	-0.24729E-01	-5.149	0.995	0.873
		COMO7A	0.293395E-01	2.592	0.95	
		HOUS36	-0.723278E+00	-4.474	0.995	
WILD39	Acres of recreational and wildlife habitat	IRRI02	0.270314E+02	2.246	0.9	0.769
		NETI20	0.573158E-01	5.540	0.999	
BOHO40**	Commercial investment: Bottle Hollow capital expansion (annual)					
WATR49**	Net worth: water enterprise (cumulative investment)					

Table 4.1-2. Continued.

Dependent Variable	Independent Variable Definition	Significant Independent Variables	Estimated Coefficients	t-Statistics	Probability Level	R^2
ULAB50**	Net worth: Ute lab (cumulative investment)					
BOWL51**	Net worth: bowling alley (cumulative investment)					
AGRI52**	Net worth: cattle enterprise (cumulative investment)					
UFAB53**	Net worth: Ute fab (cumulative investment)					
UTAN54**	Net worth: tannery (cumulative investment)					
RECR55	Net worth: recreation enterprise (cumulative investment)					

*Same-year coefficients.
**Accounting-type coefficients (see Chapter 3).

2. Hypothesizing where causal relations might exist between pairs of variables; that is, examining the variables to hypothesize how changes in a given variable might cause subsequent changes in other variables.

3. Testing these hypotheses utilizing appropriate statistical techniques.

4. Observing the output of these tests, reformulating hypotheses, and retesting until statistically significant coefficients are obtained.

4.1.4.2 Results of regressions. This process produced the coefficients reported in Table 4.1-2. A two-stage least-squares regression algorithm contained in the Econometrics Software Package (ESP) developed by J. P. Cooper, Graduate School of Business, University of Chicago, was used to perform the statistical analysis of the data. The ESP program is available as a canned routine on the USU B-6700 computer. A two-stage least-squares regression algorithm is necessary to ensure that the simultaneous equation system is identified.

The statistics reported in the two-stage least-squares regressions include the square of the coefficient of regression (R-square) and the t-statistic for each of the calculated cross-impact coefficients. The R-square is a general description of the overall goodness of fit of an equation with the calculated coefficients to the observed data. The t-statistic is a measure of the probability that the independent variable indeed relates to the value of the dependent one. For purposes of identifying coefficients for the cross-impact model, it was decided that coefficients would be accepted at the 0.8 probability level or better. It was also decided to try to obtain R-squared measures for the equations that would be as large as possible, preferably above 0.7. Table 4.1-2 presents these statistics for each of the equations obtained from the regression package. It is interesting to note that of the 62 calculated coefficients in the model, 55 were significant above the 0.9 probability level, 45 above the 0.95 level, and 29 above the 0.99 level. Of the 20 regression coefficients (R-square), 17 were above 0.7, 14 above 0.8, and 5 above 0.9. In comparison with the scatter typically associated with fitting regressions to social data, this should be considered as quite remarkable. Some variables were judged statistically insignificant and were dropped from the model as indicated the last column in Table 4.1-1.

It should be stressed that the cross-impact model was formulated in difference equation form. Consequently, the coefficients in Table 4.1-2 represent the change in a particular dependent variable given a unit change in an independent variable. They cannot be used to calculate the level of a dependent variable from the levels of independent variables.

The use of an econometric approach for estimating model coefficients produces individual, statistically significant equations relating dependent variables to independent variables. It does not guarantee that the equations that are estimated will be mutually consistent. This aspect of the use of econometrically estimated equations can cause two problems when the equations are later used in a linear programming model. The first is that there may be no or only a relatively small feasible region for the linear programming model. This may necessitate the reformulation of the model to eliminate one or more of those variables that contribute most to

infeasibility problem. The second problem is that the model may produce results that show apparent logical inconsistencies in the model output. In this case, careful interpretation of model results is required.

4.1.5 Implications of the Model

From examining the model coefficients, a few interesting observations can be made. First, the most significant variables are the capital and maintenance and operation (M & O) investments for commercial and industrial activities. These four variables accounted for 19 of the 34 coefficients for the exogenous variables. These variables have very significant correlations with important Ute social and economic parameters such as per capita income, unskilled labor, and suicide, arrest, and alcohol arrest rates.

On the other hand, the amount of money spent on environmental (ENVT10) and social service programs (SOCS28) seems to have little influence on the changes in any of the social and economic variables. This suggests that overall, the environmental and social service programs have little impact on tribal conditions that can be measured in the short run. Much longer time-series data would be needed to test for long-term impacts.

4.2 Linear Programming Formulation of the Model

4.2.1 General Structure

As outlined in Figure 4.1-1, the linear programming model formulation was to represent the policy options available to the Ute Indians through a set of control variables with the range of choices for each limited by a set of constraint equations. The variable set could then be optimized recursively, once for each objective function.

Optimization is achieved when the set of variables is found which maximizes the objective function while satisfying the constraints. For linear objective functions, such as those used, this is a simple task in the absence of constraints. One merely considers the sign of the coefficient in the objective function and chooses the largest or smallest value in the allowable range for the variable according to its effect upon the objective function. The linear programming technique adds the additional capability of using a constraint set to define relationships among variables. The constraint set used in this study included a variable set (as defined in Table 4.1-1) for each of seven years. This enabled the linear programming model to be used as a seven-year simulation. Additional years could be simulated by expanding the constraint set. The model consists of:

1. A set of objective functions.

2. Equations for predicting the indicator variables for each of seven future years (functional constraints).

3. Constraints which establish relationships between groups of variables which must be maintained in order to satisfy the laws of logic, economics, or nature (accounting constraints).

4.   Representations of what, in the view of the Ute planners, are practical and political realities (judgmental constraints).

The variables used in this formulation (Table 4.1-1) arise from three sources: 1) the formulation of goal achievement indicators; 2) a listing of policy variables formulated to represent those quantities over which the policy/decision makers have control; and 3) a set of accounting variables which track the effects of the policy variables. Since the interest is in a seven-year planning horizon, a letter was appended to each acronym to designate in the model year.

Two types of normalization were applied to the data on the variables before calculation of the cross-impact coefficients. The adjustments were directed at eliminating inflation effects and preventing pseudo-degeneracy caused by extremely large variations between variables in the magnitudes of the numbers. The adjustments converted all economic data to 1972 dollars and scaled down the large variables (land and dollars) by dividing by 1000. Figure 4.2-1 graphically illustrates some of the components in the model and their relationships.

4.2.2   Identification of the Objective Functions

The objective functions expressing Ute goals were identified in three steps. First, the several areas of importance for which objective functions should be constructed were identified. Second, the specific variables that made up each objective function were agreed upon. Finally, the problem of units in which the variables are measured was addressed. The four areas of primary concern 1) tribal self-determination, 2) economic well-being, 3) social well-being, and 4) environmental quality, provided the structural background for the objective functions. A fifth objective function, per capita income, was added later.

4.2.2.1   Identification of issue areas. The first effort at enumerating the areas of primary concern (important issues) was based upon the premise that interest groups active on the reservation would form political coalitions around issues of concern. While the issues may be obscure, interest group activity would stem from areas of primary concern. The premise, however, was incorrect in the judgment of the tribal planners. They were unable to identify any coalitions, with the exception of the elderly. This approach was consequently abandoned.

The second approach adopted the premise that the four major goals previously identified could be used as bases for the objective functions. Without further deliberation, attention was directed to step two. Since indicators have already been associated with the areas of concern, the next step was to decide which indicators in the cross-impact model should enter the objective functions, which should enter the constraint set, and which should be included in neither the objective functions nor the constraint set.

4.2.2.2   Identification of the objective function components. The variables were divided among these three groups by means of a quasi-Delphi approach. Each member of the tribal planning team was presented a list of indicators within each of the goal areas and asked to categorize them

Constraints	Variables for each Year							Right Hand Side
	Year A	Year B	Year C	Year D	Year E	Year F	Year G	
Constraints	Objective Functions							Right Hand Side
Year A	Accounting							Year A Initial Conditions
Year B	Functional Accounting Judgmental							Year B Initial Conditions
Year C	. . .							Year C Initial Conditions
Year D			. . .					
				. . .				
					. . .			
						. . .		
	Interyear Judgmental Constraints							Judgmental Limitations

Figure 4.2-1   Graphical representation of the linear programming model.

independently of the other group members. An indicator in the "high importance" category would become part of the objective function, an indicator in the "medium importance" category would become part of the constraint set, and "low importance" indicators would be allowed to fall where they may in the simulation. Since the working group consisted of four members, a variable was considered categorized when three group members agreed upon its classification.

All but two variables were categorized after two Delphi sessions with the group members working independently. The final two were categorized in a group meeting. The results of step two are presented in Table 4.2-1.

Table 4.2-1. Critical indicator importance.

Issue Areas and Indicators	Acronym	Level of Importance	
		High	Med.
Tribal Self-Determination			
1. Total acreage over which Utes maintain control	ACRE01	X	
2. Total water rights controlled by Utes (acres of irrigated land)	IRRI02	X	
3. Total mineral resources developed or leased by Utes	LEAS03	X	
4. Percent of Ute management positions held by Utes	MGMT04	X	
5. Tribal income from resources leases	INCM05	X	
6. Internal investments: agricultural (such as cattle enterprise)	AGRI06		X
7. Internal investments: commercial (such as Bottle Hollow)	COM07A		X
	COM07B		X
8. Internal investments: industrial (such as Ute fab and tannery)	IND08A		X
	IND08B		X
9. Internal investments: recreational (such as river trips)	RECR09		X
10. Tribal income spent on environmental control	ENVT10		X
11. Internal investments: cultural (such as museum and land purchases)	CULT11		X
12. External investments (in stock)	EXTN12	X	
13. Income from interest	INST13	X	
14. Income from grants and other sources	GRNT14		X
15. Water use: agriculture	AGWT15	X	
16. Water use: culinary (for tribal members)	CUWT16	X	
17. Water use: industrial (such as sales to energy companies)	INWT17	X	
18. Water use: commercial (such as sales to towns in the Basin)	CMWT18	X	
Economic Well-Being			
19. Total gross tribal income	GROS19	X	
20. Total net tribal income	NETI20	X	

Table 4.2-1. Continued.

Issue Areas and Indicators	Acronym	Level of Importance High	Med.
21. Unemployment rate	UNEM21	X	
22. Per capita income	PCAP22	X	
23. Percent of Utes in unskilled occupations	UNSK23		X
Social Well-Being			
26. Median Ute educational level	EDLV26	X	
27. Percent of Utes graduating from high school	GRAD27	X	
28. Tribal income spent on social services	SOCS28		X
29. Ute life expectancy (or death rate)	DETH29	X	
30. Ute arrest rate	ARST30	X	
31. Ute suicide rate	SUIC31		X
32. Percent of homes with indoor plumbing and electricity	PLUM32	X	
33. Percent of Utes who speak Ute	UTEL33	X	
34. Alcohol-related arrests	ALCO34	X	
35. Ute population	POPU35		X
36. New housing units (annual)	HOUS36		X
Environmental Quality			
37. Water quality	WAQU37	X	
38. Air quality	ARQU38		
39. Acres of recreational and wildlife habitat	WILD39	X	

4.2.2.3 Units of measurement. The results of step two severely impacted step three. It was not anticipated that such a large number of variables would be judged highly important, and, therefore, necessary as part of the objective functions. The problem here is that since the variables are mostly noncommensurate, it is difficult to construct the objective functions without presuming a set of weights to apply to the variables so that they may be added together.

Accordingly, a two-step approach was devised. The first step was to formulate the objective functions such that each variable reflected a percentage change in the indicator from the 1976 level, and weight each variable equally. The optimization problem was then solved, and information was obtained about the sensitivity of the solution to the relative variable weightings. The results were presented to the tribal planners so that they could reassess the relative importance of the indicators to which the solution is most sensitive. If required, the problem could have been solved again using the new estimates for the relative importance of the indicators in each objective function.

4.2.2.4 Initial objective functions. The four initial objective functions which were included in the multiobjective problem were formulated as follows:

$$f_1 = \frac{ACRE01}{ACRE01 \ (1976)} + \frac{IRRI02}{IRRI02 \ (1976)} - \frac{LEAS03}{LEAS03 \ (1976)} + \frac{MGMT04}{MGMT04 \ (1976)} +$$

$$\frac{INCM05}{INCM05 \ (1976)} + \frac{INST13}{INST13 \ (1976)} + \frac{AGWT15}{AGWT15 \ (1976)} + \frac{CUWT16}{CUWT16 \ (1976)} +$$

$$\frac{INWT17}{INWT17 \ (1976)} + \frac{CMWT18}{CMWT18 \ (1976)}$$

$$f_2 = \frac{GROS19}{GROS19 \ (1976)} + \frac{NETI20}{NETI20 \ (1976)} - \frac{UNEM21}{UNEM21 \ (1976)} + \frac{PCAP22}{PCAP22 \ (1976)}$$

$$f_3 = \frac{EDLV26}{EDLV26 \ (1976)} + \frac{GRAD27}{GRAD27 \ (1976)} - \frac{DETH29}{DETH29 \ (1976)} - \frac{ARST30}{ARST30 \ (1976)} +$$

$$\frac{PLUM32}{PLUM32 \ (1976)} + \frac{UTEL33}{UTEL33 \ (1976)} - \frac{ALCO34}{ALCO34 \ (1976)}$$

$$f_4 = \frac{WAQU37}{WAQU37 \ (1976)} + \frac{WILD39}{WILD39 \ (1976)}$$

A fifth objective function, per capita income, was added later to the set. It was expressed as:

$$f_5 = \frac{PCAP22}{PCAP22 \ (1976)}$$

After the elements of the objective functions had been initially identified, the model was reformulated and explicit statements of some of the variables were dropped from the model; though the variables remained implicitly in the model. These variables were INST13, AGWT15, CUWT16, INWT17, and CMWT18. In addition, numerical problems in the solution of the linear programming model required MGMT04 and GROS19 to be eliminated. The objective functions were therefore reformulated as follows:

$$f_1 = \frac{ACRE01}{ACRE01 \ (1976)} + \frac{IRRI02}{IRRI02 \ (1976)} - \frac{LEAS03}{LEAS03 \ (1976)} + \frac{INCM05}{INCM05 \ (1976)} +$$

$$\frac{BNK20B}{BNK20B \ (1976)}$$

$$f_2 = \frac{NETI20}{NETI20 \ (1976)} - \frac{UNEM21}{UNEM21 \ (1976)} + \frac{PCAP22}{PCAP22 \ (1976)}$$

$$f_3 = \frac{EDLV26}{EDLV26\ (1976)} + \frac{GRAD27}{GRAD27\ (1976)} - \frac{DETH29}{DETH29\ (1976)} - \frac{ARST30}{ARST30\ (1976)} +$$

$$\frac{PLUM32}{PLUM32\ (1976)} + \frac{UTEL33}{UTEL33\ (1976)} - \frac{ALCO34}{ALCO34\ (1976)}$$

f_4 Dropped

$$f_5 = \frac{PCAP22}{PCAP22\ (1976)}$$

4.2.3   Constraint Set

4.2.3.1   <u>Functional constraints.</u> The functional constraints are based upon the relationships discussed in Section 4.1.4. These relationships predict changes in the values of the endogenous variables for a given year based on changes in the endogenous and exogenous variables from the preceding year. The constraints follow from the basic difference equation in Section 4.1.4.1 as follows (all X's and Y's are column vectors, and A, B, and I are matrices):

$$X_n = X_{n-1} + A\ \Delta\ X_{n-1} + B\ \Delta\ Y_{n-1}$$

$$X_n = X_{n-1} + A(X_{n-1} - X_{n-2}) + B(Y_{n-1} - Y_{n-2})$$

$$X = (1 + A)X_{n-1} - A\ X_{n-2} + B\ Y_{n-1} - B\ Y_{n-2}$$

The coefficients in the A and B matrices are taken from Table 4.2-1. The matrix I is the identity matrix, and X and Y are endogenous and exogenous variables, respectively.

An example of a functional constraint can be found in the prediction of the Ute death rate (variable 29, acronym DETH29) in the fourth (or "D") year of the simulation:

DETH29(D) = DETH29(C) + (-0.439) LEAS03(C) - (-0.439) LEAS03(B) +
             (0.579) ENTI23(C) - (0.579) ENTI23(B) + (-0.133) ALCO34(C) -
             (-0.133) ALCO34(B)

(The coefficients from Table 4.2-1 have been rounded to three digits in the above example.)

Consistent with the general model structure illustrated in Figure 4.2-1, multiple years of prediction are achieved by repeating the functional constraints with the year subscripts being incremented. That is, year "C" predictions are based on values from years "C" and "B;" and so on.

4.2.3.2   <u>Judgmental constraints.</u> These constraints reflect the collective judgments of the Ute tribal planners as to allowable and reasonable values of the indicator and policy variables. The working group chose to impose restrictions on variables representing new housing

(HOUS36) and income from federal grants (GRNT14). The working group felt that at least 20 new homes must be constructed each year and that the amount of money the tribe could expect in the future from federal grants would not exceed three million dollars per year. This figure was raised to three and a half million dollars by the project staff on the basis of recent historical data and the fact that the working group meant current level of funding not adjusted for inflation from 1972 dollars. Due to the possibility of an unbounded optimal solution, income from petroleum leases was also bounded. The judgmental constraint concerning new houses and investment limitations led the project staff to impose a judgmental interyear accounting constraint, which will be discussed when the interyear accounting constraints are defined.

4.2.3.3 Accounting constraints. The accounting constraints address the two major resource areas over which the tribal policy/decision makers exercise direct control, water and money. These constraints ensure that the optimal policy strategy obtained reflects the existing limitations on these resources. Intrayear and interyear relationships are addressed separately.

Intrayear accounting constraints are directed at modeling the accounting relationships among resource variables within the same year. Both water and financial accounting is necessary. One water constraint is that the total amount of water used cannot exceed the available supply. One substitution of variables has been made to prevent degeneracies from appearing in the mathematical model. The cross-impact analysis indicated that the amount of water used for agriculture (AGWT15) can be completely determined from the acres of irrigated land (IRRI02) in the same year. Since these two variables are mathematically equivalent, only the acres of irrigated land (IRRI02) variable was used. The water balance constraint stipulates that for the first year:

$$3.429 \text{ IRRI02A} + \text{CUWT16A} + \text{INWT17A} + \text{CMWT18A} \leq \text{water available in the first year}$$

A similar constraint was formulated for each planning year simply by incrementing the alphabetic suffix on the variables.

The right-hand side of the above inequality represents the primary benefits to the tribe from the Central Utah Project. For each planning year, there will be a similar water availability limitation. The profile of these limitations should be increasing in future years (as estimated by Water and Power Resources Service, WPRS) which will allow expansion of various economic sectors on the reservation.

The second resource which impacts intrayear accounting is money. One set of constraints keeps track of the tribe's investments in the various economic sectors. The accounting variables which accomplish this task are the net worth variables for each of the enterprises and external investments (BNK20B) (for example, net worth of Bottle Hollow is BOHO48). For the Bottle Hollow example, the constraint would be:

$$\text{BOHO48B} - \text{BOHO48A} - \text{BOHO40A} = 0$$

The second kind of financial constraint merely restricts the cash flow for the current year to be less than or equal to the available financial resources, with any surplus being designated as an external investment (bank account, stocks, CD's, etc.). The available resources are the returns on the cumulative investments and the amount of capital invested externally plus direct commercial and industrial water sales. The returns on investment are taken to be the industry averages as shown in Table 4.2-2.

The following is an example of an intrayear accounting constraint. It says that total tribal expenditures minus total tribal income minus the bank and investment reserves must be less than zero:

BOHO40B + WATR41B + ULAB42B + BOWL43B + AGRI44B + UFAB45B + UTAN46B + RECR47B + ENVT10B + CULT11B + EXTN12B + TXP20AB + SOCS28B (which are expenditures) - 0.088 (BOHO48A) - 0.029 (WATR49A) - 0.094 (ULAB50A) - 0.111 (BOWL51) - 0.069 (AGRI52A) - 0.126 (UFAB53A) - 0.117 (UTAN54A) - 0.111 (RECR55A) - INWT17A - CMWT18A - 0.075 (BNK20BA) (which are revenues) - BNK20BA < 0 (which is the banked reserve).

The remaining accounting constraints are interyear ones mentioned within the judgmental constraint context. These state that the number of new houses which should be built in the seven-year planning period must meet the tribe's total housing requirement of at least 70 units, and that the total investment in each enterprise must not exceed some fixed reasonable limit. Examples of these two are:

HOUS36A + HOUS36B + ... + HOUS36G > 70
BOHO40A + BOHO40B + ... + BOHO40G < $6,000,000.

