

# ENERGY DEVELOPMENT AND LOCAL EMPLOYMENT<sup>1</sup>

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A shriveling population and a decaying economic base has plagued rural America since the 1920's.<sup>2</sup> The rural picture, at least until recently, has been a mirror image of the urban scene.<sup>3</sup> Conventional wisdom, both scientific and lay, has counseled industrial development as a panacea for rural unemployment and underemployment, as well as a means for stemming the flow of rural migration to the metropolis. Governmental decision-makers and their scientific advisors have long recognized the twin evils of rural poverty and urban growth. Alleviation of these problems has been attempted through a variety of government programs, with the Rural Development Act of 1972 the most recent attempt.<sup>4</sup> The intent of such government actions has been to encourage the locations of industries in rural areas thus lessening rural poverty, while simultaneously, and often unintentionally, reducing urban growth.

Rural industrialization has been further spurred by the rush to develop America's energy reserves that are located primarily in the rural West.<sup>5</sup> Between government programs and private energy exploration and development, rural industrialization in the West is currently moving more quickly than the most optimistic predictions of just a decade ago. Thus, employment opportunities are rapidly increasing in rural regions and some dwellers will undoubtedly begin participating more equitably in the nation's economic structure.

The extent to which economic benefits from rural industrial developments accrue to local residents can be estimated only imprecisely, and non-economic costs, i.e., social costs, are all-too-frequently ignored. Even when considered, social costs fair poorly in standard cost-benefit calculus.<sup>6</sup> Though the process whereby local communities accumulate economic and social benefits is imperfectly understood, the standard assumption is that with rural industrial development, economic benefits at least will be forthcoming.

Lending temporary support to the above assumption are the many studies which have demonstrated that community as well as mean personal incomes have increased as a result of industrialization.<sup>7</sup> Unfortunately, upon reflection it becomes evident that summary and aggregate measures of income beg the more important question of "Who benefits?" Many scholars<sup>8</sup> have noted that not all social categories prosper equally. The aged, women and minorities appear to suffer relative declines in prosperity as a consequence of industrial projects. Furthermore, incomes generated by rural projects do not remain entirely in the local community. They frequently "leak" out, benefiting other communities or regions, contributing considerably less than would be expected to the development of the local service sector.<sup>9</sup>

In addition to the assumption of general economic gains, employment benefits for the local populace are also frequently assumed to be the automatic result of rural development. Aside from taxation issues, employment benefits for locals are a primary justification for contemplated projects.<sup>10</sup> Advocates for development stress the gains in primary employment, and their argument rests upon four, frequently unstated, assumptions: (1) rural residents will desire positions with the new industry; (2) a large number of locals will apply for the available jobs; (3) local applicants will possess the requisite job skills;<sup>11</sup> and (4) industry is willing and able to hire a substantial proportion of the local applicants. Often there is the additional assumption that unemployed locals will desire, seek and obtain jobs with greater frequency than those already employed, thereby reducing the local unemployment rate.<sup>12</sup>

That these assumptions are so frequently unchallenged by scientists, developers and the public-at-large is not unusual. The notion that growth and progress are inherently good is consistent with the broader American cultural motif, and a critical examination of the assumptions is thus inhibited. Furthermore, the assumptions are not inconsistent with the frontier ethic of rugged individualism: Worthy Americans will seize an opportunity to better themselves and will pull themselves up by their bootstraps if only given an opportunity.

The available empirical evidence on local employment participation is scanty, but the available information casts serious doubt on the validity of the common assumptions.<sup>13</sup> For example, Summers found that of 1,039 new jobs created by a mid-western steel facility, just 18 percent resided in the county of the project, and some of these migrated to the county to gain employment.<sup>14</sup> A similar pattern was discerned by Andrews and Bauder in their study of an Ohio project. They discovered that 20 percent of the permanent jobs were occupied by county residents, in-migrants obtained 20 percent, and the remaining jobs were filled by commuters.<sup>15</sup>

Most rural industrialization studies, like the two just reported, have been in the Southern and Midwestern regions where population densities, project sizes, proximity to population centers and cultural patterns differ considerably from contemporary developments in the West. Two studies that have examined the employment benefits to locals stemming from Western energy developments have reported local participation rates far in excess of those found by Summers, and Andrews and Bauder. Mountain West Research<sup>16</sup> reported that 39.9 percent of their sampled workers were locals, and Leholm *et al.*,<sup>17</sup> concluded that fully 50 percent of their sampled workers were local residents. However, low response rates (ranging from 17 to 78 percent in the several study communities) make interpretation of their reported percentages difficult. Further, the definitions of locals used would include individuals who commuted 200 miles a day to work. If the definition in these studies were to include as locals only those who resided in the county prior to the beginning of the project, the proportion of locals obtaining employment would be in the neighborhood of 10 to 15 percent, a figure consistent with the previously cited studies.<sup>18</sup>

These few studies draw into question the assumptions underlying conventional wisdom regarding rural development. The degree to which rural residents capture new industrial employment opportunities is not limited merely by the skill levels and initiative of the local residents. Clearly, rural residents are competing for employment with migrants from the metropolis. Migrants, some of whom have migrated back "home," have successfully competed for the newly created positions, eliminating local contenders from

employment opportunities<sup>19</sup> (see Summers, 1973; Bender *et al.*, 1971; and Gray, 1969). Employment opportunities and wages in the metropolis and the relative desirability of urban living, as well as the economic and political decisions made in the metropolis are all factors which influence the extent of urban to rural migration and hence, the success of rural inhabitants in obtaining employment with the new industries.<sup>20</sup> Given these factors, industry and local expectations, based as they are upon local conditions that ignore these factors, are apt to misjudge seriously the employment gains achieved by local residents.

The purpose of this paper is to examine the validity of the argument that local communities in the energy-rich Rocky Mountain and Northern Great Plains states will achieve drastic employment gains from rural industrial projects. In achieving this end the attitudes and beliefs maintained by local inhabitants of one urban and two rural<sup>21</sup> communities regarding the participation of the indigenous population in an expected new labor market will be examined. The congruence between the rural residents' perceptions and the popular mythology surrounding rural industrial projects will be examined.<sup>22</sup> In addition, the *likely* primary employment benefits accruing to the local rural residents will be projected using past employment behaviors, occupational skill levels and motivations as criteria for the projection.

### THE STUDY

In the summer of 1974, an extensive open-ended interview schedule was administered to 248 household heads in Kanab and Escalante, Utah; and Page, Arizona (see Figure 1)<sup>23</sup> These three communities are all located in the sparsely populated, arid to semiarid Lake Powell region, a region lying in the

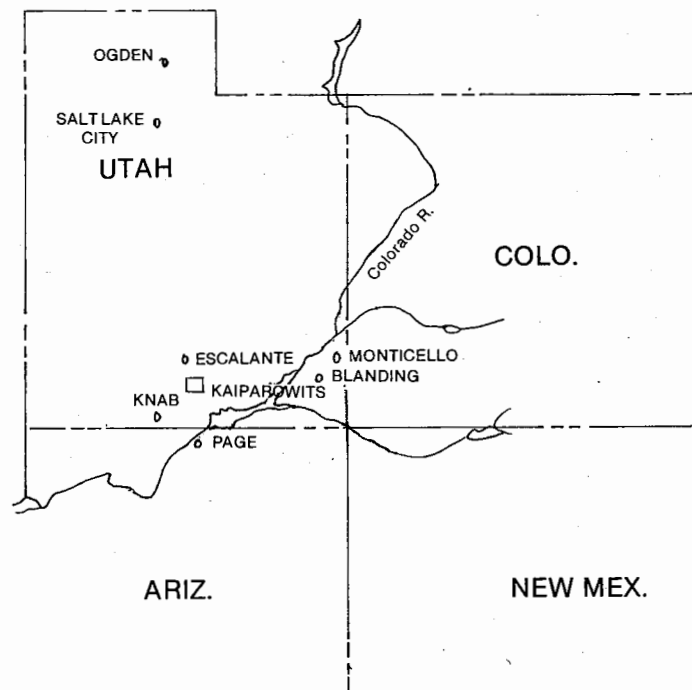


FIGURE 1. Location of the proposed Kaiparowits Project and surrounding communities.