4.2.4 Initial Conditions

All of the indicator variables and a number of the accounting variables depend upon values of the variables from previous years. Therefore, recent historical data must be used in initialization of the model. A simple example is in the investment variable associated with the Bottle Hollow resort. The set of equations which increments this variable each time the model indicates new investment should be made is:

BOHO48(C) = BOHO48(B) + BOHO40(B).

According to the historical data at the beginning of the first project year, the tribe had already invested 3.22 million dollars in Bottle Hollow. Looking at the investment for the B year we have:

BOHO48(B) = BOHO48(A) + BOHO40(A).

However, BOHO48(A) is known to be 3220 ($'s scaled by 1000) and the equation becomes:

BOHO48(B) = 3220 + BOHO40(A)

Table 4.2-2. National average income figures for related Ute industries (dollars are in 1967-68 terms).

Industry Type	Industry Size (In Dollars)	Number of Establish- ments	Number without Net Income	Total Receipts	Interest and Depreciation	Percent of Net Income to Net Worth
Hotels	Overall	9,136	4,608	2,777.4	12.4	9.0
	1 mil to 5 mil	410	223	462.4	14.9	8.8
	5 mil to 10 mil	67	26	275.3	11.6	7.8
Farms	Overall	21,762	10,222	5,844.2	7.6	8.9
	1 mil to 5 mil	988	349	1,387.8	7.4	6.9
	5 mil to 10 mil	51	14	316.3	5.3	7.4
Household Furniture	Overall	4,329	1,342	4,631.2	2.3	11.8
	1 mil to 5 mil	330	32	1,584.1	2.1	12.6
	5 mil to 10 mil	38	6	379.1	2.8	10.0
Amusement and Recreation Services	Overall	23,571	12,758	3,141.4	10.3	14.7
	500K to 1 mil	769	346	297.5	15.8	11.1
	1 mil to 5 mil	344	138	480.4	10.2	15.2
Oil Services	Overall	3,959	1,800	1,639.7	12.9	9.4
	Under 500K					13.8-23.8
	Over 500K					4.3- 9.8
Leather Tanning	Overall	2,001	560	1,890.3	2.0	12.1
	500K to 1 mil	122		163.1	2.0	14.7
	1 mil to 5 mil	121	6	488.9	1.8	11.7
Water Supply and Other Sanitary Services	Overall	5,628	2,646	752.0	21.1	5.9
	5 mil to 10 mil	19	5	16.0	21.7	2.9
	10 mil to 25 mil	19	4	47.0	28.0	3.8
Low-Risk Financial Instruments	----	----	----	----	----	----

with 3220 being one of the initial conditions. In addition to all the investment equations, the commercial, industrial, and enterprise income equations depend upon historical data in the first year and, consequently, have initial conditions imposed.

For the indicator variables, the initial conditions play a more pervasive role. For example, everything needed to compute HOUSE36(A) is known in equation:

$$\begin{aligned} HOUS36(A) = \ &HOUS36(A-1) + (-0.723) \ (HOUS36(A-1) - HOUS36(A-2)) + \\ &(0.0293) \ (COMO7A(A-1) - COMO7A(A-2)) + (-0.0247) \\ &(INCM05(A-1) - INCM05(A-2)). \end{aligned}$$

Therefore, no functional constraints appear in the A year. Incrementing all the year subscripts by one in the above equation yields the second or B year constraint for HOUS36. Here we note that some variable values are known (HOUS36(A) and all (A-1) variables) and some are not (COMO7A(A), INCM05(A)). Substituting the known values again leads to an initial condition for HOUS36 in the B year. When this process is applied to the C year, we observe that HOUS36(A) is the only variable of known value. Thus, the C year initial condition is less complex than the B year but still exists. For D and subsequent years, none of the variables are known so there are no initial conditions. Year A is the last year for which data are available.

4.2.5 Model Implementation

As is usually the case, problems encountered during the implementation and verification of the model necessitated revisions to the model. The strategy adopted for implementation was to first attempt a short-term projection (four years) and then extend to a full ten-year projection. The duration of four years was selected because this length model allows all the initial conditions to be included and a full model year to be simulated that is unencumbered with initial conditions. The majority of modifications were implemented in this four-year projection. The first series of modifications involved the elimination of superfluous variables. These were industrial water (INWT17) and tribal income spent on social services (SOCS28). The second modifications were caused by numerical problems and consisted of eliminating some indicator variables for which estimates seemed unreasonable and were apparently preventing the linear programming algorithm from finding an initial feasible solution from which to start the optimization. These variables were gross tribal income (GROS19), percent of Ute management positions held by Utes (MGMT04), acres of recreational and wildlife habitat (WILD39), and local income (LCLI24). Two aspects of the model logic were revised. One was the way the water enterprise affected the water utilization. The water accounts were eliminated (CUWT16, CMWT18), and water consumption was computed on the basis of the water enterprise total investment. These changes made the environmental investment variable superfluous and it too was eliminated. The final modification was made at the request of the Water and Power Resources Service. This was to include a tribal investment account for agricultural development of Leland Bench. This impacted both the economic and water accounting constraints.

These modifications led to a four-year model which was a reasonable representation of the Ute tribal developmental, social, and economic situation. The original intent was to expand the four-year model into a ten-year model. After several trials at this expansion, however, it was determined that a seven-year model produced good results in terms of identifiable and explainable trends. It was, therefore, decided that the full ten-year projection was unnecessary, and the seven-year model was adopted.

4.3 Identification of Optimal Development Policies

As discussed previously and illustrated in Figure 4.1-1, the linear programming model identifies an "optimal" development strategy or policy by computing that set of Ute-specific investment and management strategies that maximizes a particular objective function. The optimization showed the developmental policy achieved the largest improvement in each of the four objective function areas to be consistent among the three alternative futures studied. This is to say that the general investment patterns which achieve the best results (as indicated by the objective functions) are not dependent upon which alternative future is considered except that if no further investments are allowed (the no-growth alternative future), no improvement in per capita income can be achieved. Consequently, a unique optimal policy does not exist for the no-growth future. However, significant policy differences were obtained for the other two futures.

4.3.1 The Tribal Self-Determination Policy

The optimal policy for advancing the tribal self-determination goal is one of very aggressive land acquisition coupled with a moderate expansion in the commercial and industrial enterprise sectors. The optimal policy does not retain economic reserves in a bank account but prefers to purchase land. The enterprises developed are the ones with high returns, and one is tempted to conclude that the primary contribution of these investments is to make more land purchasing capital available. No expansion in the agricultural and water enterprises is indicated for this policy. As stated above, these general policy characteristics hold for the self-determination objective function regardless of the alternative future (no-growth, moderate-growth, or maximum-growth) considered.

4.3.2 The Economic Well-Being Policy

As might be anticipated, the policy indicated as best in terms of tribal economic well-being is one of vigorous commercial expansion coupled with the accumulation of large reserves in external investments (BNK20B). Moderate expansion is indicated in the industrial and agricultural sectors. The policy also deemphasizes income generated from petroleum leases, i.e., the model prefers to generate tribal income from sources other than oil and gas leases. Again, no substantial policy differences for the economic well-being objective function were observed for any of the three alternative futures.

4.3.3 The Social Well-Being Policy

The optimal policy for advancing social well-being was substantially different. It is one of no growth. No money is invested in any enterprises but is allowed to slowly accumulate in external investments (BNK20B). This is clearly a "do nothing" policy which says that the best social climate is achieved for the tribe by not further developing tribal resources. However, an aggressive home building program is indicated. Again, the model identifies this general policy position for the social well-being objective function for all three alternative futures.

4.3.4 The Per Capita Income Policy

A result which may be counterintuitive is the policy to achieve maximum per capita income. Development consistent with this goal is in the agricultural, recreational, and to an extent, industrial sectors. From the standpoint of maximizing the individual income of tribal members, the model clearly shows a preference for agricultural and recreational development over commercial and industrial. This was the only objective function wherein the model chose to bring in agricultural development on Leland Bench. With the exception that the model could not find a unique optimum for this objective function in the no-growth alternative future, these policy results appear to be strong regardless of the alternative future considered.

4.3.5 Summary of Policy Identification Results

The policy identification results for the four objective functions can be summarized as 1) self-determination corresponds to a land acquisition policy with moderate commercial and industrial growth; 2) economic well-being corresponds to a commercial enterprise expansion with moderate industrial expansion; 3) social well-being is associated with a policy of no economic growth with emphasis on improving housing conditions; and 4) per capita income maximization indicates a policy of expansion in agricultural and recreational developments.

4.4 Projected Social and Economic Impacts

While the cross-impact model and the available data are not sufficiently sophisticated to project social and economic impacts, the model can identify significant trends in the important social and economic variables that are likely to be produced by different policy alternatives. The following sections report on the interesting trends in some of the social and economic variables that were produced by the model for the various objective functions (policies) for each Ute-specific alternative future. Emphasis is placed on variables that show significantly different trends across objective functions for a given alternative future.

4.4.1 No-Growth Future

Under the no-growth future, the social and economic variables of the model show very similar trends under all four objective functions. In general, the arrest rate, alcohol-related arrests, percent of population

graduating from high school, and percent employed in unskilled jobs all remain at approximately the present level. Variables which become slightly worse than present levels are the death rate, per capita income, and the percentage of Utes who speak Ute.

4.4.2 Moderate-Growth Future

More variation is found for the social and economic variables among the various objective functions in the moderate-growth future, though some variables (such as the median education level and the percentage of high school graduates) behave very similarly for all objective functions. The suicide rate is generally decreased under all objective functions. The percentage of Utes who speak Ute shows a decline for all objective functions, though the decline is significantly steeper under the economic well-being objective function than under the other three.

Significant differences among the objective functions were obtained for arrest rate, alcohol-related arrests, per capita income, unemployment rate, and percentage of Utes employed in unskilled jobs. Figures 4.4-1 through 4.4-5 present a graphical representation of these differences.

As illustrated in Figure 4.4-1, the arrest rate is lowest for the social well-being objective function and appears to increase rapidly under the per capita income objective function. It is intermediate for the other objective functions. Alcohol-related arrests (Figure 4.4-2) follow the same pattern. In particular, policies emphasizing economic well-being and per capita income maximization produce worse trends in the arrest rate and alcohol-related arrests than are observed for the policies which emphasize tribal self-determination and social well-being.

Per capita income decreases dramatically for all objective functions (policies) except the per capita income objective function (Figure 4.4-3). These declines are sufficiently consistent and pronounced that the variable may merit monitoring in the future. Even under the policy to maximize per capita income, the variable declines initially before beginning to increase.

The unemployment rate for the moderate-growth future decreases for each of the objective functions, and especially for the economic well-being function (Figure 4.4-4). This follows the historical trend over the past decade. The policies which produce the most rapid decline in the Ute unemployment rate are the economic well-being and per capita income maximization objective functions. In contrast, the tribal self-determination and social well-being objective functions only show slightly decreasing trends in unemployment rate.

Finally, the percentage of unskilled jobs (Figure 4.4-5) is projected to decrease for the economic well-being and per capita income objective functions and to increase for the self-determination and social well-being objective functions. This reflects the differences in investment policies among the various objective functions.

Figure 4.4-1 Differences in arrest rate by objective function (moderate-growth future).

Figure 4.4-2 Differences in alcohol-related arrests by objective function (moderate-growth future).

Per Capita Income

Unemployment Rate

Key: F = Self-determination
E = Economic well-being
S = Social well-being
P = Per capita income

Figure 4.4-3 Differences in per capita income by objective function (moderate-growth future).

Figure 4.4-4 Differences in unemployment rate by objective function (moderate-growth future).

4.4.3 Maximum-Growth Future

The variations in the social and economic variables in the maximum-growth future are even more pronounced than in the moderate-growth future. Nevertheless, variables such as median high school education (slightly decreasing trends) and suicide rate (generally decreasing trends) show little variation across objective function. The more interesting differences among the objective functions (policies) for this future are for arrest rate, alcohol-related arrests, death rate, per capita income, unemployment rate, percentage of unskilled jobs, and percentage of Utes who speak Ute.

Figure 4.4-6 contrasts the arrest rate variable for the four policies or objective functions. It shows a generally increasing or worsening trend for all objective functions except social well-being. Figure 4.4-7 shows the same pattern for alcohol-related arrests. In general, the worsening trend is greater under the maximum-growth future than under the other futures, and greater under the moderate-growth future than under the no-growth future. As indicated in Figures 4.4-6 and 4.4-7, trends toward increased arrests are most severe for those policies emphasizing individual income maximization (the per capita income objective function), and remain severe for policies concentrating on tribal economic well-being and self-determination.

The death rate (Figure 4.4-8) for all objective functions for this future is higher than present but shows a decreasing trend through time under the per capita income objective function. As can be seen in Figure 4.4-8, the death rate is most severe for the tribal self-determination and economic well-being objective functions and is much less severe for the social well-being and per capita income objective functions. In general, the death rate under the maximum-growth future is higher than under the other futures.

Per capita income (Figure 4.4-9) shows a severe decreasing trend under all objective functions except per capita income maximization. This decrease continues recent historical trends but is much more pronounced. The most severely decreasing trend is with the tribal economic well-being policy. This would imply that efforts to improve the economic condition of the tribe as a whole worsens the economic situation for the individual tribal members. Under the maximum-growth future, per capita income is less at the end of the simulation for the self-determination, economic well-being, and social well-being objective functions than under either the no-growth or moderate-growth futures. This would further imply that as tribal resources (capital and water) become less limiting, their development for the overall social and economic benefit of the tribe may produce a substantially worsening economic situation for individual tribal members.

As in the other two futures, the unemployment rate variables shows a general decreasing trend under each of the objective functions (Figure 4.4-10). The trends are more pronounced for the economic well-being and per capita income objective functions. The unemployment rate levels are approximately the same as under the other two futures.