midst of a vast energy storehouse. They were selected for inclusion in this study because of their proximity to both energy resources and several proposed or existing energy developments. Oil, natural gas, uranium, coal, and hydroelectric power have all been tapped in substantial quantities at various times and localities in the area. In order to capitalize on the available coal reserves and nearby water necessary for processing the raw material, industry has built or proposed to build over the past several years, ten major coal-fired electric generating plants and two coal gasification projects in the Four Corners region.<sup>24</sup> The study communities were, at the time this research was conducted, situated in the midst of an area slated for massive energy development.

*The communities.* Page, Arizona, the site of Glen Canyon Dam, was a community of approximately 6,500 persons in 1974.<sup>25</sup> Prior to 1957 and the beginnings of construction on Glen Canyon Dam under the auspices of the Bureau of Reclamation, Page did not exist.<sup>26</sup> At the time of the study it was a bustling community in a rural region of Arizona with a distinctly urban atmosphere. It was inhabited largely by construction workers, government employees, and tourists from all corners of the globe. Lake Powell was the attraction for the latter, and the 2,250-megawatt Navajo Generating Station (NGS) was the magnet for the former. NGS is fueled by coal transported via electric railway from Hopi and Navajo reserves located on Black Mesa, Arizona.<sup>27</sup> At the time of the study, plans were projected to exploit the vast coal reserves of the Kaiparowits Plateau of southern Utah just north of Page.<sup>28</sup>

Kanab and Escalante are situated north and west of Page. Both communities were settled in the late 1800's by Mormon pioneers (Church of Jesus Christ of Latter-Day Saints) and both have retained their rural atmosphere,<sup>29</sup> in spite of the presence of large numbers of tourists who stop over while visiting the several national parks and monuments in the region. During the summer of 1974, the populations of Kanab and Escalante were about 2,300 and 850, respectively.

These two communities are the major Utah settlements closest to the coal reserves of the Kaiparowits Plateau and the site of the then proposed Kaiparowits Generating Station (KGS).<sup>30</sup> The residents of both Kanab and Escalante had been anxiously waiting for construction to begin on KGS and the four underground mines which would have supplied the coal. In fact, they had been anticipating the development ever since it was first proposed in 1964. The KGS was planned as a mine-mouth, coal-fired electric generating station to serve the electric power needs of Arizona and southern California. If it had been completed, it would have produced 3,000 megawatts of electricity,<sup>31</sup> consumed 12,000,000 tons of low sulfur coal and 41,400 acre-feet of water annually, and cost in the neighborhood of 3.5 billion dollars.<sup>32</sup> The consortium of companies that were pushing the project estimated that about 3,100 new construction jobs would have been available during the peak of construction, and an additional 3,100 permanent jobs would have been created to operate the plant and the coal mines after the completion of construction.<sup>33</sup>

*The sample.* Sample frames for the two Utah communities were constructed from city water records. The accuracy of the water records was verified and corrected after interviews with water department employees and a house-by-house canvass of the communities. New homes and mobile homes not included in city records were thus included. Errors caused by multiple dwelling units utilizing single water meters were also eliminated by using this technique. The sampling frame for Page was constructed from up-to-date city plats provided by the city offices of the Bureau of Reclamation.

TABLE 1. Distribution of Attitudes Toward the Kaiparowits Project for Household Heads in Page, Arizona; Kanab and Escalante, Utah

Attitude	Page		Kanab		Escalante	
	No.	%	No.	%	No.	%
In favor	55	78.5	69	84.1	82	85.4
Not in favor	10	14.3	4	4.9	3	3.1
Ambivalent	—	—	5	6.1	8	8.3
Undecided	5	7.1	4	4.9	3	3.1
TOTAL	70	100.0	82	100.0	96	100.0

A simple random sample of households was selected from each of the sampling frames, and 91 percent of the interviews with self-selected household heads were successfully completed.<sup>34</sup> Seventy interviews were completed in Page, 82 in Kanab, and 96 in Escalante.<sup>35</sup>

## RESULTS

*Attitudes and beliefs.* In order to assess the attitudes and beliefs about KGS, respondents were asked whether or not they would undertake the project if the choice were theirs. That is, would they build KGS. The over-whelming majority indicated that they would. As can be seen in Table 1, 78.5 percent in Page, 84.1 percent in Kanab, and 85.4 percent in Escalante were in favor of exploiting the coal reserves of the Kaiparowits and processing the coal locally.<sup>36</sup> It is interesting to note that KGS received the least support in Page which is currently reaping huge economic benefits from an almost identical project: NGS. Furthermore, there is a perfect inverse correlation ( $\text{Gamma} = -1.0$ ) between the degree of support and both the extent of urbanization in the communities and community income levels.<sup>37</sup> The lower the degree of urbanization or level of family income, the greater the support for KGS.<sup>38</sup>

The reasons<sup>39</sup> given by the respondents for their attitudes toward KGS were by and large economic or nationalistic, with the greatest number stating economic reasons (see Table 2). The economic category included, in addition to salaries and wages, responses more indirect in nature, such as increased taxes and employment benefits. As is the case with attitudes, the proportion of responses in the economic category is inversely correlated ( $\text{Gamma} = -1.0$ ) with the degree of urbanization and the level of family income.<sup>40</sup> While the present analysis cannot distinguish between income and urbanization as explanatory variables, various economic and social-psychological theories suggest the importance of employment and the income derived therefrom as important explanatory variables.<sup>41</sup>

The second most frequently stated reason was the rather abstract notion that the United States is in need of electric power. This type of response is essentially nationalistic. Such responses were totally consistent with governmental pleas for conservation efforts and energy self-sufficiency brought about because of the Arab oil embargo just easing at the time of the survey. However, individual self-interest cannot be ignored inasmuch as the proportion of nationalistic responses correlates ( $\text{Gamma} = 1.0$ ) with income and employment levels.

Environmental and social concerns were notably absent from the responses. In conjunction with all other responses, environmental and social

TABLE 2. Respondents' Primary Reasons for Attitude Toward the Kaiparowits Project

Primary Reason <sup>a</sup>	Page		Kanab		Escalante	
	No.	%	No.	%	No.	%
<b>POSITIVE REASONS</b>						
We need the power	26	43.3	22	28.6	21	22.6
Economic and employment	22	36.7	46	59.7	60	64.5
Will not harm environment	—	—	—	—	—	—
Other reasons	2	3.3	1	1.3	4	4.3
<b>NEGATIVE REASONS</b>						
We do not need the power	5	8.3	3	3.9	5	5.4
Economic and employment	—	—	1	1.3	1	1.1
Will harm the environment	4	6.7	4	5.2	2	2.2
Other reasons	1	1.7	—	—	—	—
<b>NEUTRAL REASONS</b>						
TOTAL	60	100.0	77	100.0	93	100.0
No reasons	10		5		3	
TOTAL	70		82		96	

<sup>a</sup>Includes only the first reason stated (see footnote 39).

responses accounted for only about eight percent of the total, while economic and nationalistic responses accounted for the remaining 92 percent. This is not surprising inasmuch as media presentations as well as the consortium's publicity focused almost entirely upon the economic benefits and the elaborate precautions being taken to protect the natural environment. When these factors are added to the intense interest surrounding the widely publicized energy crisis, this result is only to be expected.