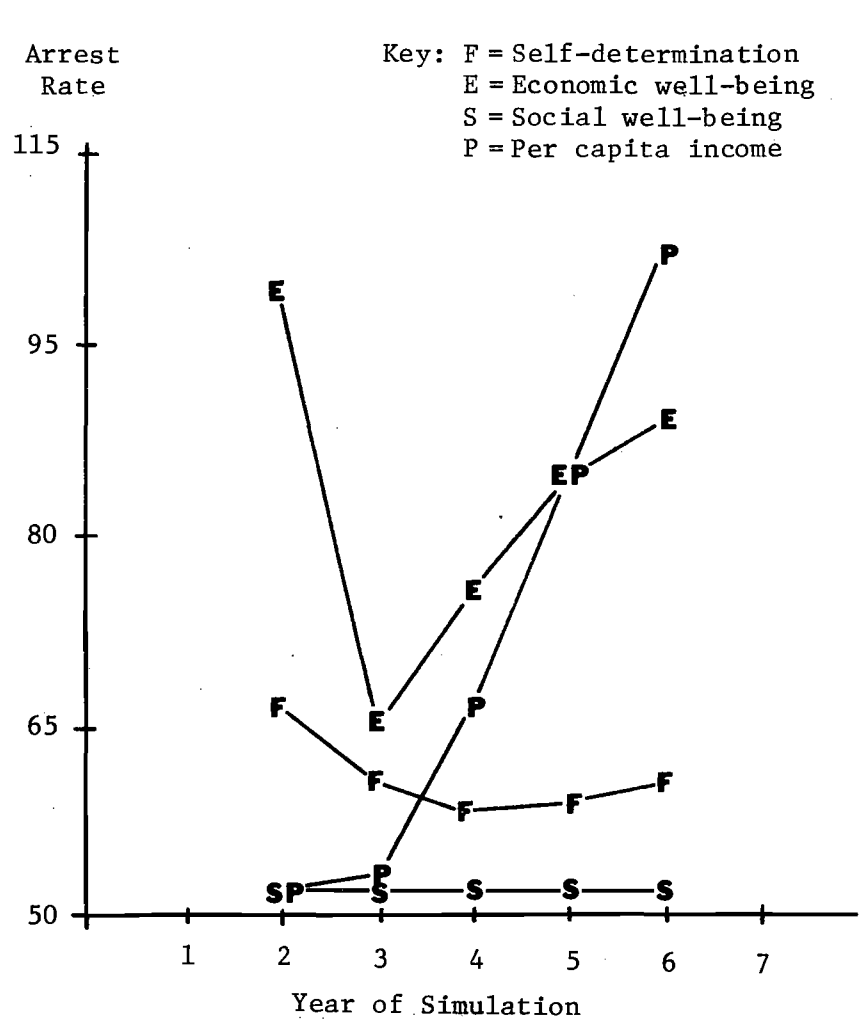Figure 4.4-5 Differences in percentage of unskilled jobs by objective function (moderate-growth future).
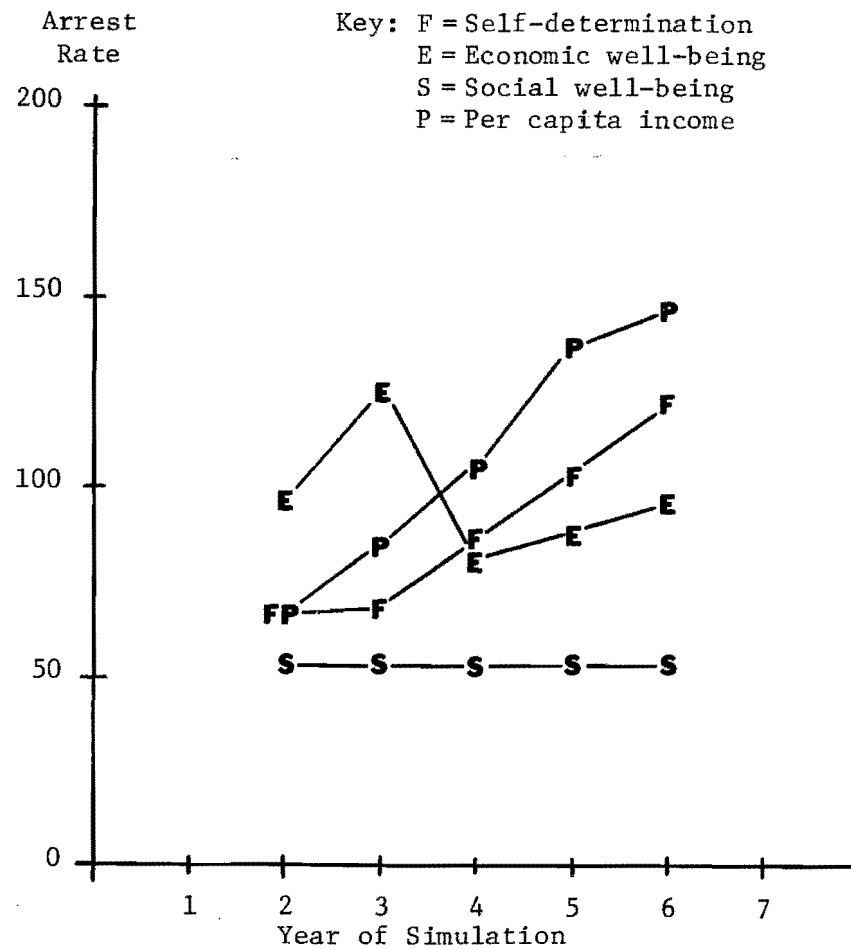
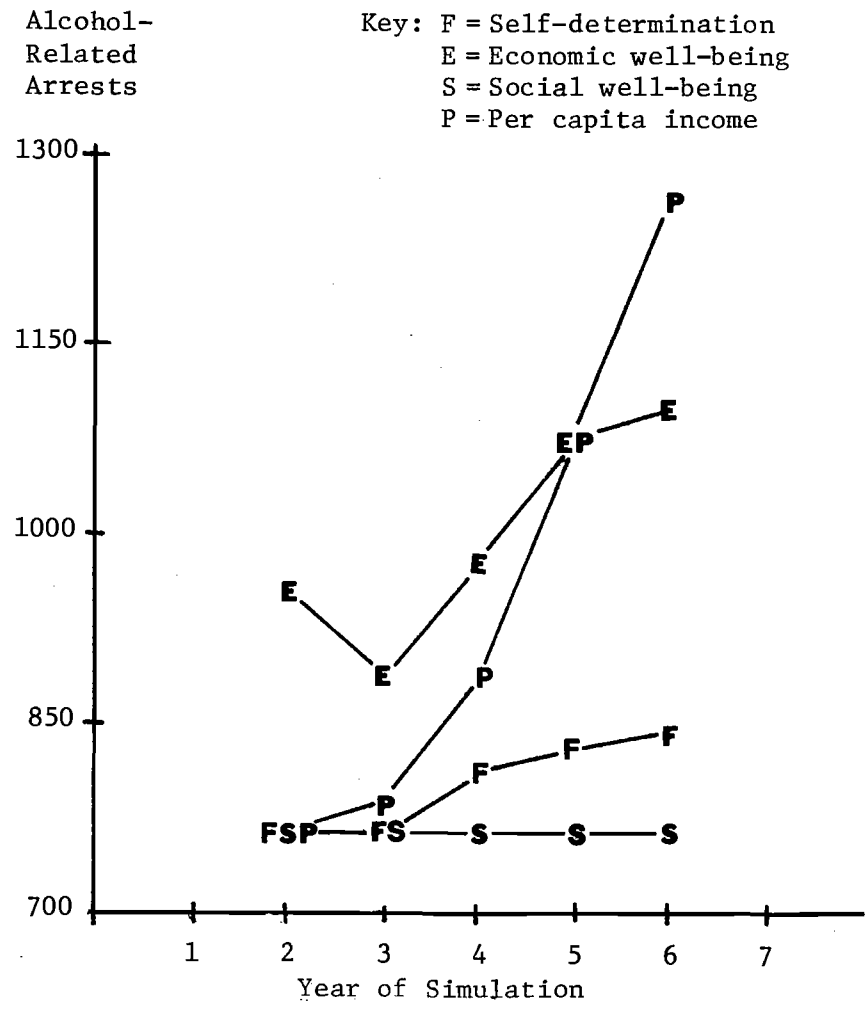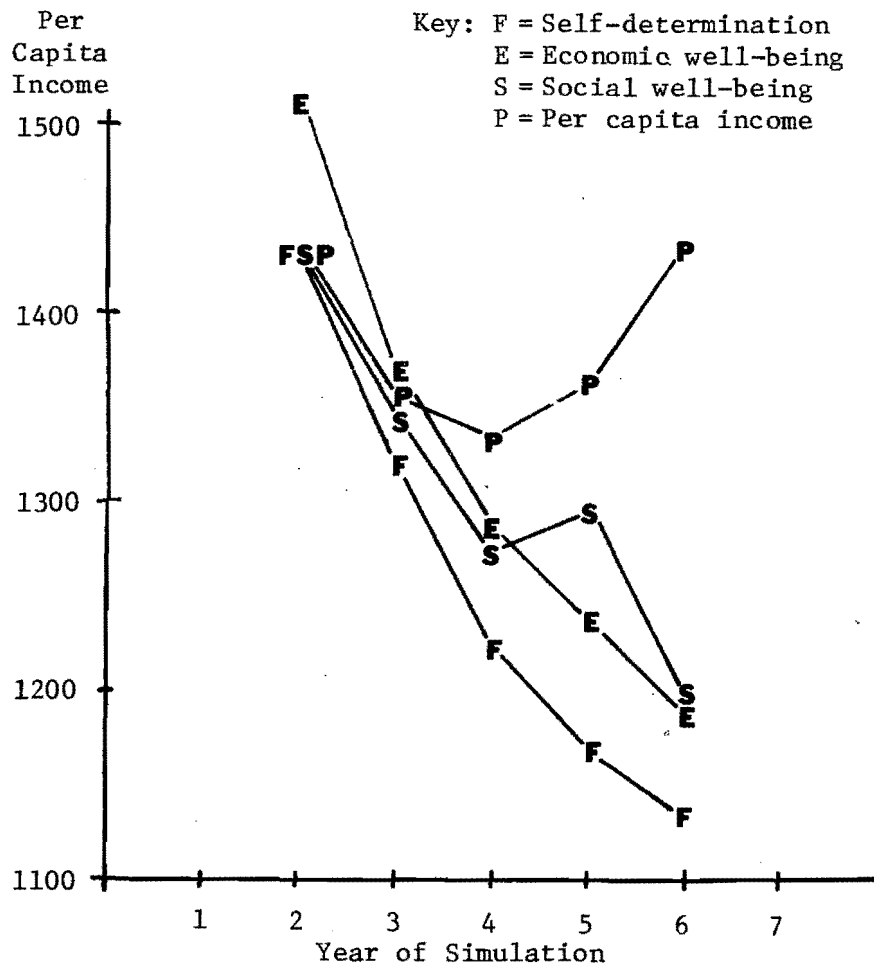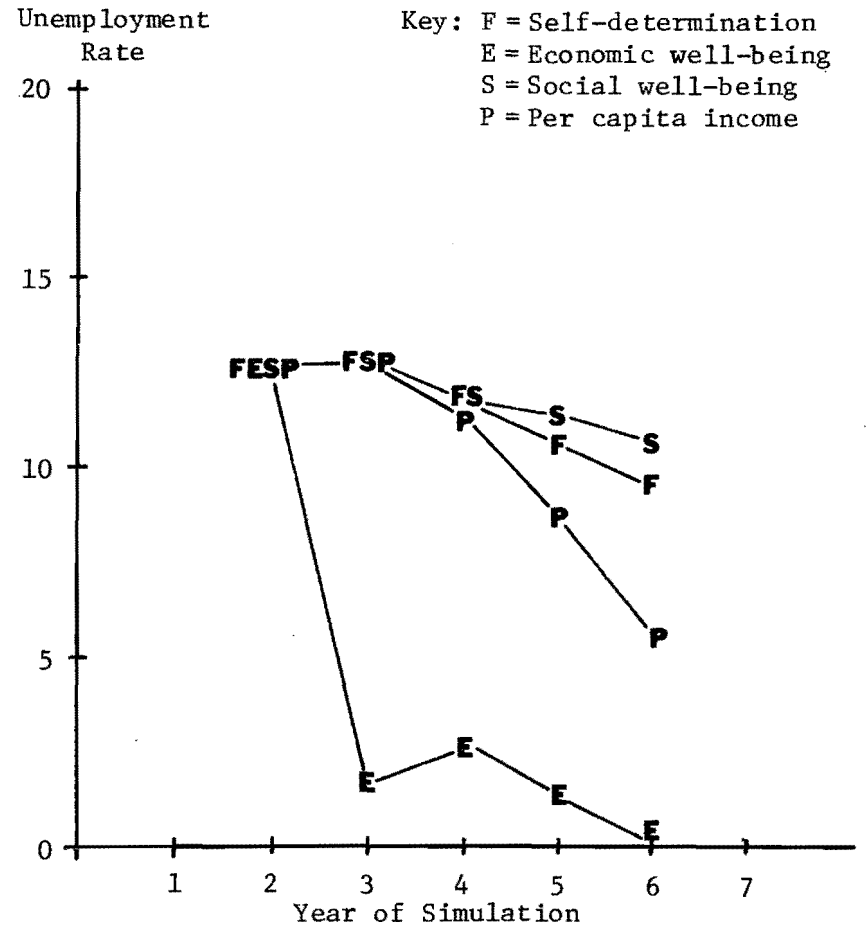Figure 4.4-6 Differences in arrest rate by objective function (maximum-growth future).
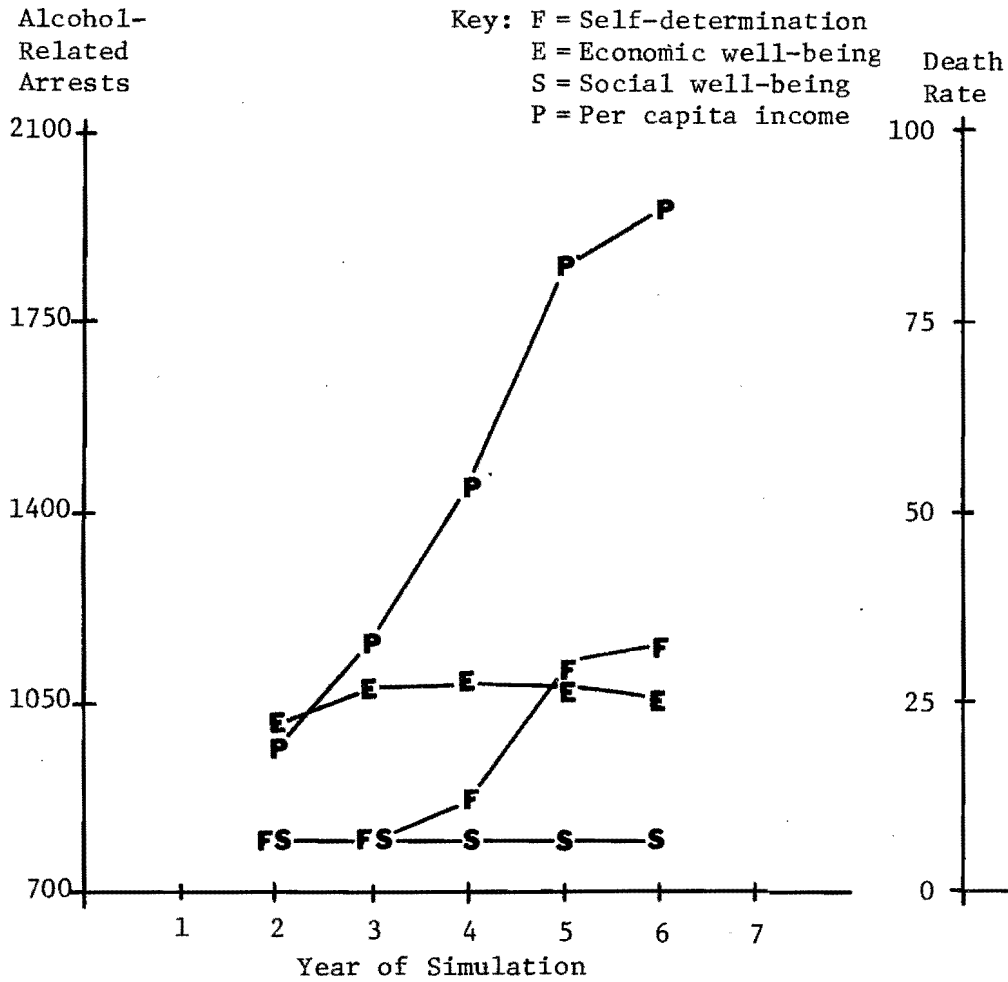
Figure 4.4-7 Differences in alcohol-related arrests by objective function (maximum-growth future).
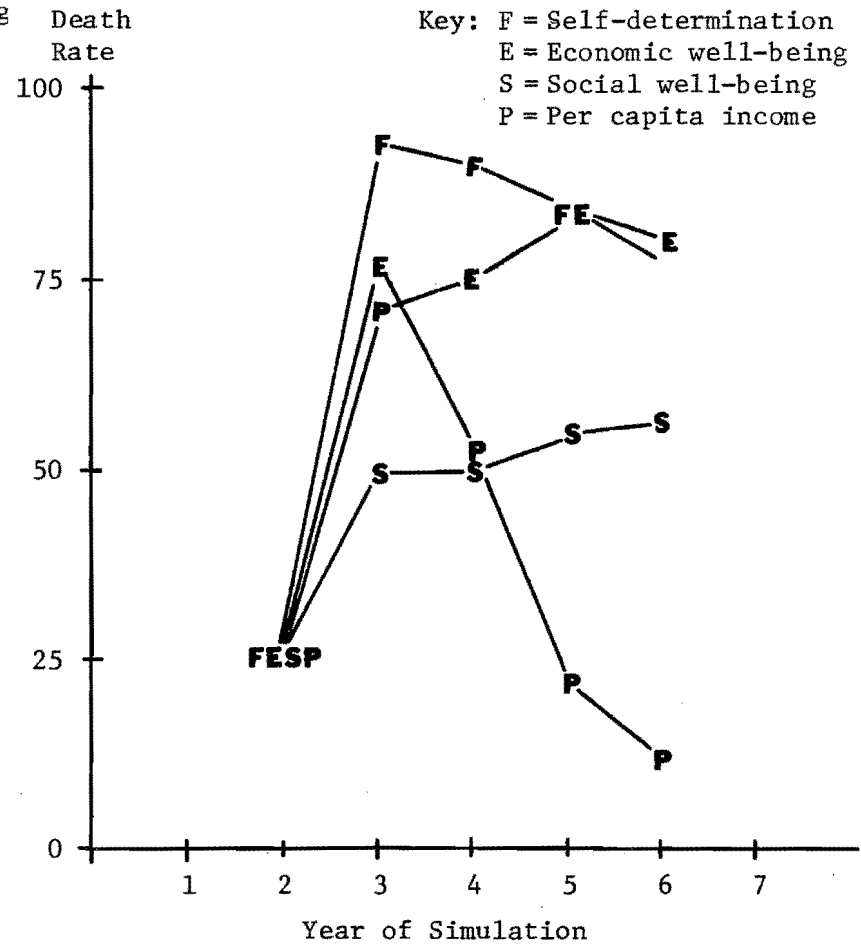
Figure 4.4-8 Differences in death rate by objective function (maximum-growth future).

Per
Capita
Income

Key: F = Self-determination
E = Economic well-being
S = Social well-being
P = Per capita income

Unemployment
Rate

Key: F = Self-determination
E = Economic well-being
S = Social well-being
P = Per capita income

Year of Simulation

Year of Simulation

Figure 4.4-9   Differences in per capita income by
objective function (maximum-growth
future).
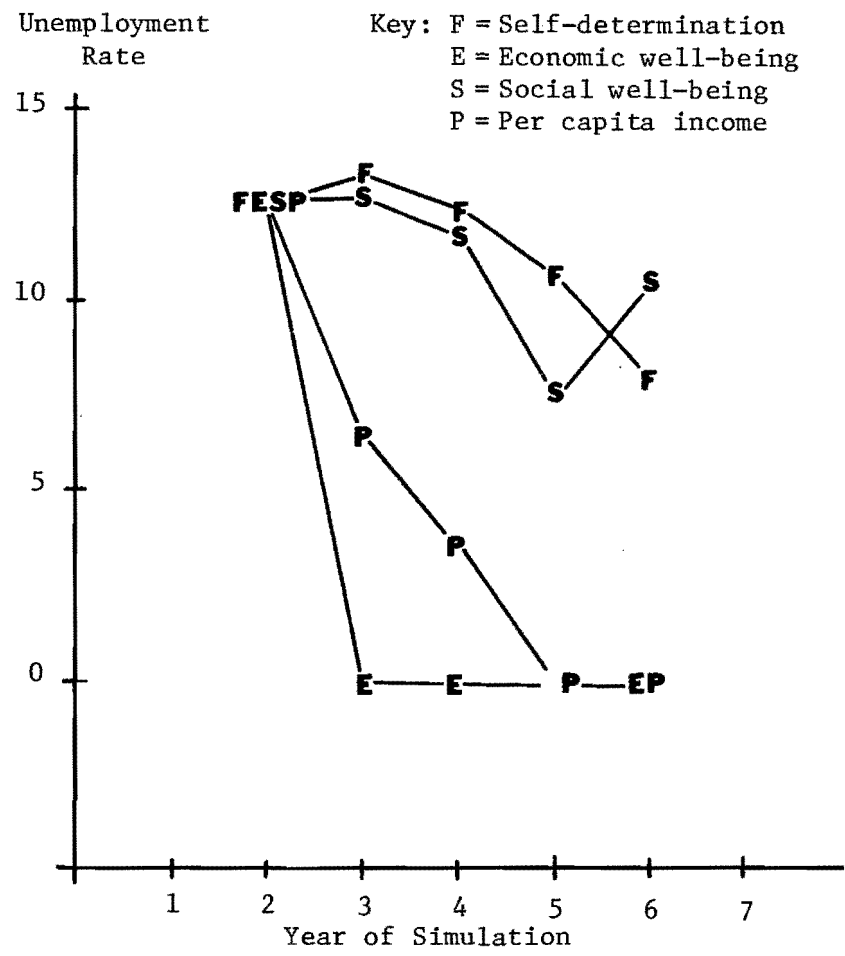
Figure 4.4-10   Differences in unemployment rate of
objective function (maximum-growth
future).

The percentage of unskilled jobs variable (Figure 4.4-11) shows a marked decreasing trend for all objective functions except social well-being. The trends are much more pronounced than under the moderate-growth or no-growth futures.

As illustrated in Figure 4.4-12, the percentage of Utes who speak Ute variable shows a slight downward trend for the self-determination and social well-being objective functions, a slight increasing trend under the per capita income objective function, and an indeterminate trend under the economic well-being objective function. In general, downward trends for this variable are more common for all of the futures.

4.5 Summary of the Model Results

Projected social and economic impact trends are summarized in Table 4.5-1 from the optimization outputs contained in Appendix A. As noted above, the tribal self-determination objective function produces policies which emphasize land purchases and which produce generally worsening trends in death rate, alcohol-related arrests, per capita income, and percentage of Utes who speak Ute. Improving trends are produced for median education level, percentage of homes with indoor plumbing and electricity, suicide rate, and unemployment rate.

The economic well-being objective function emphasizes heavy investments in commercial activities and external savings and stocks. This objective function also produces generally worsening trends in the arrest rate, alcohol-related arrests, per capita income, and percentage of Utes who speak Ute. Improving trends are observed for median education level, percentage of homes with indoor plumbing and electricity, suicide and unemployment rates, and the percentage of Utes in unskilled occupations.

The social well-being objective function stresses investment in savings and stock investment accounts. It produces worsening trends for death rate, per capita income, and percentage of Utes who speak Ute for all futures. It shows improving trends for median education level, percentage of homes with indoor plumbing and electricity, and suicide and unemployment rates.

The per capita income objective function emphasizes investments in agricultural and recreational development. It produces generally adverse trends in arrest rate and alcohol-related arrests, but it is the only objective function which produces an increasing trend in per capita income and the percentage of Utes who speak Ute and, then, only for the maximum-growth future.