This emphasis upon growth and development is nothing more than the embodiment of the American creed. It was perhaps accentuated in Kanab and Escalante where the preponderant religious affiliation is Mormonism (Church of Jesus Christ of Latter-Day Saints), which has doctrinal support for economic growth and progress.<sup>42</sup>

Additional insight into the motivation for providing KGS with such strong support is to be found in the analysis of a question probing the respondent's belief that they would personally benefit from the development. Of the household heads interviewed, 45 percent believed that they would receive direct benefits from KGS. Kanab had the greatest proportion believing that they would personally benefit from KGS (54.9 percent), followed by Escalante (40.6 percent) and Page (40.0 percent). These perceived benefits cannot be viewed as resulting solely from the geographic proximity of the communities to the project. Kanab and Escalante are roughly equi-distant from the proposed sites of both the mines and the plant and both are considerably further from the proposed mines and construction sites than Page.

The distribution of responses for those who perceived direct personal gains from the proposed Kaiparowits project can be seen in Table 3, which demonstrates that virtually all benefits were perceived in terms of economic or employment opportunities. Further, by comparing the data in Tables 2 and 3, it is evident that there is a strong correspondence between the reasons provided for supporting the project and the perceived personal gains. Thus, it must be concluded that perceived personal gains provide a strong rationale for support

for the Kaiparowits development. However, because many respondents provided economic and employment reasons for their support, but did not perceive direct personal gains, direct personal gain is not the sole explanation for the support. The perceived personal gains for other members of the community provide at least part of the explanation for the support, and personal observations in the study communities lend credence to the latter explanation. Concern for the occupational opportunities for children, other kin and friends was a justification for the project.

It is of interest that Page residents mentioned economic justifications significantly less frequently than residents of Kanab and Escalante. This is undoubtedly due to the fact that Page residents participated more equitably and fully in the labor market. Because of NGS, the majority of the Page respondents were employed in skilled, high paying jobs. In the Page sample, 79 percent were employed directly or indirectly by NGS, and the median family income was \$22,000 in 1974, while in Escalante it was slightly above \$7,000 and just over \$11,000 in Kanab. Thus, economic issues were less salient in Page.

*Occupational requirements and skills.* Even though the occupational requirements for neither KGS nor NGS are available, an examination of the distribution of occupational skills for Page provides a reasonable estimate of job requirements for a coal-fired electric generating plant in the two to three thousand megawatt range. Table 4 demonstrates the need for a large proportion of the work force possessing a high degree of skill and/or prior training. It can be seen that the job skills of household heads in Kanab and Escalante are distributed differently than in Page. Workers in Page are concentrated to a greater degree in the "Professional-Technical" and "Craftsman and Kindred Workers" categories, while residents of Kanab and Escalante, on the other hand, are more evenly distributed throughout the entire range of occupational skills. These data, then, indicate at least a partial mismatch between the occupational requirements of an electric generating plant such as KGS and the job skills available in Kanab and Escalante.

When the distributions of occupational categories are compared with the index of dissimilarity  $\Delta$ , the differences are more readily comprehended<sup>43</sup> (see Hawley, 1944; Lieberman, 1975).  $\Delta$  for the comparison between Page and Kanab is .41, while the comparison between Page and Escalante is .44.<sup>44</sup> Thus, it would be necessary to redistribute slightly more than 40 percent of the cases in both Kanab and Escalante in order for their respective distributions in the occupational categories to match the distribution in Page which serves as a criterion distribution. These data, then, indicate a mismatch between the oc-

TABLE 3. *Perceived Personal Benefits to Household Heads in Page, Arizona; Kanab and Escalante, Utah, Resulting from Kaiparowits Generating Station*

Benefits	Page		Kanab		Escalante	
	No.	%	No.	%	No.	%
Economic	5	17.9	18	40.0	20	51.3
Employment	22	78.6	23	51.1	17	43.6
Social	—	—	4	8.9	1	2.6
Environmental	—	—	—	—	—	—
Other benefits	1	3.6	—	—	1	2.6
TOTAL	28	100.0	45	100.0	39	100.0

cupational requirements of a large-scale electric generating plant such as KGS and job skills available in the populations of Kanab and Escalante.

This mismatch between skill requirements and availability is further illustrated by an examination of the union membership in the three communities. In Page, 57.1 percent of household heads are union members. In Kanab and Escalante, in contrast, only 41.5 and 5.2 percent, respectively, are union members. More important are the differences in the unions represented (see Table 6). Pipefitters and electrical workers make up a large proportion of union membership in Page, while these two unions are barely represented in Kanab and not found at all in Escalante. Union membership in both of these communities is concentrated in the Teamsters Union. This is because of the necessity to transport crude oil from a location near Escalante to a refinery in Fredonia, Arizona (seven miles from Kanab).

As was the case when comparing the occupational distributions for the three study communities, the indices of dissimilarities indicate the large differences between the three distributions of union membership.  $\Delta$  for the Page-Kanab comparison is .51, and the Page-Escalante comparison yields a  $\Delta$  of .56. Even though Kanab is more similar to Page than is Escalante, over 50 percent of the respondents in both community distributions would have to be moved to another category if the distributions were to be made identical.<sup>45</sup> Thus, the union membership in Kanab and Escalante makes it again appear as if there is a mismatch between the available and required occupational skills assuming, of course, that union membership in Page provides a reasonable estimate of the labor requirements for a large-scale electric generating facility.

It is obvious that neither census-type occupational titles nor union membership provides a completely satisfactory index of available skills. However, when both indices point to a mismatch between labor requirements and availability, the tentative conclusion that only limited numbers of local

TABLE 4. *Distribution of Occupational Characteristics of Heads of Households in Page, Arizona; Kanab and Escalante, Utah*

Occupational Category	Page		Kanab		Escalante	
	No.	%	No.	%	No.	%
Professional-Technical	16	22.9	9	11.3	12	12.5
Craftsmen & kindred workers	22	31.4	10	12.5	10	10.4
Laborers, except farm	6	8.6	6	7.5	12	12.5
Manager-Administrator	13	18.6	15	18.8	12	12.5
Sales	1	1.4	1	1.3	—	—
Clerical & kindred workers	—	—	2	2.5	—	—
Operatives	9	12.9	3	3.8	8	8.3
Transport operatives	1	1.4	10	12.5	1	1.0
Farmers and farm managers	—	—	3	3.8	6	6.2
Farm laborers & foremen	—	—	—	—	1	1.0
Service workers, except private household	2	2.9	5	6.3	7	7.3
Private household workers	—	—	—	—	—	—
Retired	—	—	14	17.5	14	14.6
Unemployed	—	—	2	2.5	13	13.5
TOTAL	70	100.0	80 <sup>a</sup>	100.0	96	100.0

<sup>a</sup>Occupational characteristics of two respondents were not ascertained.