4.6 Examples of Potential Important Trade Offs

The Ute Tribe will be faced with an increasing number of options for utilizing its increasing water, energy, and capital resources. However, the cross-impact model indicates that the tribe will have to choose among potentially severe trade offs in formulating and executing resource development policies. For example, under the social well-being objective function in the maximum-growth alternative future, alcohol-related arrests
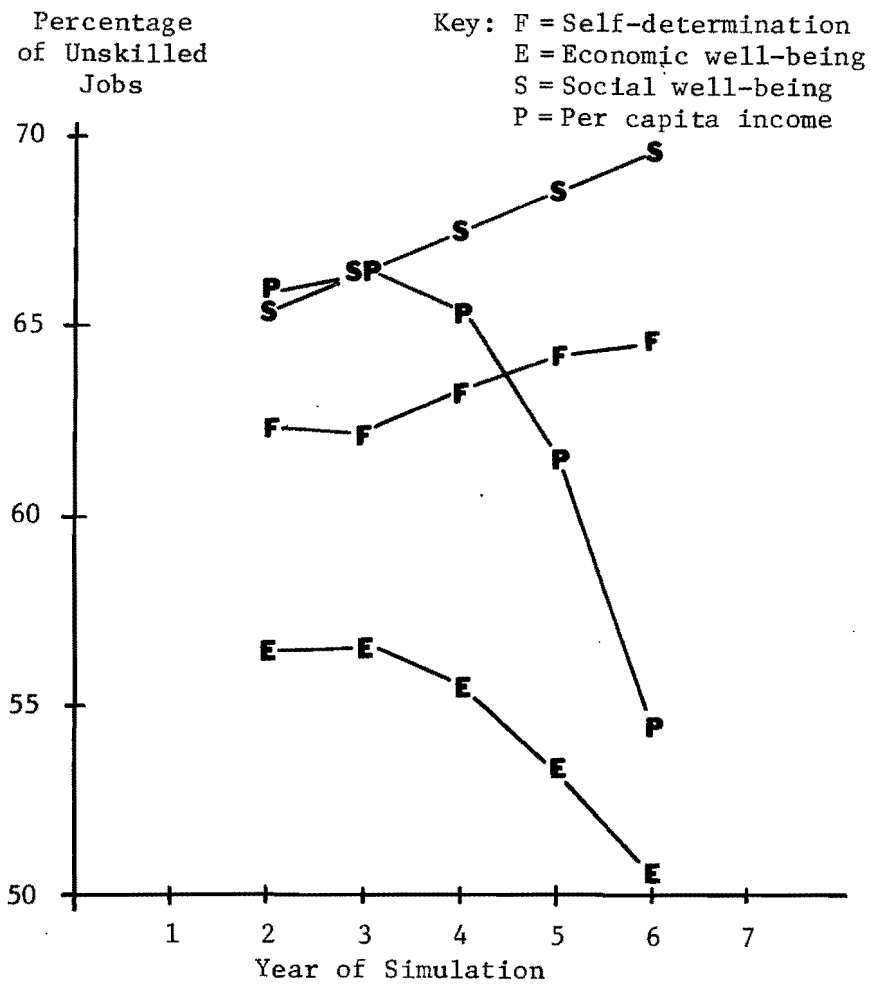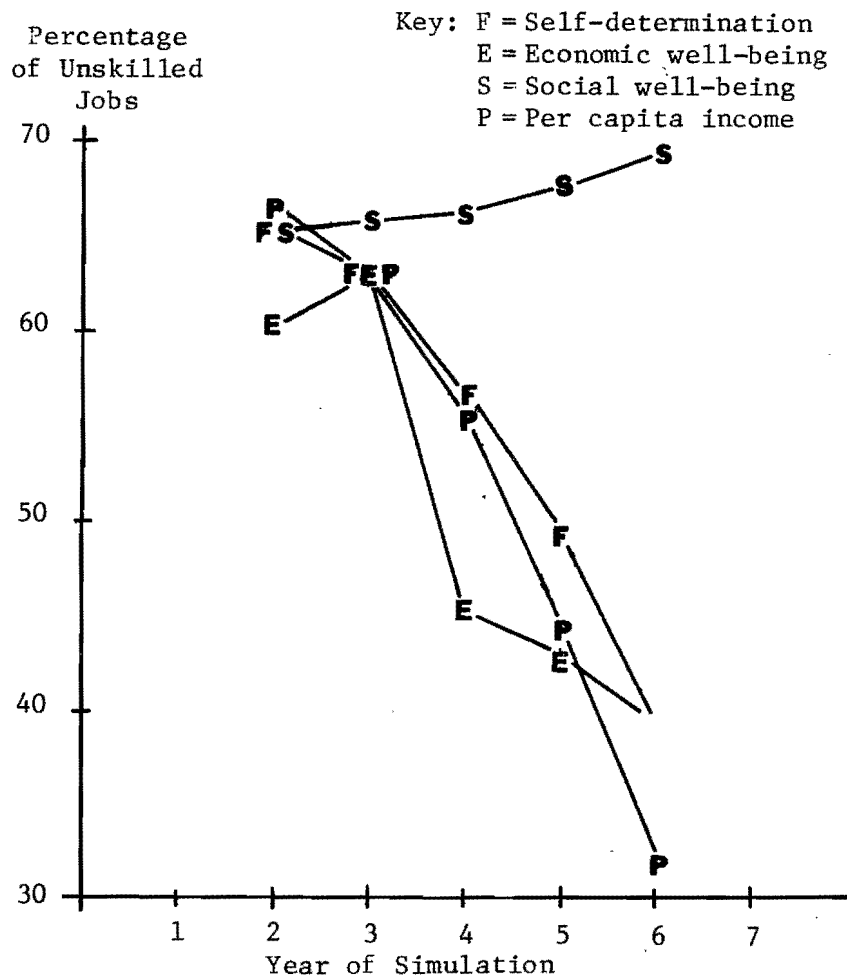
Figure 4.4-11 Differences in percentage of unskilled jobs by objective function (maximum-growth future).
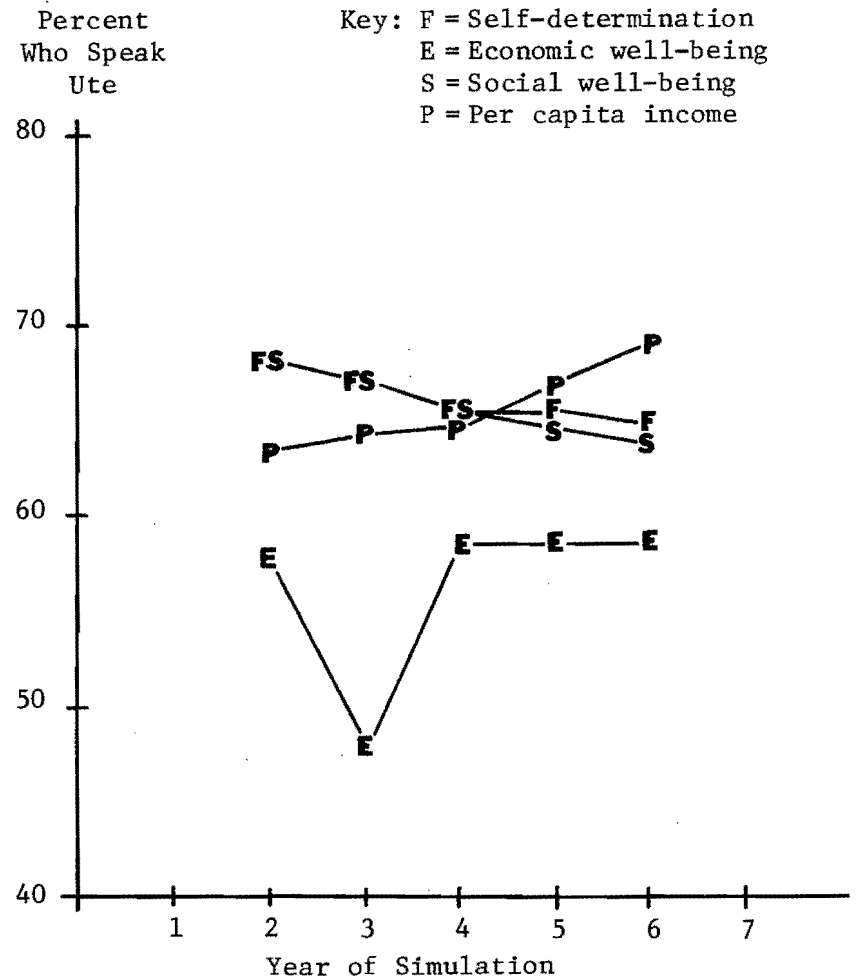
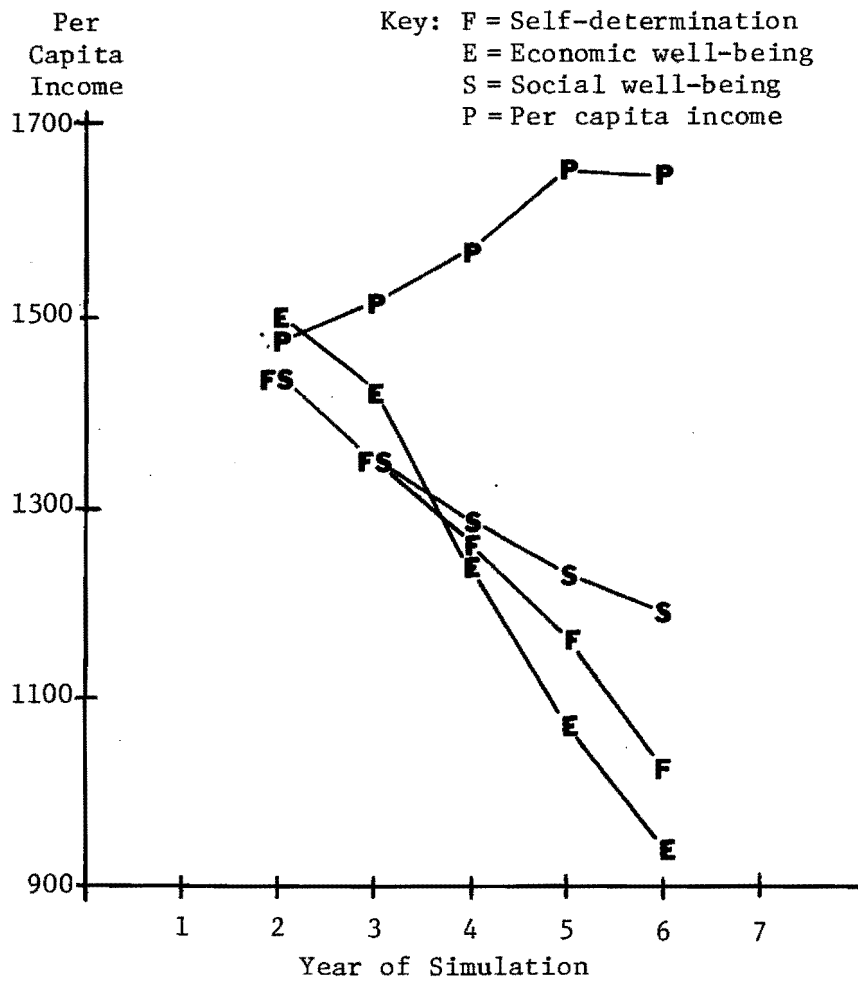Figure 4.4-12 Differences in percent of Utes who speak Ute (maximum-growth future).

Table 4.5-1   Summary of optimal policies and tribal social and economic impacts.

| | | Social and Economic Variables | | | | | | | | |
| | | No-Growth Future | | | Moderate-Growth Future | | | Maximum-Growth Future | | |
Objective Function	Policy Investment Emphases	Improving Trend	Worsening Trend	No Significant Change or Trend	Improving Trend	Worsening Trend	No Significant Change or Trend	Improving Trend	Worsening Trend	No Significant Change or Trend
Tribal self-determination	Land purchases Com. investments Ind. investments	EDLV26 PLUM32 SUIC31 UNEM21 LEAS03	DETH29 GRAD27 PCAP22 UNSK25 UTEL33	ALCO34 ARST30	EDLV26 PLUM32 SUIC31 UNEM21 LEAS03	ALCO34 DETH29 GRAD27 PCAP22 UTEL33	ARST30 UNSK25	EDLV26 PLUM32 SUIC31 UNEM21 UNSK25	ALCO34 ARST30 DETH29 GRAD27 PCAP22 UTEL33 LEAS03	
Tribal economic well-being	Com. investments Ext. investments Ind. investments Ag. investments	DETH29 EDLV26 PLUM32 SUIC31 UNEM21 LEAS03	ALCO34 ARST30 GRAD27 PCAP22 UTEL33	UNSK25	EDLV26 PLUM32 SUIC31 UNEM21 UNSK25	ALCO34 ARST30 GRAD27 PCAP22 UTEL33 LEAS03	DETH29	EDLV26 PLUM32 SUIC31 UNEM21 UNSK25	ALCO34 ARST30 DETH29 GRAD27 PCAP22 LEAS03	UTEL33
Social well-being	Ext. investments	EDLV27 PLUM32 SUIC31 UNEM21 LEAS03	GRAD27 DETH29 PCAP22 UTEL33	ALCO34 ARST30 UNSK25	ARST30 EDLV26 PLUM32 SUIC31 UNEM21 LEAS03	DETH29 GRAD27 PCAP22 UNSK25 UTEL33	ALCO34	EDLV27 PLUM32 SUIC31 UNEM21 LEAS03	DETH29 GRAD27 PCAP22 UNSK25 UTEL33	ALCO34 ARST30
Per capita income	Ag. investments	EDLV27 PLUM32 SUIC31 UNEM21 LEAS03	ALCO34 ARST30 DETH29 GRAD27 PCAP22 UNSK25 UTEL33		EDLV26 PLUM32 SUIC31 UNEM21 UNSK25 LEAS03 PCAP22	ALCO34 ARST30 DETH29 GRAD27 UTEL33		DETH29 EDLV26 PCAP32 PLUM32 SUIC31 UNEM21 UNSK25 UTEL33	ALCO34 ARST30 LEAS03	

are maintained at a constant level approximately equal to present conditions (Figure 4.6-1). Per capita income shows a severe decreasing trend (Figure 4.6-2). In contrast, the policy for maximizing per capita income shows increasing trends in alcohol-related arrests (Figure 4.6-3) and per capita income (Figure 4.6-4). This implies that the tribe can select developmental policies which increase the individual income of its members, but this increase brings increased social problems, such as alcohol-related arrests (Figures 4.6-3 and 4.6-4). Conversely, the tribe may opt for developmental policies which minimize the negative social impacts of development, but this choice also decreases individual income to tribal members (Figures 4.6-1 and 4.6-2).

4.7 Modeling Disclaimer

It should be emphasized that the model was constructed from historical data collected over a time period wherein the tribe was undergoing profound resources development and social change. The modeled trade off between economic and social goals may be an inherent feature of an atypical data base. However, as long as the Ute social and economic system continues to behave as it has in the recent past, the cross-impact model indicates that significant and difficult social and economic trade offs will exist. Moreover, the most severe trade offs are projected by the model to be between the economic well-being of individual tribal members (e.g., per capita income and unemployment rate) and the tribal social and cultural structure (e.g., arrest rate, alcohol-related arrests, death rate, and percentage of Utes who speak Ute).

Alcohol-
Related
Arrests (No./yr.)
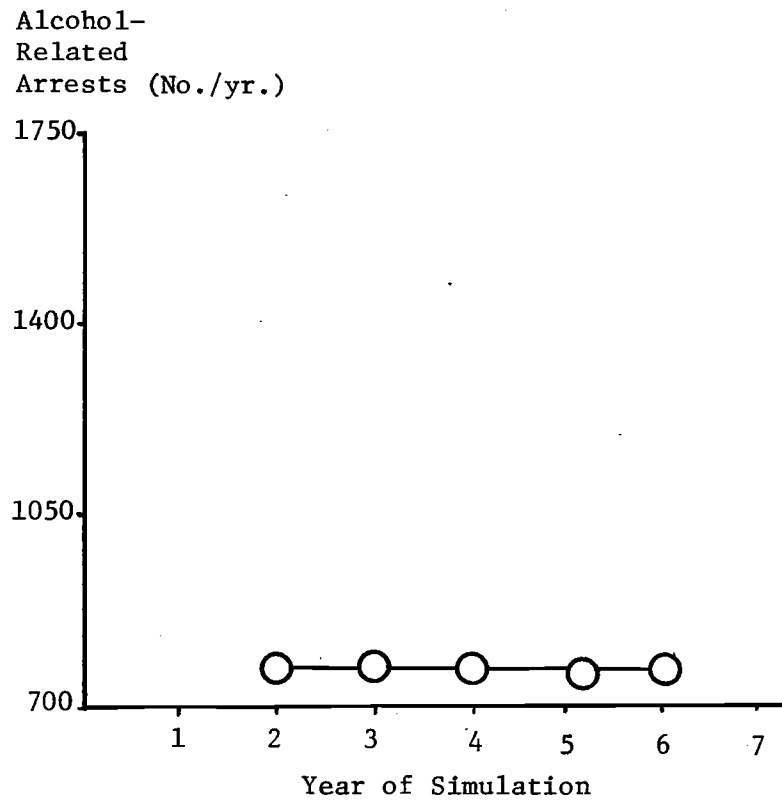
Figure 4.6-1 Alcohol-related arrests under the social
well-being objective (maximum-growth
future).

Per
Capita
Income ($/yr.)
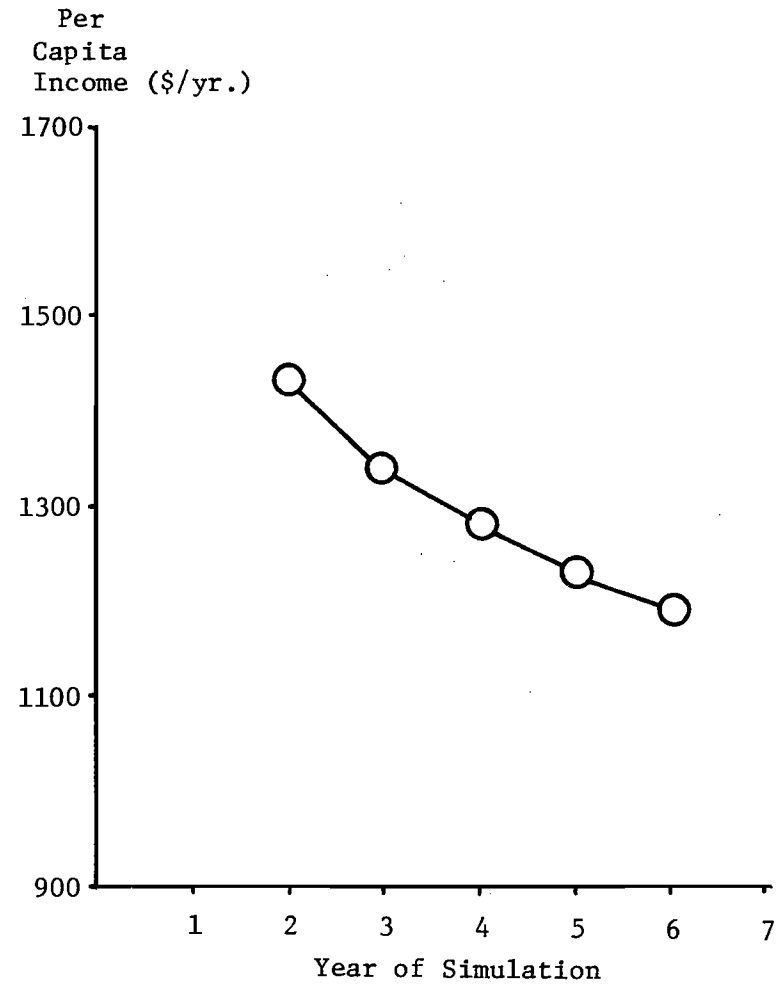
Figure 4.6-2 Per capita income under the social well-
being objective (maximum-growth future).
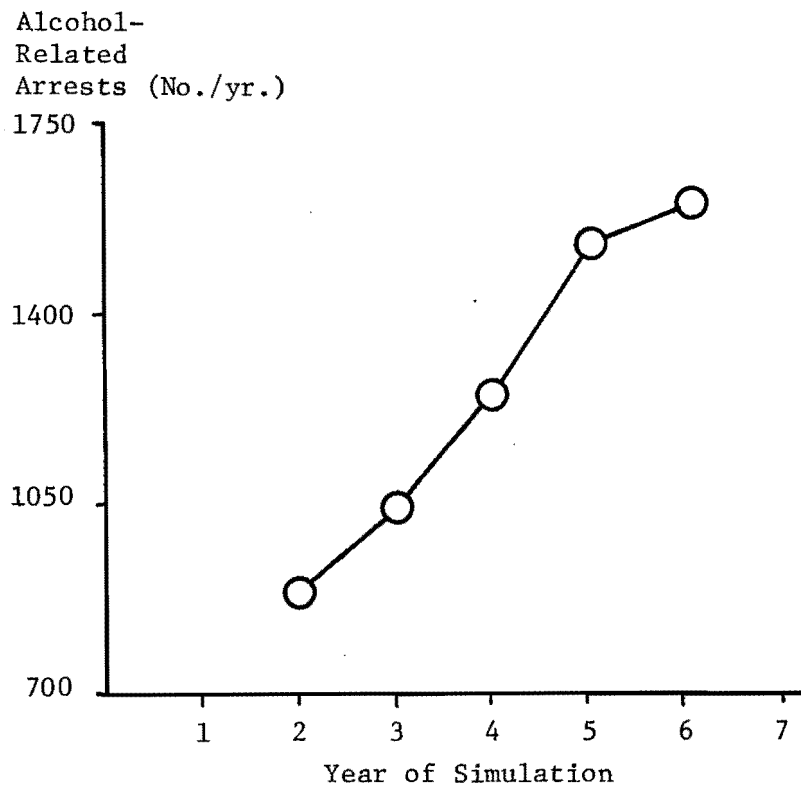
Figure 4.6-3 Alcohol-related arrests under the per capita income maximization objective (maximum-growth future).
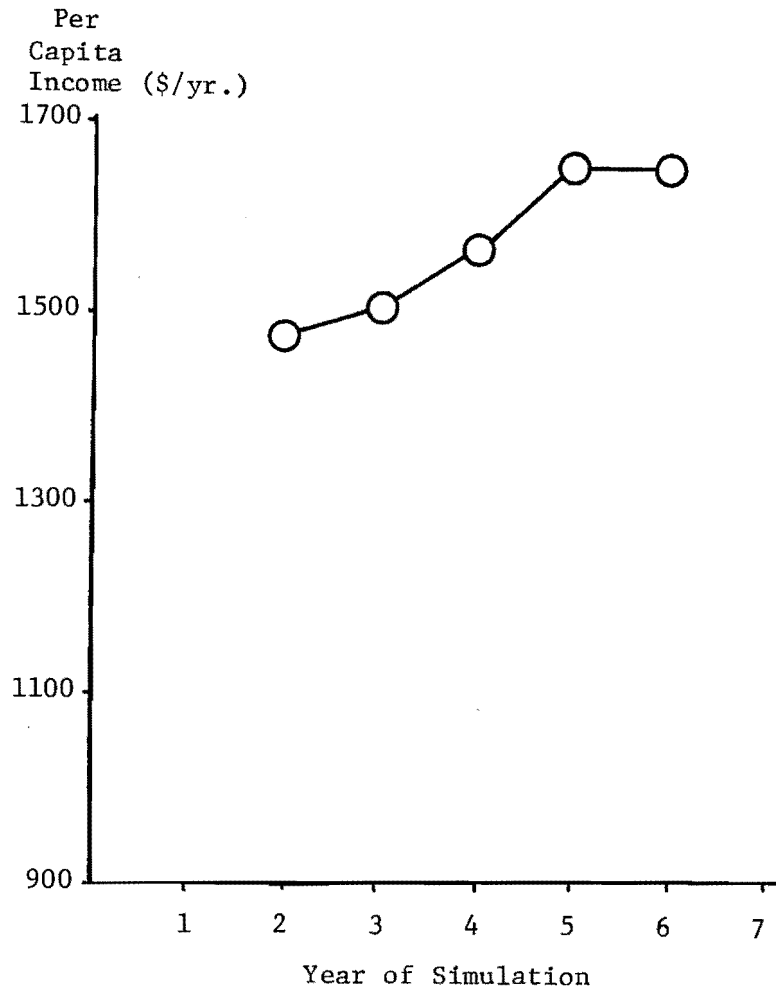
Figure 4.6-4 Per capita income under the per capita income maximization objective (maximum-growth future).