TABLE 5. Distribution of Union Membership for Household Heads in Page, Arizona; Kanab and Escalante, Utah

	Page		Kanab		Escalante	
	No.	%	No.	%	No.	%
Not a union member	30	42.9	48	59.4	91	94.8
Carpenter	1	1.4	4	5.0	—	—
Communication Workers of America	1	1.4	—	—	—	—
Concrete finishers	1	1.4	—	—	—	—
Engineers & architects	—	—	1	1.2	—	—
Equipment operators	—	—	1	1.2	—	—
Insulators (asbestos workers)	1	1.4	—	—	—	—
International Alliance of Theater Stage Hands	—	—	1	1.2	—	—
International Brotherhood of Boilermakers	3	4.3	—	—	—	—
International Brotherhood of Electrical Workers	13	18.6	1	1.2	—	—
Iron workers	1	1.4	—	—	—	—
Laborers Union	1	1.4	—	—	—	—
Machinists	—	—	1	1.2	—	—
Mechanics	—	—	1	1.2	—	—
Millwrights	2	2.9	—	—	—	—
Operating engineers	4	5.7	2	2.5	1	1.0
Painters	3	4.3	—	—	—	—
Sheetmetal workers	—	—	—	—	2	2.1
Teamsters	—	—	18	22.3	2	2.1
Pipefitters, plumbers, apprentices	9	12.9	1	1.2	—	—
Masons (bricklayers)	—	—	1	1.2	—	—
Educational Association	—	—	—	—	—	—
Postal Union	—	—	1	1.2	—	—
United Mine Workers	—	—	—	—	—	—
<b>TOTAL</b>	<b>70</b>	<b>100.0</b>	<b>81<sup>a</sup></b>	<b>100.0</b>	<b>96</b>	<b>100.0</b>

<sup>a</sup>The occupational characteristics of one respondent were not ascertained.

residents would obtain employment at KGS seems reasonable. All of this refers, of course, only to the skilled jobs. Manual jobs would be available in greater numbers to local residents than non-manual positions. Even the power companies proposing KGS hint at this fact when they acknowledge that of the 260 skilled positions necessary for operating the power plant, 150 would definitely be filled by individuals imported by the companies. This would leave, at the maximum, only 110 skilled and 250 non-skilled jobs available to local citizens. This fact is partially inconsistent with the expectations of the locals (see Table 2).

*Job training.* In addition to the jobs available at the power plant, the mining operation would employ approximately 2,500 workers, many of whom would be coal miners. Coal mining is a skilled occupation, and Tables 4 and 5 indicate a total absence of miners in any of the three communities, a condition which would demand that either miners be imported, or locals be trained. As with the other occupational categories, the power companies, the union locals,

and the State of Utah have indicated a willingness to train Utah residents to supply the demand for skilled laborers. Whether or not training programs could be instituted prior to the start of construction and operation so that locals could obtain the jobs is a crucial question, but evidence with which to answer it is not available at this time. Of equal significance, however, is the question of the extent to which the unskilled residents would participate in job training programs.

Respondents were asked the following hypothetical questions:

*Assume that a well-paying, steady job that you wanted became available with one of the firms developing Kaiparowits, but that you lacked the necessary skills. If the firm were willing to train you free of cost, would you be willing to be trained for the job if: (a) Training were local, and you were paid for training? (b) Training were local, but you were not paid for training? (c) Training were not local, but you were paid? (d) Training were not local, and you were not paid?*

The results of the above questions are found in Table 6. Two major conclusions emerge from the data. First, even under the most desirable conditions where training is local and where trainees would be paid, fewer than 50.0 percent (45.9 percent) of the respondents indicated they would accept training. Considering that the question specified a good job that was desired by the respondent, this is an unusual result. As the hypothetical training situations became less desirable, the number of respondents willing to train decreased dramatically until, in the least desirable training situation, training away from home while not paid, just 7.4 percent were willing to train. Residents of Page, perhaps because of their generally superior economic status, were the least willing to train under all conditions.

Second, even though there is a popular myth that residents are reluctant to leave Kanab and Escalante, even for income and employment, Table 6 demonstrates that this is not always the case. Residents were more agreeable to training away from home with pay than training at home without pay. The proportion willing to be trained, so long as they were paid, is considerably greater than the proportion willing to train without pay. Being paid for training was more important to the residents than remaining at home while being trained. It should be remembered that training implies only a relatively short

TABLE 6. Number and Percent of Household Heads in Page, Arizona; Kanab and Escalante, Utah, Willing to Train for Desirable Jobs Associated with Kaiparowits Project

Condition	Page		Kanab		Escalante	
	No. <sup>a</sup>	% <sup>b</sup>	No.	%	No.	%
Training local and paid	21	30.4 (N = 69)	44	54.3 (N = 81)	48	50.0 (N = 96)
Training local and not paid	11	15.9 (N = 69)	24	30.0 (N = 80)	22	22.9 (N = 96)
Training not local and paid	12	17.4 (N = 69)	27	33.3 (N = 81)	36	37.5 (N = 96)
Training not local and not paid	3	4.4 (N = 68)	5	6.2 (N = 80)	10	10.5 (N = 95)

<sup>a</sup>Does not include respondents only conditionally willing to train.

<sup>b</sup>Percentage base does not include "Not Ascertained" or "Uncertain" categories.



TABLE 8. Plans of Household Heads in Page, Arizona; Kanab and Escalante, Utah to Seek Employment at Kaiparowits Generating Station

Plans	Page		Kanab		Escalante	
	No.	%	No.	%	No.	%
Will seek employment	20	28.6	24	29.3	29	30.2
Will not seek employment	40	57.1	53	64.6	59	61.5
Uncertain	10	14.3	5	6.1	8	8.3
TOTAL	70	100.0	82	100.0	96	100.0

absence from the home community and does not reflect a willingness to make a permanent migration.

Even unemployed respondents showed only moderate enthusiasm for obtaining training in order to secure a desirable job. Table 7 demonstrates the stated willingness to be trained for both currently employed and unemployed workers. While the number of unemployed in Page (0) and Kanab (2) is so small as to render analysis trivial, an analysis of the unemployed in Escalante leads to the inevitable conclusion that not all of the unemployed would be willing to obtain necessary job-training. Under the most favorable circumstances, local and paid training, only 38.5 percent of the unemployed indicated a willingness to be trained, while only 7.7 percent were willing to train away from home without pay. This result certainly challenges one of the assumptions underlying the RDA, as well as casting doubt upon the accuracy of the local population's expectations regarding the economic and employment benefits of the Kaiparowits. It is of interest to note that a far greater proportion of the already employed were willing to be trained for new jobs or careers, than were the unemployed.

*Employment: future plans and past successes.* A more adequate index by which to gauge the employment benefits accruing to local residents may be a measure of their intent to apply for jobs with KGS. Residents were thus asked if they planned on applying for employment on the Kaiparowits project. Roughly 30 percent indicated that they were planning on applying (see Table 8). An additional 9.3 percent indicated that they were not certain whether they would apply or not. Again, residents in Page were least interested in KGS jobs, perhaps because they were already gainfully employed in rather high salary positions.

If the undecided household heads are ignored,<sup>46</sup> 31.2 percent in Kanab and 32.9 percent in Escalante would plan on applying.<sup>47</sup> Projecting these sample statistics to the respective household populations provides estimates of the number of household heads who would plan on applying for positions at KGS. In Kanab, 231 would plan on applying, while 80 in Escalante would plan similarly.

Unfortunately, not all of those who had planned to apply would, in fact, have applied; nor would all of those who had applied been hired. Even though there are no means for predicting precisely the number who would have applied and eventually been hired, the past behavior of the residents of Kanab and Escalante and the hiring practices of various energy developments in the immediate vicinity provide a reasonable estimate. Table 9 provides data on the recollections of household heads regarding their job-seeking activities with seven area energy developments. As can be seen, the proportion applying at the several projects, and the success of those applying varies greatly, depend-

b and Station

Escalante	
No.	%
29	30.2
59	61.5
8	8.3
96	100.0

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TABLE 9. Employment Seeking and Success of Kanab and Escalante Household Heads at Seven Lake Powell Region Energy Developments

	Glen Canyon Dam		Black Mesa Mine		L.P. & B.M. Railroad		Oil Developments		Uranium Developments		4-Corners Power Plant		NGS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>KANAB</b>														
Applied and hired	16	19.5	—	—	—	—	3	3.7	6	7.3	—	—	2	2.4
Applied, not hired	3	3.6	—	—	—	—	—	—	—	—	1	1.2	5	6.1
Considered applying but didn't	7	8.5	1	1.2	—	—	—	—	—	—	—	—	11	13.4
Never applied or considered	56	68.3	81	98.8	82	100.0	79	96.3	76	92.7	81	98.8	64	78.0
<b>TOTAL</b>	82	100.0	82	100.0	82	100.0	82	100.0	82	100.0	82	100.0	82	100.0
<b>ESCALANTE</b>														
Applied and hired	13	13.5	—	—	—	—	37	38.5	8	8.3	—	—	—	—
Applied, not hired	2	2.1	—	—	—	—	1	1.0	—	—	—	—	1	1.0
Considered applying but didn't	1	1.0	—	—	4	4.2	1	1.0	—	—	1	1.0	8	8.3
Never applied or considered	80	83.3	96	100.0	92	95.8	57	59.4	88	91.7	95	99.0	87	90.6
<b>TOTAL</b>	96	100.0	96	100.0	96	100.0	96	100.0	96	100.0	96	100.0	96	100.0

ing upon the project and the community. For example, of the 15 persons (15.6 percent) who applied for jobs on the Glen Canyon Dam from Escalante, 86.7 percent successfully obtained jobs. But, of the Kanab household heads, only seven persons (8.5 percent) applied at NGS; and only two of them (28.6 percent) were successful in gaining employment. Generally, success was best on the Glen Canyon Dam project and least on NGS. This is undoubtedly due in part to lower skill levels required for employment on dam projects than are required for electric generating plants. Because of the similarity of NGS and KGS, the figures for NGS provide the best estimate of job-seeking success on the Kaiparowits project.

In Kanab, of the 18 respondents who recalled having considered applying at NGS, only two or 11.1 percent gained employment. Using this 11.1 percent success rate for projecting to the 231 estimated Kanab applicants for jobs at KGS, approximately 26 would obtain jobs. However, with only 2.5 percent of the Kanab respondents unemployed at the time of the interview there were probably only 19 unemployed in the community, and the net gain in jobs for local residents would be 19. A more dismal picture emerges when data for Escalante are analyzed, for of the nine respondents who recalled considering applying for jobs at NGS, none obtained work. In fact, only one respondent ultimately applied after considering it. This low rate of application was undoubtedly influenced by the great distance between Escalante and Page.<sup>48</sup> However, given the similar degrees of support for KGS in Kanab and Escalante (see Table 1), it is not unreasonable to assume that their respective success rates might also be similar. Thus, assuming that the Escalante success rate was also 11.1 percent, a fair estimate of the number of jobs which would have been obtained at KGS is nine. Unemployment in Escalante during the summer of 1975 was projected to have been 33, so the net gain in employment for the local population would have been nine, and the combined estimate of the net increase in jobs would be just 28.<sup>49</sup> That is, the techniques used here provide an estimate that 28 additional jobs would have been provided to local residents of Kanab and Escalante by the construction of the proposed KGS.<sup>50</sup>

It could be argued that unemployment is at its lowest during the summer months, and that the net increase for Kanab residents would have been 26 jobs. While the unemployment rate is indeed lowest during the summer months, the cyclic pattern of high winter unemployment and low summer unemployment has persisted for many years, indicating a reluctance of local residents to leave their communities in order to gain employment. Many residents appear quite content to suffer from underemployment and unemployment for part of the year in order to continue residence in Kanab and Escalante. In fact, discussions with many locals indicated that many seek *periodic* employment out of the area, particularly at construction sites, in order to supplement marginal ranching and farming operations. Such a practice vitiates arguments that these same persons would actively seek out full-time employment at KGS that would have required daily commuting of approximately three hours or migration to a planned new community. Short, erratic episodes to provide additional income may have occurred, but extended employment on a distant project seems relatively unlikely, as do lengthy, daily automobile trips by rural workers.

It could also be argued that preferential hiring practices intended to encourage Navajo employment at NGS tended to discourage anglo<sup>51</sup> job applicants and reduce the number of jobs obtained by anglo residents. While preferential Navajo hiring may have inhibited some applicants, Navajo

workers have never as yet occupied the desired 45 percent of the jobs; and in June of 1974 Navajos held only about 31 percent of the jobs. Furthermore, those Navajos employed at NGS were primarily in the less desirable positions: manual, non-supervisory jobs. In any event, hiring at NGS has continued more or less consistently since construction began because of high employee turnover rates, and Kanab and Escalante residents had ample opportunity to seek and gain employment there but generally have not done so. Inasmuch as NGS is about the same distance from Kanab as KGS would have been, NGS becomes an important factor in estimating the local job benefits which would have resulted from developing KGS.

Yet another means for estimating the likely employment benefits to be enjoyed by local residents from the development of KGS is to examine the number of residents of Kanab and Escalante working at NGS, as well as the number of NGS workers in Page who are from Kanab and Escalante. As has already been noted, only two household heads from the two Utah communities, both from Kanab, were employed at the NGS, representing 2.4 percent of the sampled Kanab household heads. A projection based upon this figure leads to an estimate that 18 household heads in Escalante and Kanab were employed at NGS.<sup>52</sup> Sample results also indicated that just one former Kanab or Escalante resident was residing in Page and working at NGS. This single instance leads to an estimate that 31 former residents of Kanab and Escalante were residing in Page and working at NGS in the summer of 1974.<sup>53</sup> Using these results and combining them provides an estimate that 49 new jobs at KGS would have been taken by residents of Kanab and Escalante, and this is probably a liberal estimate.

Some might argue that KGS would have been considerably larger than NGS (by 750 mw and 2,560 mine workers); and would, therefore, have provided considerably more jobs. However, since unemployment has remained in the two Utah communities even though NGS was hiring more or less continuously, the size of the project would not seem to have much effect on the number of locals employed. The limit to the number of jobs accepted by residents of Kanab and Escalante appears to be a function of the personal proclivities of the individuals and the internal dynamics of the communities, not the size of the project.

## SUMMARY AND CONCLUSIONS

Government officials and policies assume, as do many ordinary citizens, that locating industrial projects away from metropolitan centers is the panacea for the sagging economic fortunes of rural America. The assumptions are that rural industrial projects will help place a limit on urban growth while at the same time provide employment for rural dwellers. The analysis of one such project, the proposed Kaiparowits Generating Station, casts doubt on the soundness of such assumptions.

Residents of Kanab and Escalante, Utah, overwhelmingly supported the exploitation of the Kaiparowits Plateau's coal reserves and the construction of the attendant electric generating facility. Their support rested on the belief that economic and employment benefits would accrue to their communities. Many residents perceived these benefits in terms of personal gain, believing that they would obtain jobs or increase their incomes. The remainder viewed the gains in terms of friends or relatives obtaining jobs or in terms of general advantages to be enjoyed by the community as a whole.