5.0 MODEL AND DATA UTILIZATION BY THE UTE TRIBE AND FOLLOW-ON ACTIVITY

5.1 Data Base

Over the course of the project, the project staff noted on many occasions a desire on the part of Ute planners and decision makers to know where the tribe stands with regard to many social and economic concerns. The data collected by the project represents the first time that so much historical data have been assembled in one location on so many diverse social and economic variables. This historical data base could prove very valuable to tribal planners in identifying the important social and economic parameters and in devising potential strategies for addressing tribal-wide social and economic problems. However, the data base must be maintained. If the tribe is to provide better planning and management capabilities in recognizing and dealing with important trade offs, it will probably be necessary for the tribe to institute a more rigorous and systematic program for the collection and analysis of tribal social and economic data.

5.2 Futures Evaluation

With the present model, respecification of alternative futures (through the constraint set) or objective functions is simple. This means that hypothetical future situations and their implications for alternative Ute resources development policies can be rapidly explored and their implied social and economic trade offs for the Ute tribe identified. If a data base is maintained by the tribe, the model coefficients could be updated on a periodic basis and used to upgrade the predictive capability of the model.

5.3 Follow-On Activity

The model and results of the study have already been used by the Water and Power Resources Service to assess implications of alternatives for the Ute Indian Unit of the Central Utah Project. Inquiries into the use of the model and data base constructed by the project have also been received from representatives of the Council of Energy Resource Tribes (CERT) in Denver.

Finally, and most encouraging, some of the Ute planners are presently exploring the possibility of producing videotape materials which discuss and open up for their examination the major findings of the project and their implications for Ute resources development. These tapes would be shown to Ute decision makers, planners, and community leaders as part of a planning/educational program concerninq tribal development potential and the impacts that tribal development brings.

APPENDICES

Appendix A

Panel Orientation Materials: Session I

OBJECTIVE

Determine how the achievement of Ute goals would be affected
by various possibilities for the use of Ute resources in basin
developments

WORK TASKS

Formulate Ute goals

Specify indicators of Ute goal achievement

Determine the levels of the indicators for the base year 1970

Develop a comprehensive inventory of each important Ute resource

Inventory operating and planned developments in the basin

Select the Ute resource utilization possibilities of greatest
interest to the Tribe

Determine how each resource utilization possibility would be
expected to result in changes in the indicators

Relate the predicted changes in indicators to Ute goal achievement

COMMENTS

1. Tribal goals will be identified by the Business Committee
    and other selected members of the Tribe.

2. The Business Committee will select the Ute resource utilization
    possibilities to be examined in the study.

3. Each of these resource utilization possibilities will be called
    an "alternative future."

Work Task 1:

Formulate Ute goals

Comments:

1. Tribal goals will be identified by the goal identification panel.

2. These goals will include a broad range of social, economic, and environmental concerns.

3. The task here is to identify and formulate all relevant Ute goals. It is not to make judgments about their relative importance.

4. The other work tasks involve developing data and procedures for assessing the impacts of various Ute resource utilization possibilities on the achievement of Ute goals.

Work Task 2:

Specify indicators of Ute goal achievement

Comments:

1. Indicators are things which can be measured and which have a bearing on the achievement of one or more goals.

2. For example, income and employment are indicators of economic well-being (see the display for more details).

3. The task of defining the relationships between indicators and goals is technical and will be the responsibility primarily of the USU technicians. These mathematical definitions will enable us to assess how changes in indicators would affect Ute goal achievement.

Work Task 3:

Determine the levels (measurements) of these indicators for the base year 1970

Comments:

1. The 1970 indicator measurements will provide a basis for assessing the changes predicted for various Ute resource utilization possibilities.
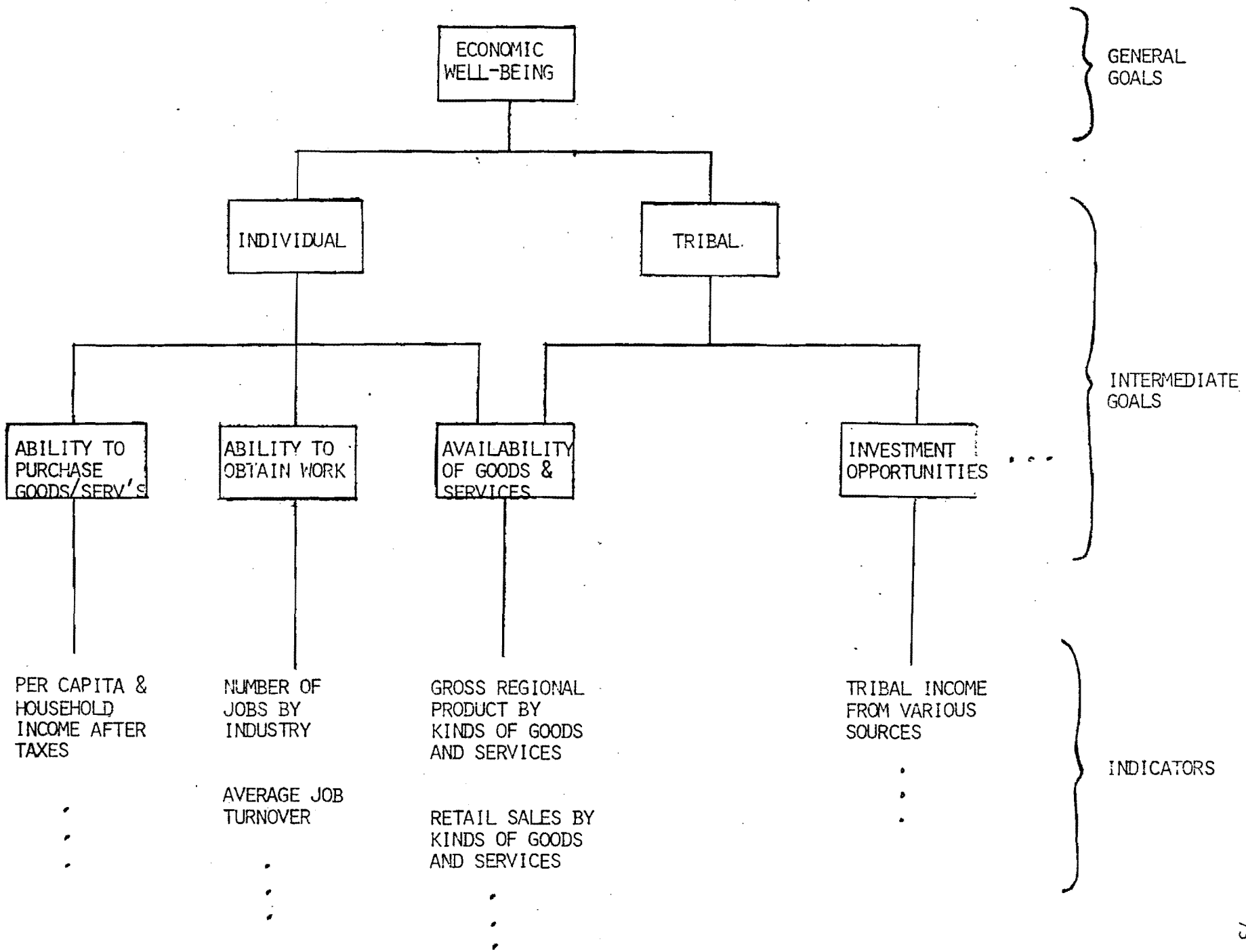
Work Task 4:

Develop a comprehensive inventory of each important Ute resource

Comments:

1. The inventory will include information (location, quantity, legal status, etc.) on such Ute resources as water, minerals, oil shale, manpower, capital, etc.

2. Since much of the needed information already exists, this task will mostly involve organizing available information in a form which will facilitate a systematic identification of Ute resource utilization possibilities.

3. The study will not publish or otherwise release this information without the written consent of the Business Committee.

Work Task 5:

Inventory operating and planned developments in the Basin

Comments:

1. Development possibilities both on and off the reservation will be considered and will include water resources, energy, agricultural, mineral, commercial, and other kinds of development.

2. The inventory will involve determining the resources requirements of each development - and again will be organized in a way that facilitates the identification of Ute resource utilization possibilities.

Work Task 6:

Select the Ute resource utilization possibilities of greatest interest to the Tribe

Comments:

1. The Business Committee will select these resource utilization possibilities (alternative futures).

2. These possible ways of utilizing Ute resources will presumably include preservation and "non-developmental" uses as well as "developmental" uses.

Work Task 7:

Determine how each resource utilization possibility would be
expected to result in changes in the indicators

Comments:

1. Various computer models will be used to predict the effects
   (indicator changes) of the various alternatives for Ute
   resources development.

2. Two of the models to be used (UPED and UPLAND) were developed
   by the state planning office. They provide projections for the
   economic indicators.

3. Other models will be used to predict future levels for the
   environmental and social indicators.

Work Task 8:

Relate the predicted changes in indicators to Ute goal achievement

Comments:

1. A model called Techcom will be used to relate changes in the
   indicators to changes in goal achievement - to provide a re-
   liable assessment of how alternative resource utilization
   possibilities would affect the achievement of Ute goals.

2. The purpose of this task is to get the information produced
   in the study in a form useful for planning and management
   purposes.

Appendix B

Ute Goals: First Response

UTE GOALS
(from Goal Identification Panel)

I. Tribal self-determination

A. Retention of Ute rights to resources
-Tribe has first right to all water and minerals
-To protect our resources, we must develop our water resources
-Tribal land not be subdivided into small lots
-Tribe being able to utilize its resources to the best of their knowledge
-Tribe should decide whether or not to develop and not outsiders
-Tribe should develop its resources
-Water rights should be protected.

B. Reducing unwanted interference of non-Utes in Tribal decision making
-Not having too much non-Ute influence on Tribal decisions
-Too much input from non-Indians
-Ute people to be able to control and govern themselves
-Running our Tribal government
-Not having white man influencing our Tribal Business Committee on their decisions
-Running our own business as a Tribe
-To be able to control Tribal government without BIA and non-Indian influence
-Tribe has opportunity and responsibility of managing their own affairs
-Make decisions about fate of our resources without outside interference
-Qualified Utes having management positions in agencies which affect the Tribe

C. Economic independence (reducing the dependence of the Tribe on outside income sources)
-Ute people not having to rely on others
-Economic self-sufficiency

D. Opportunity for tribal members to review and have an input into important tribal decisions (budgets, commitments of Ute resources, etc.)
-Having more input in such things as schools, education of our youth, and all concerned matters
-Having good feelings of communication with Tribal leaders, members of the Tribe, and so forth
-Indian leaders that have the values and goals of other Ute Indians at heart
-Ability to do what is best for the Tribal members
-Fewer promises that do not come about
-Business committee gives direction to the Tribe
-Working together as a Tribe (not going different directions)
-Ute people through their goals will decide how Tribal progress will best suit their needs

-Leadership from governing body of the Utes (The Tribal
Business Committee)
-Tribal Council should make all efforts to inform Ute people
on issues of concern
-Tribal members should work together and stand behind their
leaders
-Tribe needs strong leadership to manage its affairs, and
Tribal members should be willing to recognize this leadership
-Tribal members should review and comment on Tribal budget and
other important decisions in advance
-Government is needed in our communities and the ideas and
desires of Tribal members communicated to Business Committee
by local leaders

E. Adequate Tribal planning
-Plan ahead (working toward goals and objectives)
-Thoughtful and careful planning
-Work for the future of the Tribal members (not the present)
-Long range goals set for youth
-Set future goals
-Prevent maladies from our future generation
-Tribe having enough money to carry out plans
-Ability and dedication to make decisions that will benefit
the Tribe in years to come
-Long range planning is badly needed
-Form a 30-member executive council (10 from each band) to
advise and review Business Committee actions
-Business Committee should use newspaper, newsletters, and
meetings to communicate with Tribal members
-Open Business Committee meetings to Tribal members

II. Economic well-being

A. Economic well-being for individual Utes

1. Income opportunity
-Earn a good living
-Well paying jobs
-Adequate income/good wages
-Enough money
-To be able to earn a living
-Dividing Tribal money fairly among Tribal members
-Decent dividend payment from our enterprises and from reser-
vation income
-Dividend payed to Tribal members from businesses or enter-
prises established
-Wages should be tied to productivity
-Equal division of revenue for Ute resources
-Land assignments (and other distributed goods) should be
divided among Tribal members fairly

1. Job opportunity
-Sufficient jobs
-Our people will be employed

-Jobs
-Not receiving handout by working for income
-Jobs for Ute people
-Job opportunity
-Exclude all non-members from Tribal employment
-Our people working in Tribal enterprises
-Equal opportunity in getting a job
-At present the economic conditions of the Tribe are designed
 for non-members only, while our people are barely making it
 on welfare
-Getting the job people want
-Fair working conditions to all members
-Right kind of working conditions
-Work as long as you want and get promotions and raises
-Job advancement
-Job security
-Job suited to Ute way of life and attitudes
-Some kind of security for people who can't for whatever
 reason work
-Business Committee should be aware of Ute capabilities and
 training when setting up Ute businesses that will employ Utes
-Utes should have first priority in Ute jobs, but they should
 be productive and dependable at the job
-Utes should be advanced to management positions whenever they
 are capable
-Jobs should be appealing to Utes and should fit Utes tastes
 and qualifications
-Qualified Utes should receive management positions
-Utes should be qualified for a job before it is given to them

3. Opportunity for self-employment
   -Self-employment
   -Self-income source

B. Economic well-being for the Tribe

1. Self-sustaining Ute enterprise
   -Continuing on-going investment programs with greater returns
    for Tribe
   -We must utilize benefits (money) from our resources (like oil)
    which will eventually run out to build economic factors (like
    businesses)
   -Utilizing present resources so they will be self-sustaining
   -Tribe having enough money to carry out its plans
   -Financial well-being to take care of future
   -Self supporting businesses
   -Gain money in a professional manner, business development or
    economic development for the Tribe
   -Tribe establishing enterprises and these enterprises will be
    self-supporting (and employ our people)
   -Money coming from our sources
   -Ute enterprises should be self-sufficient
   -Utes should develop all potentials for Tribal income

-Tribe should develop enterprises that will be managed even-
tually by Tribal members
-Looking for new ways for Tribal development

2. Development of Ute resources
-Better utilization of resources that are here
-Develop what natural resources we have in terms of water, fish,
wildlife, and other resources to provide good things
-Tribe having the human and economic resources to do whatever
it wants (to make times better for all its members and local
people in the Basin)
-Developing our water resources
-Provide for Tribal needs full development of Tribal resources
-Utilization of human resources
-Wise capital investment
-Better utilization of natural resources (land, water, and
mineral, such as oil, gas, etc.)
-Upgrade management skills of Utes

C. Availability of goods and services

1. Reasonable choice of goods and services
-Here on the reservation there isn't anything good to buy
(people go to Salt Lake City)
-Insurance
-Create Ute co-op for purchase of wide range or retail items
(food, cars, clothes, etc.....)

2. Reasonable prices for goods and services
-Having things to buy at reasonable prices
-Prices are too high
-It costs more to eat, sleep, purchase, and consequently we as
a Tribe have to maintain a safe inflation level (as prices go
up, Tribal money must go up)
-Local goods are priced high
-Should be more competition between stores

D. Reasonable taxes
-Tribe not be taxed on things they buy at stores (such as
Roosevelt and Vernal or their own stores on the reservation)
-Tax deduction not be made (on property or income)
-Taxes (federal, state, and local) are excessive

III. Social and personal well-being

A. Educational opportunity

1. Getting a good education
-A good education
-Educate people to be self-reliant
-Support youth in school
-Educate the young people
-Prepare Indian youth so they can come back and manage
-Indians do not need type of education we receive to have a job

-Job training
-Good job training
-Job training or workshop in the kind of job you like
-More training on the job
-MDIA training in adequate public service
-Good trade schools locally
-Training when it will help me improve and advance in my position
-Education
-Good school systems
-Without education you don't have well being (I don't mean education in the sense that society understands it)
-Good education so our children can go to college
-Good education will bring money, homes, jobs, success
-Children can get diplomas and graduate
-Adequate education opportunities, quality education
-The public school should provide an adequate education for Utes
-Should have better teachers and facilities
-Indians should have a good education for job opportunity

   2. Ute participation in school system
      -Good public schools where our youth will not be sent off the reservation to get a better education
      -Schools of our own
      -Having our own teachers
      -Indian teachers

B. Preservation of Ute culture and traditions
      -Not losing Tribal customs and traditions
      -Protecting sacred and historical places
      -Planning a future that fits Ute ways
      -Preserving Tribal customs and traditions should be up to the individuals and parents
      -Sticking to traditional customs will reduce family problems

C. Community development

   1. Physical development
      -Good housing
      -The reservation have a good housing unit
      -Nice, large spaced homes
      -Houses not all looking the same
      -Houses not clustered in a housing project (like a ghetto)
      -Good lawns
      -Adequate housing--comparable to whites (brick or frame, sufficient bedrooms, living room with fireplace, etc.)
      -Housing is inadequate in design, spacing, and quality
      -Sufficient living space for Ute living group needs

   2. Social development
      -Keeping youth with the Tribe
      -Do things for younger generation
      -When child graduates, he will know he has a job with the Tribe
      -Election of leaders in each community
      -Communication of community needs to Business Committee
      -More community pride needed

D. Individual freedom
  -Being able to live as you want
  -A chance to make individual choices
  -Being able to think and do as you please without the BIA and Tribal officials
  -Doing what you want
  -Being able to have the things you want
  -Understanding myself and goals that are going to help accomplish my goals
  -To make your own life worthwhile
  -Must be self-determined (or have to depend on welfare)
  -Desirable to be respected
  -Stabilized person in the social community
  -A good marriage
  -Good understanding at home
  -A good supporting wife
  -Enjoy things the family wants
  -Togetherness as a family
  -Ute individuals should be able to plan for themselves and utilize their talents without the help of others
  -Self-reliance

E. Less discrimination against Utes
  -Utes should not be discriminated against

F. Adequate services on reservation

  1. Public services
    -Adequate police protection (from vandalism, theft, etc.)

  2. Social services
    -Adequate social services
    -Medical services
    -Having a qualified doctor
    -Get people who are really concerned for people's welfare
    -Adequate family counseling
    -Elderly Indian people should not be forgotten
    -Having ways to care for the elderly
    -Need better medical services and doctors
    -Need adequate personnel and programs for youth recreation
    -Need better alcohol and drug programs that reach all those who need help
    -Utes should be allowed to choose their own local doctor
    -Tribe needs a permanent doctor
    -Adequate recreational opportunities for me and my children
    -More recreation for youth
    -Having social activities for elderly

IV. Environmental quality on reservation

  A. Air quality
    -Clean air
    -Stop white man from goofing up the clean air

B. Water quality
    -Clean water
    -Clean rivers
    -Protecting water
    -Clean drinking water

C. Having enough water
    -Enough water (for needs of people)
    -Build water storage (dams)
    -Develop springs

D. Protecting fish and wildlife
    -Maintaining wildlife
    -Protecting fish
    -Protecting wildlife from extinction
    -Continuation of wildlife and fish management (through Fish and
     Game Department, Fish and Game Advisory Board, and Business
     Committee)
    -Cooperation between governmental bodies in herd management is
     necessary
    -Should develop new management methods
    -Ute Fish and Game should keep up with new methods to preserve
     fish and wildlife
    -Ute control of fish and game
    -Predator control is important

E. Protecting natural vegetation (plant life)

F. Protecting (not altering or despoiling) the landscape
    -Protecting the landscape
    -Keep Indian lands as clean as possible
    -Clean campgrounds
    -Clean areas
    -Protecting land
    -No beer cans from white man
    -No dams
    -Continuation of land management control (designated land man-
     agement control or to be in wilderness area)

G. General environment protection
    -Protect all Tribal environment
    -Take care of what is here (don't let men or nature take over)
    -Keep things natural and clean
    -Maintain health and well-being of all living things and all
     things nature put here
    -Government back off, let nature take its course
    -Respect nature
    -All things should be protected
    -Controlling developments which take place on the reservation
     (mineral, water, and land). Keep it from polluting the air,
     water, and land, etc.
    -Protecting all things -- in the air, water, land, animals,
     fish, and plants. Of course, not forgetting human beings.
    -Indian people will have to start adopting pollution control
     measures.