Undoubtedly the increased tax base resulting from the proposed KGS would generate benefits in the two communities, especially in the area of increased public facilities such as better roads, schools, and hospitals. Nevertheless, the analysis presented here demonstrates a lack of congruence between community expectations of increased employment and income and the probable reality. Large numbers of jobs for locals are simply unlikely to materialize, and those that do would probably be in the less skilled and lower paying categories. There are several interrelated factors that lead to such a conclusion.

First, there is a mismatch between available job skills in Kanab and Escalante and those required for the construction and operation of an electric generating plant and coal mines. When the distribution of occupational skills in a town like Page, Arizona, the location of the 2,250-megawatt NGS, is compared with the distribution of occupational skills found in Kanab and Escalante, the mismatch becomes evident. Whereas a relatively high proportion of Page residents were trained in skilled trades such as pipefitting and welding, skills necessary for projects like NGS, few residents of Kanab and Escalante possessed the same skills. Thus, the jobs available to local residents would be preponderately in the nonskilled and lower paying occupational categories.

Second, local residents were reluctant to be trained for jobs they might desire but for which they lacked the necessary skills. Their willingness to be trained was determined, in part, by the opportunity to be paid while they were training. Relatively few were willing to be trained if they were not paid a wage during this training period, even though there would be no cost for the training itself. More surprisingly, even unemployed persons tended to reject the possibility of being trained in order to gain employment at the then proposed KGS. This finding belies the notion that KGS would employ the currently unemployed and, therefore, reduce the welfare rolls. Without training, many of the unemployed would remain so for the same reasons causing their unemployment: lack of job skills.

Third, when past performance of locals in seeking and securing jobs on other energy projects is considered, projects for future employment at KGS are not encouraging. Inasmuch as NGS and KGS are very nearly identical in both skill requirements and distance from Kanab, projections were based upon experiences of locals at NGS. These projections indicate that probably fewer than 30 and certainly fewer than 50 jobs would likely have been filled by Kanab and Escalante residents. Thus, of the approximately 4,000 new jobs available from the primary industry, fewer than one percent would be filled by local residents, a result clearly unacceptable and inconsistent with their expectations.<sup>54</sup>

Fourth, the distance between the employment sites and the local communities creates a problem. Both Kanab and Escalante are approximately one and one-half hours by car from the proposed sites of either KGS or the mines.<sup>55</sup> Even if keen interest in obtaining jobs and the requisite occupational skills were evident in both communities, the extent to which workers would be willing to spend approximately three hours a day commuting is uncertain. Although it might prove satisfactory for periods of short duration, a three-hour commute does not appear feasible over the long run. Thus, for those workers electing to continue their employment at KGS, the opinion of moving away from their home towns to a proposed new community might prove to be attractive.



Past employment histories indicate a willingness of local residents to relocate outside their home communities in order to augment their unemployment cycle, high in the winter and low in the summer. This supports the contention that the residents of Kanab and Escalante prefer to remain in their home communities, even in the face of unemployment. The proportion willing to move to a new community cannot be accurately estimated, but it is believed to be relatively small. After all, local support for KGS was ultimately based upon the residents' desires to earn a living wage while remaining in their native communities. Moving to a new community, even if only 60 or 100 miles away, in order to continue employment at KGS would be inconsistent with their desires and perceptions.

The analysis presented here makes it clear that there is considerable incongruence between expectations of the local residents and the likely reality. The majority of the jobs, and with them the economic benefits, resulting directly from the construction of KGS would undoubtedly have been enjoyed not by the residents of Kanab and Escalante, but rather by the skilled workers who would migrate to KGS. Although residents of Kanab and Escalante merely wanted their fair share of the American economic pie, they wanted to enjoy it in their own backyard.

The results of this study can certainly not be generalized without caution to all rural industrial developments nor even to all western energy developments. Nevertheless, the single instance of a proposed electric generation and coal mining project in south-central Utah certainly casts doubts upon the popular assumption that local residents are always the recipients of massive employment and economic benefits when large industry moves into a rural community. It further calls into question traditional economic development models.

This study makes it clear that huge benefits do not accrue to those persons that folk wisdom and political/industrial rhetoric specify as the recipients. Inasmuch as the benefits are not bestowed in significant amounts on local residents, the accumulation must be elsewhere. In order to assess the benefits meaningfully, to say nothing about the associated costs, it is necessary to widen the foci of investigations to include the social structures and economies located at some distance from the site of development, i.e., the social and economic structures of the large metropolitan areas. Only then will it be possible to answer the question: Who benefits?

## NOTES

1. The research reported in this paper was supported in part by grant No. EnV 76-04849 to the Sociology Subproject of the Lake Powell Research Project from the Regional Environmental Systems Program of Research Applied to National Needs (RANN) of the National Science Foundation. The views contained herein do not necessarily reflect the views of the National Science Foundation. This paper is a revised version of the Lake Powell Research Project Bulletin No. 56, September, 1977. Thanks are due to Thomas Greider for his helpful editorial comments on the final draft of this paper.
2. Cf., Joseph G. Jorgensen, "Energy, Agriculture, and Social Science in the American West," in J. G. Jorgensen *et al.*, *Native Americans and Energy Development* (Cambridge, Mass.: Anthropology Resource Center, 1978), pp. 3-16; and U. S. President's National Advisory Commission on Rural Poverty, *The People Left Behind* (Washington, D. C.: U. S. Government Printing Office, 1967).
3. Recent studies indicate that in some rural areas the migration trend is shifting from out-migration of individuals to in-migration. Beale (1975) indicates that many rural areas are experiencing larger growth rates than metropolitan areas.
4. Cf., David L. Rogers *et al.*, "Industrialization, Income Benefits, and the Rural Community," *Rural Sociology*, vol. 43 (1978), pp. 250-264; Gene F. Summers, "Nonmetro Industrial Growth: Warts and All," paper presented at a seminar sponsored by the U. S. Senate Committee on Agriculture and Forestry (Washington, D. C.: September, 1975); Peter A. Morrison *et al.*, *Review of Federal Programs to Alleviate Rural Deprivation* (Santa Monica, Calif.: Rand Corporation, 1974); Michael F. Nolan and William D. Heffernan, "The Rural Development Act of 1972: A Skeptical View," *Rural Sociology*, vol. 39 (Winter, 1974), pp. 536-545; and Frank Clemente and Gene F. Summers, "Large Industries in Small Towns: Who Benefits?" Working Paper RID 73.9 (Madison: University of Wisconsin, Center for Applied Sociology, 1973).
5. Cf., Ronald L. Little, "Rural Industrialization: The Four Corners Region," in Lewis Carter and Louis Gray (eds.), *Social Implications of Energy Scarcity: Social and Technological Priorities in Steady State and Constricting Systems* (Pullman: Washington State University Department of Sociology and Social Research Center, 1976); U. S. Bureau of Mines and U. S. Environmental Protection Agency, *A Listing of Proposed, Planned or Under Construction Energy Projects in Federal Region VIII: A Joint Report*, prepared by the Subcommittee to Expedite Energy Development of the Bureau of Mines and The Socioeconomic Impacts of Natural Resource Development Committee of the Environmental Protection Agency, 1975; Mountain Plains Federal Regional Council, *Socioeconomic Impacts and Federal Assistance in Energy Development Impacted Communities in Federal Region VIII*, Committee on Socioeconomic Impacts of Natural Resources Development, 1975; and U. S. Department of Interior, *Draft Environmental Impact Statement Kaiparowits Project* (Washington, D. C.: U. S. Government Printing Office, 1975); for descriptions of some of the hundreds of proposals that are currently being considered in the Rocky Mountain region.
6. Even environmental impact statements can succumb to this appealing argument. They frequently tend to stress the economic and employment benefits while ignoring the potential social problems created by rural industrial projects. Cf., Morrison *et al.*, *loc. cit.*; U. S. Department of Interior, 1974, *op. cit.*; U. S. Department of Interior, *Draft Environmental Impact Statement: Western Gasification Company (WESCO) Coal Gasification Project and Expansion of Navajo Mine by Utah International, Inc., New Mexico* (Washington, D. C.: U. S. Government Printing Office, 1974).
7. Rogers *et al.*, *loc. cit.*
8. Gene F. Summers and Jean M. Lang, "Bringing Jobs to People: Does it Pay?" *Small Town*, vol. 7 (September, 1976), pp. 4-11; Frank Clemente, "What Industry Really Means to a Small Town," *Farm Economics* (University Park: Pennsylvania State University and the U. S. Department of Agriculture (April, 1975); John Scott, Jr. and Gene F. Summers, "Problems in Rural Communities after Industry Arrives," in Larry R. Whiting (ed.), *Rural Industrialization: Problems and Potentials* (Ames: Iowa State University, 1974), pp. 94-107; Clemente and Summers, *loc. cit.*; and Sheridan Maitland and James Cowhig, "Research on the Effects of Industrialization in Rural Areas," *Monthly Labor Review*, vol. 81 (October, 1958), pp. 1121-1124.
9. Cf., H. A. Wadsworth and J. M. Conrad, "Impact of New Industry on a Rural Community," *Indiana Agricultural Experiment Station Research Bulletin*, no. 811 (July, 1966); and Clemente, *loc. cit.*