Appendix C

Panel Orientation Materials: Session II

IDENTIFICATION OF UTE GOALS

(Results of the Goal Identification Panel
Breakfast Meeting held on January 30)

Introduction

At the January 30 breakfast meeting, each member of the Goal Iden-
tification Panel identified what he thinks are important Tribal goals under
the following four general headings: Economic Well-Being, Social and
Personal Well-Being, Environmental Quality, and Ute Self-Determination.
The results of the January 30 meeting are presented here.

After carefully considering the goals that each of you listed, the
members of the Utah State University team have attempted to summarize your
answers and organize them into appropriate groups or categories. In order
to carefully distinguish your input from ours, we have presented the results
of the January 30 meeting under two headings: one labeled "Your Answers"
and the other labeled "Our Summary and Organization of Your Answers."

Although it will be necessary to decide on how the many particular
ways of stating a goal should be summarized, it is important to keep a
list of all of the particular formulations (the statements listed under
"Your Answers") since they are what give meaning and substance to the
summary statements; they tell us how summary goal statements should be
understood and interpreted and they will guide us in the process of iden-
tifying measurable indicators of goal achievement.

A few of the goals have brackets [ ] around them. This means that
we have placed the goal under a different heading or category than the
one you did.

Your Answers	Our Summary and Organization of Your Answers

A. MINIMIZING NON-UTE INFLUENCE IN TRIBAL DECISION MAKING

1. Not having too much non-Ute influence on Tribal decisions
2. Too much input from non-Indians
3. Ute people to be able to control and govern themselves
4. Running our Tribal government
5. Not having white man influencing our Tribal Business Committee on their decisions
6. Running our own business as a Tribe
7. To be able to control Tribal government without BIA and non-Indian influence
8. Tribe has opportunity and responsibility of managing their own affairs

A. MINIMIZING NON-UTE INFLUENCE IN TRIBAL DECISION MAKING

1. Tribe having opportunity to manage its own affairs
2. Less influence of non-Utes on Tribal government

B. TRIBAL MEMBERS HAVING INPUT INTO TRIBAL DECISIONS

1. Having more input in such things as schools, education of our youth, and all concerned matters
2. Having good feelings of communication with Tribal leaders, members of the Tribe, and so forth
3. Indian leaders that have the values and goals of other Ute Indians at heart
4. Ability to do what is best for the Tribal members
5. Fewer promises that do not come about
6. Business committee gives direction to the Tribe
7. Working together as a Tribe (not going different directions)

A. TRIBAL MEMBERS HAVING INPUT INTO TRIBAL DECISIONS

1. Good communication between Tribal members and leaders
2. Business Committee giving direction to Tribe
   a. Understanding desires of the Tribe
   b. Being able to carry out desires of the Tribe

Your Answers	Our Summary and Organization of Your Answers
8. Ute people through their goals will decide how Tribal progress will best suit their needs	
9. Leadership from governing body of the Utes (The Tribal Business Committee)	

C. UTES HAVING ENOUGH SAY IN DECISIONS MADE BY NON-UTES WHICH AFFECT THE TRIBE

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D. UTES BEING ABLE TO CHANGE NON-UTE POLICIES WHICH IT DOES NOT LIKE

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E. UTES HAVING MANAGEMENT POSITIONS IN AGENCIES WHICH AFFECT THE TRIBE

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F. [UTES MAINTAINING RIGHTS TO RESOURCES]

    F. [UTES MAINTAINING RIGHTS TO RESOURCES]

1. Tribe has first right to all water and minerals
2. To protect our resources, we must develop our water resources
3. Tribal land not be subdivided into small lots
4. Tribe being able to utilize its resources to the best of their knowledge

    1. Utes having first right to all Ute resources
    2. Tribal right to all resources maintained (not subdivided)

G. [SELF-DETERMINATION FOR THE INDIVIDUAL]

    G. [SELF-DETERMINATION FOR THE INDIVIDUAL]

1. Self-determination for the individual
2. Manage their own businesses
3. Be able to plan budget
4. Use what you earn to best use
5. To be able to understand and make decisions
6. To be able to utilize the resources you have
7. Rely on yourself for economic and social stability

    1. Ability of the Tribe to utilize its resources in its own best interest
      a. Ability to manage own business
      b. Ability to budget
      c. Self-reliance
    2. Freedom of speech
    3. Freedom of assembly
    4. Helping individual Utes to adjust to

Your Answers	Our Summary and Organization of Your Answers
8. Freedom of speech	or cope with White culture
9. Freedom of assembly	
10. Transforming Tribal members to White culture	
11. Self-reliance (individuals rely on themselves)	
12. Individual furthering himself in his own society (through education)	

H. THOUGHTFUL TRIBAL PLANNING

1. Plan ahead (working toward goals and objectives
2. Thoughtful and careful planning
3. Work for the future of the Tribal members (not the present)
4. Long range goals set for our youth
5. Set future goals
6. Prevent maladies from our future generation
7. Tribe having enough money to carry out plans
8. Ability and dedication to make decisions that will benefit the Tribe in years to come

H. THOUGHTFUL TRIBAL PLANNING

1. Having long-range goals established for the Tribe
2. Having careful planning to reach these goals
3. Tribe having enough money to carry out plans

I. SOLVING THE TERMINATION PROBLEM*

1. Termination would be extinction for the Tribe
2. What would the Tribe do? (Sell land, oil, minerals, water rights, etc., and have nothing left?)
3. Self-determination does not mean termination (it is there for the Ute Tribe to use and provide more meaningful and responsive services from Tribal resources, B & D, Public Health)

I. SOLVING THE TERMINATION PROBLEM*

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*This should probably be regarded as an action alternative rather than a goal; an evaluation of this alternative would involve assessing its impacts on all of the economic, social, environmental, and self-determination goals.

Your Answers	Our Summary and Organization of Your Answers

A. JOB OPPORTUNITY

1. Having enough jobs for Utes
   a. Sufficient jobs
   b. Our people will be employed
   c. Jobs
   d. Not receiving handout by working for income
   e. Jobs for Ute people
   f. Job opportunity

2. Getting Utes employed
   a. Exclude all non-members from Tribal employment
   b. Our people working in Tribal enterprises
   c. Equal opportunity in getting a job
   d. Indians do not need good education to have a job
   e. At present the economic conditions of the tribe are designed for non-members only, while our people are barely making it on welfare

3. Right kinds of jobs
   a. Getting the job people want
   b. Fair working conditions to all members
   c. Right kind of working conditions
   d. Work as long as you want and get promotions and raises
   e. Job advancement
   f. Job security
   g. Self employment
   h. Self-income source

4. Earning enough money
   a. Earn a good living
   b. Well paying jobs
   c. [Adequate income/good wages]

A. JOB OPPORTUNITY

1. Having enough jobs for Utes

2. Getting Utes employed
   a. Equal opportunity for Utes in non-Tribal jobs
   b. Giving Utes preference in Tribal jobs

3. Right kinds of jobs
   a. Adequate working conditions
   b. Job security
      1. Lasting jobs
      2. Job advancement
   c. Self employment opportunity

4. Earning enough money
   a. Getting enough income from jobs
   b. Getting enough income from other sources (settlements, etc.)

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Your Answers	Our Summary and Organization of Your Answers

d.   [Enough money]
e.   [To be able to earn a living]

B.   ACCEPTABLE TRIBAL ECONOMIC DEVELOPMENT

1.   Continuing on-going investment programs with greater returns for Tribe
2.   Better utilization of resources that are here
3.   Develop what natural resources we have in terms of water, fish, wildlife, and other resources to provide good things
4.   We must utilize benefits (money) from our resources (like oil) which will eventually run out to build economic factors (like businesses)
5.   Utilizing present resources so they will be self-sustaining
6.   Tribe having enough money to carry out its plans
7.   Tribe having the human and economic resources to do whatever it wants (to make times better for all its members and local people in the Basin)
8.   Financial well-being to take care of future
9.   Self supporting businesses
10. Gain money in a professional manner, business development, or economic development for the Tribe
11. Tribe establishing enterprises and these enterprises will be self-supporting (and employ our people)
12. Money coming from our sources
13. Developing our water resources
14. Provide for Tribal needs full development of Tribal resources
15. Utilization of human resources

B.   ACCEPTABLE TRIBAL ECONOMIC DEVELOPMENT

1.   Proper development of Ute resources
     a.   Natural resources
          1.   Water
          2.   Minerals
          3.   Energy (coal, oil, shale, other)
          4.   Land
          5.   Fish and wildlife
     b.   Capital resources
     c.   Human resources development
          [Developed under "Social and Personal Well-Being]

Your Answers	Our Summary and Organization of Your Answers

16. Wise capital investment
17. Better utilization of natural resources (land, water and minerals, such as oil, gas, etc.)

C. DIVIDING TRIBAL INCOME FAIRLY AMONG TRIBAL MEMBERS

  1. Dividing Tribal money fairly among Tribal members
  2. All the money resources be divided on a three month basis*
  3. Decent dividend payment from our enterprises and from reservation income
  4. Dividend paid to Tribal members from businesses or enterprises established

C. DIVIDING TRIBAL INCOME FAIRLY AMONG TRIBAL MEMBERS

  1. Dividing income fairly among Tribal members
    a. Income from Tribal businesses, enterprise investments, and leases divided fairly)
    b. Income from settlements and other government payments to the Tribe divided fairly

D. ACCEPTABLE TAX POLICIES

  1. Tribe not be taxed on things they buy at stores (such as Roosevelt and Vernal or their own stores on the reservation)
  2. Tax deductions not be made (on property or income)
  3. Taxes (federal, state, and local) are excessive

D. ACCEPTABLE TAX POLICIES

  1. Elimination of taxes on purchases by Indians
  2. Elimination of tax deductions (withholding)

E. HAVING THINGS TO BUY AT REASONABLE PRICES

  1. Having things to buy at reasonable prices
  2. Here on the reservation there isn't anything

E. HAVING THINGS TO BUY AT REASONABLE PRICES

  1. Having enough things to buy
    a. Good selection of things to buy

*This should probably be regarded as an action alternative rather than a goal; an evaluation of this alternative would involve assessing its impacts on all of the economic, social, environmental, and self-determination goals.

Your Answers	Our Summary and Organization of Your Answers
to buy (people go to Salt Lake City)	1. Good selection of goods
3. Prices are too high here	2. Good selection of services (insurance, etc.)
4. It costs more to eat, sleep, purchase, and consequently we as a Tribe have to maintain a safe inflation level (as prices go up, Tribal money must go up)	2. Reasonable prices
	3. Inflation adjustments in Tribal income
5. Insurance	

Your Answers	Our Summary and Organization of Your Answers
A. GOOD GRADE AND HIGH SCHOOL EDUCATION	A. GOOD GRADE AND HIGH SCHOOL EDUCATION

A. GOOD GRADE AND HIGH SCHOOL EDUCATION

1. A good education
2. Good public schools where our youth will not be sent off the reservation to get a good education
3. Education
4. Good school systems
5. Without education you don't have well being (I don't mean education in the sense that society understands it)
6. Good education so our children can go to college
7. Good education will bring money, homes, jobs, success
8. Children can get diplomas and graduate
9. Adequate education opportunities, quality education
10. Schools of our own
11. Have our own teachers
12. Indian teachers
13. Educate people to be self-reliant
14. Support youth in school
15. Educate the young people
16. Prepare Indian youth so they can come back and manage
17. Indians do not need good education to have a job

B. GOOD JOB TRAINING

1. [Job training]
2. Good job training
3. Job training or workshop in the kind of job you like

A. GOOD GRADE AND HIGH SCHOOL EDUCATION

1. Adequate school systems
   a. Good training for youth
   b. Completion of education
   c. Training for management positions
2. Having Ute control of education
   a. Ute school system
   b. Ute teachers
3. Supporting youth in school

B. GOOD JOB TRAINING

1. Sufficient on-the-job training
2. Good trade schools locally
3. Workshops and other kinds of jobs training locally

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Your Answers	Our Summary and Organization of Your Answers

4. [More training on the job]
5. MDIA training in adequate public service
6. Good trade schools locally
7. Training when it will help me improve and advance in my position

C. GOOD HOUSING

1. Good housing
2. The reservation have a good housing unit
3. Nice, large scaped homes
4. Houses not all looking the same
5. Houses not clustered in a housing project (like a ghetto)
6. Good lawns
7. Adequate housing – comparable to whites (brick or frame, sufficient bedrooms, living-room with fireplace, etc.)

D. ADEQUATE PUBLIC SERVICES

1. Adequate police protection (from vandalism, theft, etc.)

E. ADEQUATE SOCIAL SERVICES

1. Adequate social services
2. Medical services
3. Having a qualified doctor
4. Get people who are really concerned for people's welfare
5. Adequate family counseling

C. GOOD HOUSING

1. Enough adequate housing
2. Well-designed housing
   a. Adequate space between houses
   b. Variation in design
   c. Good housing units

D. ADEQUATE PUBLIC SERVICES

1. Adequate police protection
2. Other public services

E. ADEQUATE SOCIAL SERVICES

1. Medical services
2. Adequate family counseling
3. Other social services

Your Answers	Our Summary and Organization of Your Answers

F. LESS DISCRIMINATION AGAINST UTES

   1. [Equal opportunity in getting a job]

G. ADEQUATE RECREATIONAL OPPORTUNITIES

   1. Adequate recreational opportunities for me and my children
   2. More recreation for youth
   3. Having social activities for elderly

H. KEEPING YOUTH WITH THE TRIBE

   1. Keeping youth with the Tribe
   2. Do things for younger generation
   3. When child graduates, he will know he has a job with the Tribe

I. KEEPING TRIBAL CUSTOMS AND TRADITIONS

   1. Not losing Tribal customs and traditions
   2. Protecting sacred and historical places

J. BEING ABLE TO LIVE AS YOU WANT TO

   1. Being able to live as you want to
   2. A chance to make individual choices
   3. Being able to think and do as you please without the BIA and Tribal officials
   4. Doing what you want
   5. Being able to have the things you want

F. LESS DISCRIMINATION AGAINST UTES

   1. [Equal opportunity in getting a job]

G. ADEQUATE RECREATIONAL OPPORTUNITIES

   1. For Tribe in general
   2. For youth
   3. For elderly

H. KEEPING YOUTH WITH THE TRIBE

   1. Programs for youth
   2. Assuring a job with Tribe after graduation

I. KEEPING TRIBAL CUSTOMS AND TRADITIONS

   1. Keeping customs and traditions
   2. Protecting sacred and historical places

J. BEING ABLE TO DO WHAT YOU WANT

   1. Being able to make own choices about what you do without outside interference
   2. Being able to understand yourself and how to achieve your personal goals

Your Answers	Our Summary and Organization of Your Answers
6. Understanding myself and goals that are going to help accomplish my goals	3. Being able to do things on your own which will make your life worthwhile
7. To make your own life worthwhile	4. Being respected
8. Must be self-determined (or have to depend on welfare)	5. Being stable in the social community
9. Desirable to be respected	
10. Stabilized person in the social community	

K. GOOD FAMILY LIFE

1. A good marriage
2. Good understanding at home
3. A good supporting wife
4. Enjoy things the family wants
5. Togetherness as a family

K. GOOD HOME LIFE

1. Good marriage
2. Good family relations

L. HAVING CARE FOR THE ELDERLY

1. Elderly Indian people should not be forgotten
2. Having ways to care for the elderly

L. HAVING GOOD CARE FOR THE ELDERLY

1. Having elderly involved in communities
2. Having ways to care for elderly

M. ECONOMIC WELL-BEING

(Social and personal well-being obviously depend on economic well-being)

M. ECONOMIC WELL-BEING

Your Answers	Our Summary and Organization of Your Answers
A. CLEAN AIR	A. CLEAN AIR
1. Clean air 2. Stop White man from goofing up the clean air	1. Clean air
B. CLEAN WATER	B. CLEAN WATER

1. Clean water
2. Clean rivers
3. Protecting water
4. Clean drinking water
	1. Clean water
	   a. Rivers, streams, and lakes
	   b. Drinking water

C. ENOUGH WATER	C. ENOUGH WATER
1. Enough water (for needs of people) 2. Build water storage (dams)* 3. Develop springs	1. Developing sources of water to meet Tribal needs.
D. PROTECTING THE LANDSCAPE	D. PROTECTING THE LANDSCAPE
1. Protecting the landscape 2. Keep Indian lands as clean as possible 3. Clean campgrounds 4. Clean areas 5. Protecting land 6. No beer cans from White man 7. No dams* 8. Continuation of land management control (designated land management control or to be in wilderness area)	1. Clean lands 2. Not altering lands or stream beds

*This should be regarded as an action alternative; an evaluation of this alternative would involve assessing its impact on all of the economic, social, environmental, and self-determination goals.

Your Answers	Our Summary and Organization of Your Answers
E. MAINTAINING WILDLIFE	E. MAINTAINING WILDLIFE

Your Answers

E. MAINTAINING WILDLIFE

1. Maintaining wildlife
2. Protecting fish
3. Protecting wildlife from extinction
4. Continuation of wildlife and fish management (through Fish and Game Department, Fish and Game Advisory Board, and Business Committee)

F. MAINTAINING PLANT LIFE

G. PROTECTING ALL OF THE ENVIRONMENT

1. Protect all Tribal environment
2. Take care of what is here (don't let men or nature take over)
3. Keep things natural and clean
4. Maintain health and well being of all living things and all things nature put here
5. Government back off, let nature take its course
6. Respect nature
7. All things should be protected
8. Controlling developments which take place on the reservation (mineral, water, and land) keeping it and if such developments will pollute the air, water, and land, etc.
9. Protecting all things -- in the air, water, land, animals, fish, and plants. Of course, not forgetting human beings.

Our Summary and Organization of Your Answers

E. MAINTAINING WILDLIFE

1. Fish
2. Game animals
3. Other animals

F. MAINTAINING PLANT LIFE

G. PROTECTING ALL OF THE ENVIRONMENT

(The intermediate goals under this general goal have all been included under the other general environmental goals.)

Appendix D

<u>Panel Questionnaire: Session III</u>

QUESTIONNAIRE FOR THE PERSONAL INTERVIEWS

Introduction

Although a very good start has been made in identifying and organi-
aing the goals of the tribe, we need in the meetings and interviews which
will follow to add other relevant goals, clarify meanings, organize the
goals into appropriate groups, and identify the ways in which goal achieve-
ment can be measured. The following questionnaire has been developed as a
means for helping us do these things. You might want to look it over
before the March 2 meeting and interviews.