10. For example, Robert S. Halliday, "Kaiparowits Issue Full of Passion," *Salt Lake Tribune* - (January 18, 1976); Little, 1976, *loc. cit.*; and Nick Snow, "Growth Key: Local Officials," *Deseret News* (May 29, 1975). Secondary and tertiary benefits are not altogether ignored by the supporters of rural industrial projects, but because of the difficulty in detailing such benefits, they will not be considered in this paper. Further, there is reason to believe that secondary and tertiary employment benefits may be minimal. Cf., Mason Gaffney, "Counter-Colonial Land Policy for Montana," *Western Wildlands*, vol. 3, no. 3 (1977), pp. 16-25; and Gary G. Stanfield, "Predicting Socioeconomic Impacts of Energy Development: Net Changes in Employment in Response to Increases in Basic Employment," Working Paper No. 44 (The Pennsylvania State University, Center for the Study of Environmental Policy, 1978). It seems that competition from national concerns drives out some of the local merchants, e.g., Charles F. Cortese and Bernie Jones, "The Sociological Analysis of Boom Towns," *Western Sociological Review*, vol. 8, no. 1 (1977), pp. 76-90; while other merchants adjust to the increased volume of trade by a more efficient utilization of current employees without an increase in their numbers; see Benjamin Chinitz, "National Policy for Regional Development," in John F. Kain and John R. Meyer (eds.), *Essays in Regional Economics* (Cambridge, Harvard University Press, 1971).
11. Cf., Lloyd D. Bender, Bernal L. Green and Rex R. Campbell, "Trickle Down and Leakage in the War on Poverty," *Growth and Change*, vol. 12 (October, 1971), pp. 34-41; Irwin Gray, "Employment Effect of a New Industry in a Rural Area," *Monthly Labor Review*, vol. 92 (June, 1969), pp. 26-30; and Maitland and Cowhig, *op. cit.*
12. Cf., Summers and Lang, *loc. cit.*; Gray, *loc. cit.*
13. Sound scientific research on the issues involved in rural industrialization are relatively plentiful, but lacking in theoretical development. Furthermore, the literature available is found in "fugitive" publications; that is, publications not generally available in university libraries let alone available in public libraries. Because the dissemination of such applied research has not been via main stream journals and magazines, citizens, governmental officials, planners, and social science researchers alike find it difficult to locate pertinent information. Even the most mundane problems, about which there may in fact be copious literature, frequently must go without tested solutions. Unanticipated problems encountered and solved in one community remain unanticipated in communities facing subsequent developments. Each community is left to deal with many problems spontaneously, as they rise. Decision makers are all too often forced to proceed without benefit of scientific counsel, basing their decisions upon conjecture, belief, faith and the propaganda of the industries.
14. Gene F. Summers, "Large Industry in a Rural Area: Demographic, Economic and Social Impacts," Working Paper RID 73.19 (University of Wisconsin-Madison, Center for Applied Sociology, 1973), p. 10.
15. Wade H. Andrews and Ward W. Bauder, "The Effects of Industrialization on a Rural County: A Comparison of Social Change in Monroe and Nobel Counties of Ohio (Ohio Agricultural Research and Development Center, Department Series 407, 1968), p. 130.
16. Mountain West Research, *Construction Worker Profile, Final Report*, a study for the Old West Regional Commission (Washington, D. C., 1975).
17. Arlen G. Leholm, F. Larry Leistritz and James S. Wieland, "Profile of Electric Power Plant Construction Work Force" (North Dakota Agricultural Experiment Station, Agricultural Economics Statistics Series Issue No. 22, 1976).
18. Although Leholm *et al.* and MWR used the same data set for part of the research, the two studies report differing population sizes, making interpretation and comparisons difficult.  
It should be noted that while the proportion of new jobs going to local residents may amount to only a small proportion of the total, if the project employment requirements are large, the number of new jobs obtained by locals may in fact revitalize the local economy, simultaneously altering the extant social structure.
19. See Summers, 1973, *loc. cit.*; Bender *et al.*, *loc. cit.*; and Gray, *loc. cit.*
20. The role of the metropolis in the development and de-development of rural areas has been ignored in the traditional modernization literature, and by much social impact assessment work which is generally atheoretical. Unfortunately, no well-articulated theoretical structure is readily available which integrates the metropolis into the developmental process. However, two overlapping theoretical traditions provide a broad framework for viewing the process: (1) Metropolitan Dominance, and (2) Neo-colonialism. The former includes such authors as: Norman Scott Brien Gras, *An Introduction to Economic History* (New York: Harper and