Tribal Goals	Put a check (✓) in the column which best expresses your view about the importance of each goal		
	Very Important	Fairly Important	Not Very Important

A. Ute Self-Determination

1. Minimizing non-Ute influence in Tribal decision making

   a. Tribe having opportunity to manage its own affairs
   b. Less influence of non-Utes on Tribal government

2. Tribal members having input into Tribal decisions

   a. Good communication between Tribal members and leaders
   b. Business Committee giving direction to Tribe

      (1) Understanding desires of the Tribe
      (2) Being able to carry out desires of the Tribe

3. Utes having enough say in decisions made by non-Utes which affect the Tribe

4. Utes being able to change non-Ute policies which it does not like

5. Utes having management positions in agencies which affect the Tribe

6. Utes maintaining rights to resources

   a. Utes having first right to all Ute resources
   b. Tribal right to all resources maintained (not subdivided)

7. Self-determination for the individual

   a. Ability of the Tribe to utilize its resources in its own best interest

Tribal Goals	Put a check (✓) in the column which best expresses your view about the importance of each goal		
	Very Important	Fairly Important	Not Very Important
(1) Ability to manage own businesses			
(2) Ability to budget			
(3) Self-reliance			
b. Freedom of speech			
c. Freedom of assembly			
d. Helping individual Utes to adjust to or cope with White culture			
8. Thoughtful Tribal planning			
a. Having long-range goals established for the Tribe			
b. Tribe having enough money to carry out plans			
9. Solving the termination problem			
B. Economic Well-Being			
1. Job Opportunity			
a. Having enough jobs for Utes			
b. Getting Utes employed			
(1) Equal opportunity for Utes in non-Tribal jobs			
(2) Giving Utes preference in Tribal jobs			
c. Right kinds of jobs			
(1) Adequate working conditions			
(2) Job security			
(a) Lasting jobs			
(b) Job advancement			
(3) Self-employment opportunity			
d. Earning enough money			
(1) Getting enough income from jobs			

Tribal Goals	Put a check (✓) in the column which best expresses your view about the importance of each goal		
	Very Important	Fairly Important	Not Very Important
(2) Getting enough income from other sources (settlements, etc.)			
2. Acceptable Tribal economic development			
a. Proper development of Ute resources			
(1) Natural resources			
(a) Water			
(b) Minerals			
(c) Energy (coal, oil, shale, other)			
(d) Land			
(e) Fish and wildlife			
b. Capital resources			
c. Human resources development			
3. Dividing Tribal income fairly among Tribal members			
a. Dividing income fairly among Tribal members			
(1) Income from Tribal businesses, enterprise investments, and leases divided fairly			
(2) Income from settlements and other government payments to the Tribe divided fairly			
4. Acceptable tax policies			
a. Elimination of taxes on purchases by Indians			
b. Elimination of tax deductions (withholding)			
5. Having things to buy at reasonable prices			
a. Having enough things to buy			

| | Put a check (✓) in the column which best expresses your view about the importance of each goal | | |
Tribal Goals	Very Important	Fairly Important	Not Very Important
(1) Good selection of things to buy			
(a) Good selection of goods			
(b) Good selection of services (insurance, etc.)			
b. Reasonable prices			
c. Inflation adjustments in Tribal income			

C. **Social Well-Being**

1. Good grade and high school education

   a. Adequate school systems

      (1) Good training for youth
      (2) Completion of education
      (3) Training for management positions

   b. Having Ute control of education

      (1) Ute school system
      (2) Ute teachers

   c. Supporting youth in school

2. Good job training

   a. Sufficient on-the-job training
   b. Good trade schools locally
   c. Workshops and other kinds of job training locally

3. Good housing

   a. Enough adequate housing
   b. Well-designed housing

      (1) Adequate space between houses
      (2) Variation in design
      (3) Good housing units

Tribal Goals	Put a check (✓) in the column which best expresses your view about the importance of each goal		
	Very Important	Fairly Important	Not Very Important
4. Adequate public services			
a. Adequate police protection			
b. Other public services			
5. Adequate social services			
a. Medical services			
b. Adequate family counseling			
c. Other social services			
6. Less discrimination against Utes			
a. Equal opportunity in getting a job			
7. Adequate recreational opportunities			
a. For Tribe in general			
b. For youth			
c. For elderly			
8. Keeping youth with the Tribe			
a. Programs for youth			
b. Assuring a job with Tribe after graduation			
9. Keeping Tribal customs and traditions			
a. Keeping customs and traditions			
b. Protecting sacred and historical places			
10. Being able to do what you want			
a. Being able to make own choices about what you do without outside interference			
b. Being able to understand yourself and how to achieve your personal goals			
c. Being able to do things on your own which will make your life worthwhile			
d. Being respected			
e. Being stable in the social community			

Tribal Goals	Put a check (✓) in the column which best expresses your view about the importance of each goal		
	Very Important	Fairly Important	Not Very Important
11. Good home life			
a. Good marriage			
b. Good family relations			
12. Having good care for the elderly			
a. Having elderly involved in communities			
b. Having ways to care for elderly			
13. Economic Well-Being			
D. Environmental Quality			
1. Clean air			
a. Clean air			
2. Clean Water			
a. Clean water			
(1) Rivers, streams, and lakes			
(2) Drinking water			
3. Enough Water			
a. Developing sources of water to meet Tribal needs			
4. Protecting the landscape			
a. Clean lands			
b. Not altering lands or stream beds			
5. Maintaining wildlife			
a. Fish			
b. Game animals			
c. Other animals			
6. Maintaining plant life			
7. Protecting all of the environment			

Now we would like you to think of the ways in which we can improve the formulation of the Tribe's goals. To do this, please ask yourself the following questions: Are there important goals which have been overlooked? Are there better ways of stating the goals which have already been identified? Are there better ways of summarizing and organizing these goals? Using the results of the January 30 meeting of the Goal Identification Panel as a reference, please answer these questions by filling out the questionnaire below.

Tribal Goals	In the space provided below, add to or change any of the goals as you see fit

A. Ute Self-Determination

   1. Minimizing non-Ute influence in Tribal decision making

      a. Tribe having opportunity to manage its own affairs

      b. Less influence of non-Utes on Tribal government

   2. Tribal members having input into Tribal decisions

      a. Good communication between Tribal members and leaders

      b. Business Committee giving direction to Tribe

         1. Understanding desires of the Tribe

         2. Being able to carry out desires of the Tribe

   3. Utes having enough say in decisions made by non-Utes which affect the Tribe

   4. Utes being able to change non-Ute policies which it does not like

   5. Utes having management positions in agencies which affect the Tribe

6. Utes maintaining rights to resources

   a. Utes having first right to all Ute resources
   b. Tribal right to all resources maintained

7. Self-determination for the individual

   a. Ability of the Tribe to utilize its resources in its own best interest

      1. Ability to manage own businesses
      2. Ability to budget
      3. Self-reliance

   b. Freedom of speech
   c. Freedom of assembly
   d. Helping individual Utes to adjust to or cope with White culture

8. Thoughtful Tribal planning

   a. Having long-range goals established for the Tribe
   b. Tribe having enough money to carry out plans

9. Solving the termination problem

B. Economic Well-Being

   1. Job opportunity

      a. Having enough jobs for Utes
      b. Getting Utes employed

         1. Equal opportunity for Utes in non-Tribal jobs
         2. Giving Utes preference in Tribal jobs

c. Right kinds of jobs

    1. Adequate working conditions
    2. Job security

        a. Lasting jobs
        b. Job advancement

    3. Self-employment opportunity

d. Earning enough money

    1. Getting enough income from jobs
    2. Getting enough income from other sources (settlements, etc.)

2. Acceptable Tribal economic Development

a. Proper development of Ute resources

    1. Natural resources

        a. Water
        b. Minerals
        c. Energy (coal, oil, shale, other)
        d. Land
        e. Fish and wildlife

b. Capital resources
c. Human resources development

3. Dividing Tribal income fairly among Tribal members

a. Dividing income fairly among Tribal members

    1. Income from Tribal businesses, enterprise investments, and leases divided fairly

2. Income from settlements and other
   government payments to the Tribe
   divided fairly

4. Acceptable tax policies

   a. Elimination of taxes on purchases by
      Indians
   b. Elimination of tax deductions (with-
      holding)

5. Having things to buy at reasonable prices

   a. Having enough things to buy

      1. Good selection of things to buy

         a. Good selection of goods
         b. Good selection of services
            (insurance, etc.)

   b. Reasonable prices
   c. Inflation adjustments in Tribal income

C. Social Well-Being

1. Good grade and high school education

   a. Adequate school system

      1. Good training for youth
      2. Completion of education
      3. Training for management positions

   b. Having Ute control of education

      1. Ute school system
      2. Ute teachers

   c. Supporting youth in school

2. Good job training

   a. Sufficient on-the-job training
   b. Good trade schools locally
   c. Workshops and other kinds of job train-
      ing locally

3. Good housing

   a. Enough adequate housing
   b. Well-designed housing

      1. Adequate space between houses
      2. Variation in design
      3. Good housing units

4. Adequate public services

   a. Adequate police protection
   b. Other public services

5. Adequate social services

   a. Medical services
   b. Adequate family counseling
   c. Other social services

6. Less discrimination against Utes

   a. Equal opportunity in getting a job

7. Adequate recreational opportunities

   a. For Tribe in general
   b. For youth
   c. For elderly

8. Keeping Youth with the Tribe

   a. Programs for youth
   b. Assuring a job with Tribe after grad-
      uation

9. Keeping Tribal customs and traditions

   a. Keeping customs and traditions
   b. Protecting sacred and historical places

10. Being able to do what you want

   a. Being able to make own choices about
      what you do without outside interference
   b. Being able to understand yourself and
      how to achieve your personal goals
   c. Being able to do things on your own
      which will make your life worthwhile
   d. Being respected
   e. Being stable in the social community

11. Good home life

   a. Good marriage
   b. Good family relations

12. Having good care for the elderly

   a. Having elderly involved in communities
   b. Having ways to care for elderly

13. Economic well-being

D. Environmental Quality

  1. Clean air

   a. Clean air

  2. Clean water

   a. Clean water

     1. Rivers, streams, and lakes
     2. Drinking water

Tribal Goals	In the space provided below, add to or change any of the goals as you see fit

3. Enough water

   a. Developing sources of water to meet Tribal needs

4. Protecting the Landscape

   a. Clean lands
   b. Not altering lands or stream beds

5. Maintaining wildlife

   a. Fish
   b. Game animals
   c. Other animals

6. Maintaining plant life
7. Protecting all of the environment

Appendix E

Survey Questionnaire

Date _____

Your Name _____

Name of Person Interviewed _____

INTRODUCTION: As you are aware, many important changes are occurring
on the reservation and in the Uintah Basin as a whole.
Many other changes will occur as a result of population
growth, energy resource development, and related factors.
As part of a larger study designed to assess Ute goals
and traditions, we are interviewing a sample of Tribal
members concerning their attitudes and feelings toward
the changes that are taking place. Since you are
particularly involved with these changes as members
of the Tribe, your ideas will be very valuable to us
in this study. We would like to talk with you for a
few minutes about these issues. The interview will
last only about 30 minutes and you will be paid $5.00
for your time.

1. The following is a list of things that some tribal members feel are important. For each of these, we would like you to consider whether or not you think it is an important goal for the Ute Tribe and its members. To help you respond to the questions, think about what you would like life to be like here on the reservation in the future. If what we talk about would contribute toward achieving that type of life, then it should be considered an important goal. If not, then it would not be considered an important goal. We would like you to consider each factor on a seven-point scale. If it is a highly desirable goal or of great value to the Tribe, give a score of seven. If of no real value or significance, give a score of four. Things that are highly undesirable or of great disvalue to the Tribe should be given a score of one.

	Highly desirable/ of great value			Of no real significance		Highly undesirable/ of great disvalue	
	7	6	5	4	3	2	1

Retaining Ute rights to Tribal natural resources such as land, water, and mineral resources

Reducing the role of non-Utes in Tribal affairs

Increasing the economic independence of the Ute Tribe

Increasing the opportunity for individual Tribal members to influence Tribal decisions

Increasing the planning and management capabilities of the Tribe

Increasing income opportunities for Tribal members

The creation of more and better job opportunities for Tribal members

Increasing the economic well-being of the Tribe

	Highly desirable/ of great value			Of no real significance		Highly undesirable/ of great disvalue	
	7	6	5	4	3	2	1

Improved educational opportunities for all Tribal members

|—————|—————|—————|—————|—————|—————|—————|

Increasing Ute participation in the local school system such as Ute teachers and Ute-oriented curriculum

|—————|—————|—————|—————|—————|—————|—————|

The preservation of Ute cultural traditions

|—————|—————|—————|—————|—————|—————|—————|

Maintaining sacred and ceremonial places

|—————|—————|—————|—————|—————|—————|—————|

Decreasing alcoholism and problem drinking on the reservation

|—————|—————|—————|—————|—————|—————|—————|

Elimination of discrimination against the Utes

|—————|—————|—————|—————|—————|—————|—————|

The provision of better medical, dental, and hospital services and facilities on the reservation

|—————|—————|—————|—————|—————|—————|—————|

The provision of adequate housing suited to individual Ute lifestyles

|—————|—————|—————|—————|—————|—————|—————|

Improved recreation opportunities on the reservation

|—————|—————|—————|—————|—————|—————|—————|

Improved care for the elderly

|—————|—————|—————|—————|—————|—————|—————|

The provision of legal aid for those Tribal members who need it

|—————|—————|—————|—————|—————|—————|—————|

	Highly desirable/ of great value			Of no real significance		Highly undesirable/ of great disvalue	
	7	6	5	4	3	2	1

Maintaining high air quality on the reservation

|———+———+———+———+———+———+———|
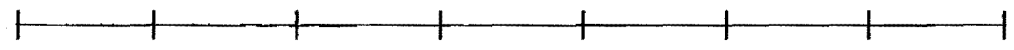
Maintaining high water quality on the reservation

|———+———+———+———+———+———+———|
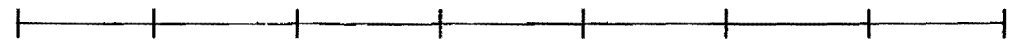
Protecting Tribal fish and wildlife resources

|———+———+———+———+———+———+———|
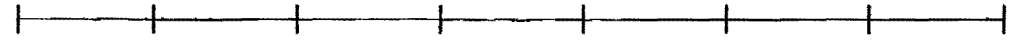
Protection of natural vegetation (plant life)

|———+———+———+———+———+———+———|
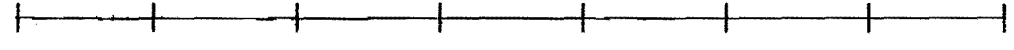
Protecting the landscape (not altering or destroying the natural environment)

|———+———+———+———+———+———+———|
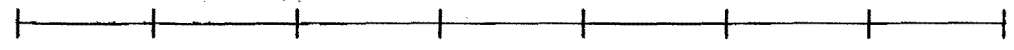
2. Now that we have talked about important Tribal goals, we would like to discuss a number of developments that have occurred on the reservation or that are being considered. Please indicate whether each of these developments is consistent or inconsistent with what you feel are important Tribal goals for the future. Give a score of seven for items that are completely compatible with Ute goals and a score of one for those that are completely incompatible with Ute goals. Things that are neither compatible nor incompatible should be given a score of four.

	Completely compatible with Ute goals			Neither compatible nor incompatible		Completely incompatible with Ute goals	
	7	6	5	4	3	2	1

The development of agricultural enterprises
such as cattle ranching on the reservation

Leasing of already developed Tribal lands
to non-Utes

Leasing of undeveloped Tribal lands to
non-Utes

The development of Tribal water resources

Leasing Tribal water resources to non-Utes

Timber leasing to non-Utes

Not developing energy resources (such as
coal, oil and oil shale)

Joint venture energy resource development
(the Tribe develops the resource in co-
operation with private industry)

Ute financed energy resource development

	Completely compatible with Ute goals			Neither compatible nor incompatible		Completely incompatible with Ute goals	
	7	6	5	4	3	2	1

Energy resource leases (Tribal resources such as oil and gas are leased to private industry for an established fee)

|———|———|———|———|———|———|———|

The development of Tribal tourist facilities (Bottle Hollow, etc.)

|———|———|———|———|———|———|———|

The development of Tribal recreation facilities (Twin Pots, etc.)

|———|———|———|———|———|———|———|

The development of manufacturing and retailing such as the fabricating plant, the tannery, etc.

|———|———|———|———|———|———|———|

Tribal capital investment in savings and stocks and bonds

|———|———|———|———|———|———|———|
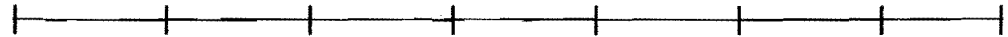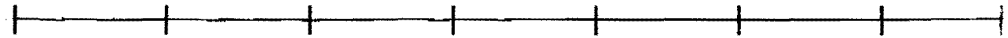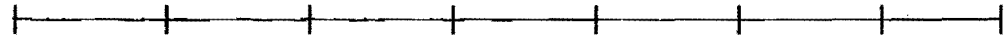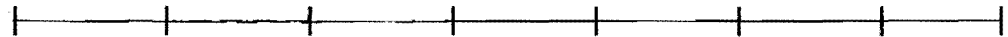
Termination of all government support for the Tribe

|———|———|———|———|———|———|———|

3. There is growing concern in some circles with the problem of assuring that future change on the reservation be kept consistent with Ute Tribal traditions or with the important values and beliefs that have been handed down from the past. We would like to now go back over the list again and have you indicate if the item discussed is consistent or inconsistent with what you feel are important Ute values and traditions. Again we will use a seven-point scale. Give a score of seven to those things that you feel are completely compatible with Ute tradition. Give a score of one to those things that are completely incompatible with important Tribal traditions. Things that are neither compatible nor incompatible should be given a score of four.

	Completely compatible with important Ute traditions			Neither compatible nor incompatible		Completely incompatible with important Ute traditions	
	7	6	5	4	3	2	1

The development of agricultural enterprises such as cattle ranching on the reservation

Leasing of already developed tribal lands to non-Utes

Leasing of undeveloped Tribal lands to non-Utes

The development of Tribal water resources

Leasing Tribal water resources to non-Utes

Timber leasing to non-Utes

Not developing energy resources (such as coal, oil and oil shale)

Joint venture energy resource development (the Tribe develops the resource in cooperation with private industry)

	Completely compatible with important Ute traditions			Neither compatible nor incompatible		Completely incompatible with important Ute traditions	
	7	6	5	4	3	2	1

Ute financed energy resource development

$\vdash\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!\dashv$

Energy resource leases (Tribal resources such as oil and gas are leased to private industry for an established fee)

$\vdash\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!\dashv$

The development of Tribal tourist facilities (Bottle Hollow, etc.)

$\vdash\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!\dashv$

The development of Tribal recreation facilities (Twin Pots, etc.)

$\vdash\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!\dashv$

The development of manufacturing and retailing such as the fabricating plant, the tannery, etc.

$\vdash\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!\dashv$

Tribal capital investment in savings and stocks and bonds

$\vdash\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!\dashv$

Termination of all government support for the Tribe

$\vdash\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!+\!\!-\!\!-\!\!\dashv$

4. All things considered, how well satisfied are you with living on the reservation?

    a. Not at all satisfied.
    b. Not very much satisfied.
    c. Pretty much satisfied.
    d. Very much satisfied.

5. When it comes to a place to live, almost any place has some things about it we like and some we dislike.

    a. What are some of the main things you like about living on the reservation?

        1. _____

        2. _____

        3. _____

        4. _____

        5. _____

    b. What are some of the main things you dislike about it?

        1. _____

        2. _____

        3. _____

        4. _____

        5. _____

6. Which of the following statements best describes how you would feel about moving away from the reservation, if presented with that situation?

    a. I would never consider leaving here.
    b. I would move to another community if I had to, but would be reluctant to leave here.
    c. It makes no difference to me whether I live here or in another community.
    d. I would probably be more satisfied living in another community.
    e. I would really like to leave the reservation if I had the opportunity.

7. In general, how would you feel about a large number of whites moving onto the reservation?

    _____ Like very much
    _____ Like
    _____ Don't care
    _____ Dislike
    _____ Dislike very much

8. If you could change anything on the reservation you wanted to, what would you change?

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

Appendix F

Cross Tabulations of Survey Responses:
Questions 2 through 8

Table F-1. Response estimates to full tribal development questions.

Question	Response			Number of Respondents
	Compatible (percent)	Neither (percent)	Incompatible (percent)	
Lease developed lands	58	15	28	81
Lease undeveloped lands	64	9	25	75
Develop water resources	83	9	9	79
Lease water resources	46	15	39	73
Lease timber	56	19	24	71
Do not develop energy	57	14	30	63
Joint venture energy development	46	18	36	75
Ute-financed energy development	57	13	30	69
Energy resource leases	59	11	30	67

Table F-2. Response estimates to historical development questions.

Question	Response			Number of Respondents
	Compatible (percent)	Neither (percent)	Incompatible (percent)	
Lease developed lands	53	22	25	73
Lease undeveloped lands	62	17	22	71
Developed water resources	85	9	6	72
Lease water resources	55	6	39	71
Lease timber	62	13	26	71
Do not develop energy	57	17	25	65
Joint venture energy development	49	15	36	60
Ute-financed energy development	50	22	28	58
Energy resource leases	55	19	26	52

Table F-3. Response estimates to the question on lease developed lands.