- Brothers, 1922); R. D. McKenzie, *The Metropolitan Community* (New York: McGraw-Hill, 1933); Donald J. Bogue, *The Structure of the Metropolitan Community: A Study of Dominance and Subdominance* (Ann Arbor: University of Michigan, 1949); and Harold F. Goldsmith and James H. Copp, "Metropolitan Dominance and Agriculture," *Rural Sociology*, vol. 29 (1964), pp. 285-395. The latter includes: Paul A. Baran, *The Political Economy of Growth* (New York: Monthly Review Press, 1957); Andre Gunder Frank, *Capitalism and Underdevelopment in Latin America: Historical Studies of Chile and Brazil* (New York: Monthly Review Press, 1969); Joseph G. Jorgensen, "Indians and the Metropolis," in Jack O. Waddell and O. Michael Watson (eds.), *The American Indian in Urban Society* (Boston: Little, Brown, 1971), pp. 66-113; and Louise Lamphere, "The Internal Colonization of the Navajo People," *Southwest Economy and Society*, vol. 1 (1976), pp. 6-14.
21. These communities are rural by lifestyle if not by strict census definitions.
  22. It should be noted that the attitudes and beliefs of the residents of these two communities are, on the whole, consistent with the attitudes and beliefs of state and county officials as well as representatives of the industry. See *Deseret News* (January 27, 1976 and February 24, 1976).
  23. Two other Utah communities, Blanding and Monticello, were also included in the survey, but have not been included in this analysis because of the long distances between them and the then proposed Kaiparowits power project.
  24. See U. S. Department of Interior, *Final Environmental Impact Statement: Kaiparowits Project* (Washington, D. C.: U. S. Government Printing Office, 1976); Richard J. Schneider, "Largest U. S. Coal-Fired Power Plant Proposed for Southern Utah," *Rocky Mountain News* (January 25, 1976); and Little, 1976, *loc. cit.*
  25. See Ronald L. Little, "Some Social Consequences of Boom Towns," *North Dakota Law Review*, vol. 53, no. 3 (1977), pp. 401-425.
  26. Jean Duffy, "Page, Arizona: The Town a Dam Built," *Arizona Highways* (January, 1964); and Henry Frost, "Successful Transiency—Some Findings from the Page, Arizona Community Research Project," paper presented at the annual meeting of the American Association for the Advancement of Science, Denver, Colorado (December, 1961). Until March of 1975, Page remained a federal town administered by the Bureau of Reclamation. For a discussion of problems associated with federal ownership, see Samuel E. Vickers, "Page, Arizona: A Study of Factors Affecting Incorporation of a 'Federal' Community," *Institute of Public Administration Public Affairs Bulletin*, vol. 7, no. 3 (1968).
  27. For discussions of some of the controversy ignited by the Black Mesa strip mining operations, see "Dig at Black Mesa," *Newsweek* (February, 1971), pp. 75-76, and Anthony Wolff, "Showdown at Four Corners," *Saturday Review of the Society* (June 3, 1972), pp. 29-41.
  28. For discussions of the coal reserves of the Kaiparowits Plateau, see D. Carey *et al.*, *Kaiparowits Handbook: Coal Resources*, Lake Powell Research Project Interim Report (Los Angeles: Institute of Geophysics and Planetary Physics, University of California, May, 1975); and Little, 1976, *loc. cit.*
  29. Cf., Lowry Nelson, *The Mormon Village* (Salt Lake City: University of Utah Press, 1952); and Nethella G. Woolsey, *The Escalante Story: A History of the Town of Escalante and Description of the Surrounding Territory, Garfield County, Utah, 1875-1964* (Springfield, Utah: Art City Publishing Company, 1964).
  30. On April 14, 1976, two members of the power consortium which proposed the Kaiparowits Generating Station and which expended millions of dollars planning for it, Southern California Edison and San Diego Gas and Electric, announced that they were withdrawing from the project. Other members of the consortium were unable to proceed alone and subsequently the Department of Interior discontinued processing the project proposal. Consortium officials indicated that their withdrawal was because of harrassment from environmentalists, but other rationales, such as reduced power projections, surfaced later. The well-publicized battle over the Kaiparowits project seemed over until August of 1978 when plans for mining of the coal without conversion surfaced and the battle lines were drawn again between environmentalists, industry, and industry's supporters.
  31. This is more than twice the current generating capacity of the entire state of Utah.
  32. U. S. Department of Interior, 1976, *op. cit.*
  33. *Ibid.*

34. Page had the lowest completion rate: 82 percent.
35. The unequal sample sizes and sampling fractions coincide with Kish's recommended procedure of oversampling smaller populations. See Leslie Kish, *Survey Sampling* (New York: John Wiley and Sons, 1967), pp. 43-51. Further, logistical problems of the field work as well as problems of coordinating data collection with the Epidemiology Subproject made it impossible to maintain equal sampling fractions even if such a procedure were desirable.
36. Evidence of local support for the project is also evidenced by the creation of a citizen's group called ALIVE (American League for Industry and Vital Energy). This group has lobbied at the state capitol in Salt Lake City and also organized a trip to Washington, D. C., in order to gain support for the project from then Secretary of Interior Kleppe, and members of the President's staff. The trip was sponsored, in part, by Southern California Edison and other members of the consortium.
37. Each community's level of urbanization was ranked according to size of community and the researcher's perceptions of their life-style. Both measures indicated that Page was the most urbanized and Escalante the least urbanized. The perfect gamma values result from the perfect correlations between the two variables for the three pairs. It should be remembered that gamma ignores ties, but is amenable to a Proportionate Reduction of Error interpretation.
38. In spite of the large proportion of local residents supporting KGS, an even greater proportion favored the construction of the extant Glen Canyon Dam. In Page, 92.6 percent, 92.7 percent in Kanab, and 90.3 percent in Escalante supported the dam.
39. Respondents generally provided several reasons for maintaining their attitudes toward KGS. However, it was assumed that the first reason given was the most salient, so only that response is analyzed here.
40. See footnote 37.
41. For an example of a theory using a rational self-interest model, see Richard B. McKenzie and Gordon Tullock, *The New World of Economics* (Homewood, Illinois: R. D. Irwin, 1975).
42. For a discussion of economic growth as a tenant of Mormonism, see Little, 1976, *loc. cit.*
43. Cf. Amos. H. Hawley, "Ecology and Human Ecology," *Social Forces*, vol. 22 (May, 1944), pp. 398-405; and Stanley Lieberman, "Rank-Sum Comparisons Between Groups," in David R. Heise (ed.), *Sociological Methodology, 1976* (San Francisco: Jossey-Bass, Inc., 1975), pp. 276-291.
44.  $\Delta$  for the Kanab and Escalante occupational distributions equals .26.
45.  $\Delta$  for Kanab and Escalante union membership equals .38.
46. Ignoring the undecided and calculating percentages strictly on the "decided" categories, in effect, apportion the undecided into the other two categories.
47. Inasmuch as interest here is on the effects of industry on rural communities, projections for Page are excluded from the discussion. Data for Page has been included thus far only for illustrative and comparative purposes.
48. The shortest all-weather route between Escalante and Page is about 200 miles. Various other routes which are impassable during the winter are still in the neighborhood of 100 miles.
49. A recently completed discriminate function analysis using similar information for all four Utah communities in the Lake Powell study, projects that 31 new jobs would be obtained by the residents of the four communities. It should be noted that the analysis required interval data assumptions which could not always be matched by the data.
50. Our major concern is with direct employment at the project. Although secondary employment would certainly be generated, if high paying direct jobs are insufficient motivation for locals to seek training and employment, it seems likely that lower paying positions will provide even less incentive.
51. The term "anglo" refers to white residents of non-Spanish heritage.
52. An estimate of the combined communities corrected for the unequal sampling frame gives an estimate of only 14. Of the two NGS employees residing in Kanab and Escalante, only one is a native, the other having moved to Kanab so he could work at NGS. Thus, projected total employment benefits to local native residents then is only about 9 jobs.

53. Personal observations in Page, Kanab, and Escalante lead to the conclusion that the sampling error, the inclusion of one former Kanab resident, leads to an overestimate of the total number of Page NGS workers who were originally from Kanab and Escalante. It should also be noted that there were no migrants from the remainder of either Kane or Garfield counties, the respective sites of Kanab and Escalante.
54. At a public meeting in Kanab, local residents rejected the suggestion that perhaps only an approximate 50 jobs would be filled by residents of Kanab and Escalante.
55. No plans have been announced for a transportation system which would replace the private automobile as a means for delivering workers to the mines and plant. Given the current anxieties over energy conservation, this is both unusual and inconsistent with both government and power company publicity.