Group	Full Tribal Development Responses				Group	Tribal Baseline/Historical Trends Responses		
	Compatible (percent)	Neither (percent)	Incompatible (percent)			Compatible (percent)	Neither (percent)	Incompatible (percent)
Residence:[a]					Residence:[a]			
North	57	14	28		North	62	19	19
Central	32	21	46		Central	32	21	42
South	79	8	12		South	79	12	9
					Full Tribal Development:			
					Compatible	87	4	9
					Neither	8	75	17
	—	—	—		Incompatible	10	25	65
Total (n=81)	58	14	28			53	22	25

[a]Significance: >.05

Table F-4. Response estimates to the question on leased undeveloped lands.

Group	Full Tribal Development Responses				Group	Tribal Baseline/Historical Trends Responses		
	Compatible (percent)	Neither (percent)	Incompatible (percent)			Compatible (percent)	Neither (percent)	Incompatible (percent)
Age:[b]					Residence:[a]			
16-25	32	16	53		North	62	19	19
26-35	63	10	27		Central	38	21	42
36-45	83	8	8		South	79	12	9
46-55	83	0	17					
Over 55	83	0	17		Full Tribal Development:			
Residence:[a]					Compatible	88	10	2
					Neither	0	67	33
North	67	5	29		Incompatible	20	15	65
Central	33	19	48					
South	88	3	9			—	—	—
Total (n=75)	64	9	25		Total (n=71)	62	17	22

[a]Significance: > .05

[b]Significance: > .10

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Table F-5. Response estimates to the question on the development of water resources.

Group	Full Tribal Development Responses Compatible (percent)	Neither (percent)	Incompatible (percent)		Group	Tribal Baseline/Historical Trends Responses Compatible (percent)	Neither (percent)	Incompatible (percent)
Residence:[b]					Residence:[a]			
North	76	10	14		North	67	19	14
Central	71	14	14		Central	88	12	0
South	97	3	0		South	94	0	6
					Full Tribal Development:			
					Compatible	91	3	6
					Neither	57	43	0
					Incompatible	83	17	0
Total (n=79)	83	8.5	8.5		Total (n=72)	85	9	6

[a]Significance: >.05

[b]Significance: >.10

Table F-6. Response estimates to the question on leased water resources.

| Group | Tribal Baseline/Historical Trends Responses | | |
	Compatible	Neither	Incompatible
Residence:[b]			
North	48	10	43
Central	38	8	54
South	73	3	24
Full Tribal Development:			
Compatible	97	3	0
Neither	46	9	46
Incompatible	4	12	85
Total (n=71)	55	6	39

[a]Significance: >.10

Table F-7. Response estimates to the question on leased timber.

| | Full Tribal Development Responses | | | | | Tribal Baseline/Historical Trends Responses | | |
| | Compatible (percent) | Neither (percent) | Incompatible (percent) | | Group | Compatible (percent) | Neither (percent) | Incompatible (percent) |
Group								
Residence:[a]					Residence:[c]			
North	58	16	26		North	67	14	19
Central	31	27	42		Central	36	12	52
South	76	15	9		South	78	13	9
					Full Tribal Development:			
					Compatible	98	2	0
					Neither	29	29	43
	—	—	—		Incompatible	0	29	71
Total (n=71)	56	19	24		Total (n=71)	62	13	26

[a]Significance: > .05

[b]Significance: > .10

Table F-8.   Response estimates to the question on not to develop energy resources.

| Group | Full Tribal Development Responses | | | | Group | Tribal Baseline/Historical Trends Responses | | |
	Compatible (percent)	Neither (percent)	Incompatible (percent)			Compatible (percent)	Neither (percent)	Incompatible (percent)
Sex:[a]					Sex:[a]			
Male	60	19	21		Male	59	25	16
Female	50	4	46			54	4	42
Residence:[b]					Full Tribal Development:			
North	63	0	37		Compatible	85	8	8
Central	38	21	42		Neither	29	57	14
South	68	16	16		Incompatible	18	18	64
Total (n=63)	57	14	30		Total (n=65)	57	17	25

[a]Significance: >.05

[b]Significance: >.10

Table F-9. Response estimates to the question on joint venture energy development.

Group	Full Tribal Development Responses				Group	Tribal Baseline/Historical Trends Responses		
	Compatible (percent)	Neither (percent)	Incompatible (percent)			Compatible (percent)	Neither (percent)	Incompatible (percent)
Residence:[a]					Residence:[a]			
North	36	23	41		North	38	10	52
Central	31	15	54		Central	36	14	50
South	66	16	19		South	67	20	13
					Full Tribal Development:			
					Compatible	91	6	3
					Neither	15	62	23
					Incompatible	0	4	96
Total (n=75)	46	18	36		Total (n=60)	49	15	36

[a]Significance: >.05

Table F-10. Response estimates to the question on Ute-financed energy development.

Group	Full Tribal Development Responses			Group	Tribal Baseline/Historical Trends Responses		
	Compatible (percent)	Neither (percent)	Incompatible (percent)		Compatible (percent)	Neither (percent)	Incompatible (percent)
Residence:[b]				Full Tribal Development:			
North	55	14	32	Compatible	80	13	8
Central	40	12	48	Neither	10	60	30
South	73	13	13	Incompatible	5	21	74
Total (n=69)	57	13	30	Total (n=59)	50	22	28

[b]Significance: >.10

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Table F-11. Response estimates to the question on energy resource leases.

Group	Full Tribal Development Responses				Group	Tribal Baseline/Historical Trends Responses		
	Com-patible (percent)	Neither (percent)	Incom-patible (percent)			Com-patible (percent)	Neither (percent)	Incom-patible (percent)
Residence:[b]					Residence:[a]			
North	50	5	46		North	40	15	45
Central	50	9	41		Central	48	19	33
South	72	16	13		South	71	21	7
					Full Tribal Development:			
					Compatible	90	8	3
					Neither	17	33	50
	—	—	—		Incompatible	5	30	65
Total (n=67)	59	11	30		Total (n=52)	55	19	26

[a]Significance: >.05

[b]Significance: >.10

Table F-12. Test for interviewer bias on extra questions.

Question	Interviewer: 1 (percent)	2 (percent)	3 (percent)	Number of Respondents
Satisfaction with reservation life:[a]				
Not at all	0	100	0	1
Not very	29	43	29	7
Pretty much	32	28	40	50
Very	77	9	14	22
Moving from reservation:[b]				
Never leave	59	6	35	17
Reluctant	80	20	0	15
No difference	24	59	18	17
Would leave	25	75	0	4
Like to leave	24	6	71	17
Whites moving onto reservation:[c]				
Like	67	0	33	3
Don't care	4	0	96	23
Dislike	65	32	3	31
Dislike very much	58	38	4	24

[a] $X^2(6) = 17.32$ Significance = 0.003

[b] $X^2(8) = 41.25$ Significance = 0.000

[c] $X^2(6) = 67.78$ Significance = 0.000

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Table F-13. Response estimate to the question: Which of the following statements best describes how you feel about moving away from the reservation?

Responses	Percent
Would never leave	24
Reluctant to leave	21
It makes no difference where I live	24
Would probably be satisfied in another community	6
Would like to leave	24

Table F-14. Response estimates to the question: How well satisfied are you with living on the reservation?

Responses	Percent
Very	28
Pretty much	63
Not very	8
Not at all	1

Table F-15. Response estimates to the question: How do you feel about a large number of Whites moving onto the reservation?

Responses	Percent
Like	4
Don't care	28
Dislike	38
Dislike very much	30

Table F-16. Contingency table: Residence with interviewer.

	Residence		
	North (percent)	Central (percent)	South (percent)
Interviewer 1	18	21	62
Interviewer 2	52	14	33
Interviewer 3	16	68	16

$x^2(4) = 29.0536$ Significance = 0.00

Table F-17. Test for interviewer bias on goal questions.

| | Response | | |
	Desirable (percent)	Not Significant (percent)	Undesirable (percent)
Reducing role of Utes:[a]			
Interviewer 1	97	3	0
Interviewer 2	67	24	10
Interviewer 3	96	4	0
Increase Ute participation in local schools:[b]			
Interviewer 1	97	3	0
Interviewer 2	71	19	10
Interviewer 3	100	0	0
Decrease alcoholism:[c]			
Interviewer 1	90	10	0
Interviewer 2	33	62	5
Interviewer 3	100	0	0
Improve recreation:[d]			
Interviewer 1	97	3	0
Interviewer 2	67	33	0
Interviewer 3	100	0	0

[a] $x^2(4) = 15.14$ Significance = 0.004

[b] $x(4) = 15.75$ Significance = 0.003

[c] $x^2(4) = 35.86$ Significance = 0.000

[d] $x^2(4) = 18.54$ Significance = 0.001

Appendix G

Indicator List for Ute Goal Achievement

I. Tribal Self-Determination

    A. Retaining Ute rights to resources

        1. Keeping Ute lands in Ute ownership

            -Ownership map of reservation area; Tribal land, leased
            land, allotted land, non-Indian land
            -Price per acre of Ute and non-Ute comparable use land

        2. Retaining/Protecting water rights

            -Price per acre-foot of water

                -Ute
                -Non-Ute

            -Percent of total Ute entitlement invested by Utes
            -Percent of Ute entitlement consumed by Utes
            -Percent of Ute entitlement diverted by non-Utes
            -Percent of Ute entitlement transported out of the basin

        3. Retaining/Recovering mineral rights

            -Known mineral reserves by kind and quantity
            -Percent of reserves presently recoverable
            -Percent of recoverable minerals sold to non-Utes
            -Percent of recoverable mineral leased to non-Utes

    B. Reducing unwanted interference of non-Utes in Tribal affairs

        1. Utes having a voice in non-Ute decisions which affect the
            Tribe

            -Number of Utes representing the Tribe who have participated
            in any formal local governmental process per year period
            -Number of Utes representing the Tribe who have participated
            in any formal state governmental process per year period
            -Number of Utes representing the Tribe who have participated
            in any formal federal governmental process per year period
            -Number of Utes representing the Tribe who have participated
            in any formal business decision process per year period
            -The degree to which Utes feel that the Tribe can effect
            important non-Tribal decisions.*

        2. Having qualified Utes in Tribal positions

            -Percent of Utes in Tribal management positions
            -Percent of Utes in management positions who are qualified
            under Personel Code

    C. Economic independence for the Tribe

    -Percent of Tribal income from external sources
    -Percent of Utes employed by Tribe or self-employed

D. Opportunity for Tribal members to review and have input into Tribal decisions

-Percent of eligible Utes voting in Tribal elections
-Number and kinds of formal procedures through which Tribal members can participate in their government
-Percent of eligible Utes utilizing these procedures

E. Adequate Tribal planning

-Number of planners employed by the Tribe
-Amount of Tribal funds allocated for planning
-Degree of complexity and comprehensiveness of Tribal plan and management information system

II. Economic Well-Being

A. Economic well-being for individual Utes

1. Income opportunity

a. Income opportunity from jobs

-Per capita income from Tribal jobs
-Per capita income from non-Tribal jobs
-Per employee income for Utes from Tribal jobs
-Per employee income for non-Utes from Tribal jobs
-Non-Ute basin per capita income

b. Income opportunity from owned business (self-employed)

-Ute per capita income from owned business
-Basin non-Ute per capita income from owned businesses

c. Income opportunity from settlements

-Ute per capita income from settlements

d. Income opportunity from Tribal investments

-Per capita Ute income from Tribal investments (excluding job income)

e. Income opportunity from private savings and investments

-Per capita Ute income from private savings (excluding self-owned business)
-Per capita non-Ute basin income from private savings (excluding self-owned business)

f. Income opportunity from welfare

-Per capita Ute income from welfare
-Per capita non-Ute basin income from welfare

g. Equal distribution of Tribal income among Tribal members

   -Distribution of Tribal monies among Utes
   -Distribution of total individual Ute income

2. Job opportunity

   a. Ability to get job

      -Percent Utes employed by Tribe
      -Percent Utes employed by other than Tribe
      -Ute standard rate of unemployment
      -Ute full rate of unemployment
      -Basin standard rate of unemployment

   b. Type of employment

      -Ute employment by industry and job classification
      -Non-Ute basin employment by industry and job classification
      -Number of Ute employment with Tribe who meet qualifica-
       tions established in new job descriptions

   c. Opportunity for job advancement [probably only available
      for Tribe]

      -Increases in earned income by Utes relative to inflation
       rates
      -Changes in job classification of Utes reflecting in-
       creased responsibility
      -Percent of Utes leaving job after promotion
      -Percent of Utes with fiscal responsibility
      -Percent Utes unsupervised
      -Percent Utes with supervisory position

   d. Working conditions

      -Total annual lost time by job type in Tribal jobs due
       to on the job accidents
      -Total annual lost time for basin by job type due to
       on the job accidents

   e. Job lasting as long as desired

      -Ute turnover rates by job type
      -Ute absenteeism rates by job type

3. Opportunity for self-employment

   a. Resource availability

      -Percent Utes applying for and receiving business
       development loans or grants
      -Percent Utes applying for and receiving Tribal land,
       water, etc., for private development

B. Economic Well-Being for Tribe

1. Self-sustaining (profit making) Ute enterprises

   a. Gross returns to Tribal enterprises
   b. Costs of Tribal enterprises

      -Annual operation
      -Debt service
      -Fixed cost (investment)

   c. Net profits to Ute enterprises compared with standard
      returns (bonds or by industry type)

2. Development of Ute resources

   a. Annual investment of Tribal funds to develop natural
      resources

      -Dollars invested to develop land, water, mineral,
      energy, and fish and wildlife
      -Percent of Tribal funds invested in land, water,
      mineral, energy, and fish and wildlife
      -Dollars invested to maintain water, land, and fish
      and wildlife

   b. Annual matching funds for federal, state, local govern-
      ment and private sources for Tribal investment by cate-
      gories listed in B2 (a)
   c. Investment of Tribal funds to increase Tribal wealth
      (develops capital resources)

      -Dollars invested in interest-bearing bonds, stocks,
      etc.
      -Percent Tribal funds invested in interest-bearing
      bonds, stocks, etc.

   d. Investment of Tribal funds to develop professional and
      technical manpower skills (development of human capital)

      -Dollars and percent invested in primary education
      -Dollars and percent invested in secondary education
      -Dollars and percent invested in vocational education
      -Dollars and percent invested in college education
      -Dollars and percent invested in on-reservation remedial
      and adult education

   e. Annual matching funds or grants from federal, state,
      and local government and private sources for develop-
      ment of fund capital (by categories in B2 (d))

C. Availability of goods and services

-Proportion of retail sales to Indians on and off reservation
-Prices of selected goods on reservation (probably not meaningful)
-Prices of selected goods off reservation (probably not meaningful)

D. Reasonable Taxes

-Business Taxes

  -Tax collections by agency
  -Tax rates by agency

-Sales Taxes

  -Tax collections by Tribe and state
  -Tax rates of Tribe and state

-Income Tax

  -Tax collections by federal government
  -Tax rates by income class by federal government

III. Social and personal well-being

A. Educational opportunity

1. Getting a good education

  -Ute achievement compared to non-Ute achievement by school
   for the 3rd, 8th, and 12th grades on "national average"
   exams
  -Amount of Tribal money spent per year on Tribal education-
   al programs and facilities
  -Ute drop-out rates compared to basin non-Ute drop-out rates
   for the 3rd, 8th, and 12th grades by school

2. Ute participation in school system

  -Percent of school personnel that are Ute compared to the
   percent of students that are Ute by school
  -Amount of funds going to public education per year as a
   result of Tribal participation (Tribal funds, matching
   federal funds, etc.)

B. Preservation of Ute cultural traditions

-Population map showing distribution of Utes by band
-Ute individual self-identification (i.e., band, tribe, etc.)*
-Percent of these interviewed who speak Ute by age group*
-Amount of time spent per month by the members of the household
 on traditional food acquisition, craft and implement production,
 etc.*

-Household constituency*
-Percent of Utes visiting traditional sacred places and/or participating in traditional sacred ceremonies or activities for sacred purposes*
-Perception of the importance of maintaining Ute values and culture*

C. Community development

   1. Physical development

       -Percent of dwellings located within 10 yards of the nearest neighbor
       -Percent of Utes in self-help/turn-key or other agency constructed homes

   2. Social development

       .-Percent of Utes living away from the Uintah-Ouray reservation
       -Ute perception of the reasons for wanting to leave the reservation*

D. Individual adjustment and well-being

   1. Social adjustment

       -Percent of Ute marriages where spouses are separated
       -Rates of alcoholism and problem drinking
       -Percent of Utes incarcerated

   2. Degree of self-direction

       -Percent of Utes who believe they are too much at the mercy of others

E. Discrimination against Utes

   Ute employment and income levels compared to basin non-Ute levels

F. Adequate services on reservation

   1. Public services

       -Number of hours per month per 100 Utes spent by police on reservation compared to similar rates from the non-Ute basin
       -Number of hours per month per 100 Utes spent by fire fighters on reservation compared to similar rates from the non-Ute basin
       -Number of hours per month per 100 Utes spent by garbage collectors on reservation compared to similar rates from the non-Ute basin
       -Feet of surfaced road per square mile on the reservation compared to the non-Ute basin

2. Social services

   a. Medical/dental

      -Percent of Utes seeing a doctor per year compared to basin non-Utes*
      -Percent of Utes seeing a dentist per year compared to basin non-Utes*
      -Perceived adequacy and quality of medical services*

   b. Hospital facilities available

      -Number of beds per 1000 basin residents
      -Distance traveled by Utes to obtain medical services*

   c. Counseling (list counseling services available)

      -Percent of Utes using any basin counseling service

   d. Recreation (list recreation available)

      -Percent of Utes using any formal recreation facility per year by age group
      -Amount of Tribal funds spent per year to develop recreation facilities
      -Perceived equality of access to basin recreation facilities*

   e. Elderly care (list services for elderly)

      -Percent of elderly regularly utilizing some elderly care facility
      -Amount of Tribal money spent on elderly care per year
      -Residence of elderly*

   f. Legal aid

      -Percent of Utes seeing an attorney per year
      -Attitudes regarding equal access to system of legal justice*

IV. Environmental Quality on Reservation

  A. Air quality

    1. Good visibility

      -miles of visibility

    2. Good smelling air

      -pollutant concentrations by pollutant

3. Air without irritants or contaminants

   —Pollutant concentrations by pollutant

B. Water quality

   1. Good drinking water

      a. Good tasting water

         —Pollutant concentrations by pollutant

      b. Good smelling water

         —Pollutant concentrations by pollutant

      c. Clear water

         —Maximum depth of visible Sechi disk

      d. Water without disease-causing contaminants

         —Fecal coliforms

   2. Good water in rivers, streams, and lakes for recreation and fish and wildlife

      —Pollutant concentrations by pollutant
      —Maximum depth to visible Sechi disk
      —Fecal coliforms

   3. Water of adequate quality for industrial and other uses

      —Pollutant concentrations by pollutant
      —Maximum depth to visible Sechi disk
      —Fecal coliforms

C. Having enough water

   1. For drinking

      —Mean availability by season by quality class
      —Low flow availabilities (mean consecutive seven-day expected ten-year low flow)

   2. For recreation

      —Mean availability by season by quality class
      —Low flow availabilities (mean consecutive seven-day expected ten-year low flow)

3. For industrial and other uses

    -Mean availability by season by quality class
    -Low flow availabilities (mean consecutive seven-day
     expected ten-year low flow)

D. Protecting fish and wildlife

    1. Protecting fish

        -Spawning habitat correlated with natural fish population
        -Feeding habitat correlated with natural fish population

    2. Protecting big game

        -Winter range correlated with deer and elk population
        -Summer range correlated with deer and elk population

    3. Protecting small game and upland fowl

        -Nesting and feeding habitat correlated with populations

    4. Protecting other wildlife

        -Other wildlife habitat correlated with populations

E. Protecting natural vegetation (plant life)

    1. Forests

        -Condition and trend by vegetative types

    2. Grasslands

        -Condition and trend by vegetative types

    3. Desert rangelands

        -Condition and trend by vegetative types

    4. Stream vegetation

        -Condition and trend by vegetative types

    5. Marshlands

        -Condition and trend by vegetative types

F. Protecting (not altering or despoiling) the landscape

    1. Keeping the land free of litter and waste

        -Annual litter collection and trends

2. Adequate restoration of land alteration (excavation, strip mining, etc.)

    -Percent of land restored to natural condition

3. Keeping land in natural state

    -Percent of acres disturbed by man