

# **PROFILE OF THE COAL CREEK PROJECT CONSTRUCTION WORK FORCE**

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## FOREWORD

This report is a supplement to Agricultural Economics Statistical Series, Issue No. 22, Profile of Electric Power Plant Construction Work Force. It provides a profile of the characteristics of the construction work force at the UPA-CPA construction site near Falkirk, North Dakota. The authors express gratitude to the construction employees for completing the questionnaires and to the UPA-CPA company officials for their full cooperation in this endeavor. The study would not have been possible without their cooperation and effort in completing the questionnaire.

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## Highlights

The prospect of extensive energy development in North Dakota has created considerable interest in potential employment opportunities, as well as possible social, economic, and environmental effects. In light of this interest, during August and September of 1976, workers were surveyed at UPA-CPA's Coal Creek construction project to determine the socioeconomic characteristics of the work force. Although characteristics of construction work forces in the future may be considerably different from the present construction work forces, inferences drawn from the present work force may be useful for predicting the employee characteristics of an expanded work force. An understanding of these characteristics may be valuable in helping federal, state, and local decision makers plan for extensive development.

Comparison of the characteristics of the Coal Creek construction work force with earlier North Dakota construction work forces indicates a similarity in age, education, and family size. Interesting differences occur with several characteristics--marital status, length of residence, home ownership, and commuting distance.

## PROFILE OF THE COAL CREEK CONSTRUCTION WORK FORCE

by  
James S. Wieland and F. Larry Leistritz\*

The Coal Creek Plant, an electric generating complex located in McLean County, North Dakota, is a joint effort between United Power Association and Cooperative Power Association (UPA-CPA). Construction of the plant, located about two miles west of Falkirk, began in the spring of 1975. The project consists of two 500-megawatt electric generating units and is scheduled for completion in 1980.

The socioeconomic characteristics of the Coal Creek construction work force are summarized in this paper. An understanding of these characteristics is essential if planners are to make accurate impact projections.

A survey was conducted at the Coal Creek site during August and September of 1976. This was a cooperative effort between the Department of Agricultural Economics, North Dakota State University, and researchers from the University of Wyoming who are engaged in a study of McLean County sponsored by the Old West Regional Commission. Of the approximately 510 employees, 268 or 52.5 percent responded to the questionnaire, of which 254 or 49.8 percent were usable. The responses were divided into local and nonlocal employee categories. A local worker was defined as one who had lived at his present address prior to May, 1975. One hundred and fifty-six or 61.4 percent of the employees were local workers. The average age of the local workers was 36.4 years and 33.2 years for nonlocal employees. Over 71 percent of the local workers and 62.2 percent of the nonlocal workers were married (Table 1).

Local workers had an average family size of 2.78 and nonlocal workers 2.29.<sup>1</sup> The local workers had 1.09 children per worker living with them in the area while the nonlocal workers had 0.72 children (Table 2). The nonlocal workers had fewer children on the average and their children were substantially younger than the local workers' children.

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<sup>1</sup>Family size refers to the employee plus any dependents living with them in the coal development area.

TABLE 1. MARITAL STATUS OF 156 LOCAL AND 98 NONLOCAL UPA-CPA CONSTRUCTION EMPLOYEES, NORTH DAKOTA, 1976

Marital Status	Local	Nonlocal
	<i>percent<sup>a</sup></i>	<i>percent<sup>a</sup></i>
Married	71.2	62.2
Single	21.2	24.5
Widowed or Divorced	4.5	11.2
Separated	0.6	2.0
No Answer	<u>2.6</u>	<u>0.0</u>
TOTAL	100.1	99.9

<sup>a</sup>Percent may not total 100 due to rounding.

TABLE 2. NUMBER OF CHILDREN PER WORKER BY AGE CATEGORY FOR LOCAL AND NON-LOCAL UPA-CPA EMPLOYEES, NORTH DAKOTA, 1976<sup>a</sup>

Age Category	Number of Children Per Worker	
	Local	Nonlocal
Less Than 6 Years Old	.341	.422
6-12 Years Old	.381	.157
13-18 Years Old	<u>.365</u>	<u>.145</u>
TOTAL	1.087	.724

<sup>a</sup>This only includes children under 18 living with workers in the surrounding area.

Almost 53 percent of the local workers and only 27.6 percent of the nonlocal workers lived in a city with a population of over 10,000 people; while only 30.1 percent of the local and 50 percent of the nonlocal workers lived in a city with a population of 500 to 1,000 people (Table 3). This indicates that nonlocal workers prefer to live in smaller towns near the construction site if housing is available.

The local workers traveled an average of 41.9 miles--one way--to work, while nonlocal workers commuted 32.4 miles. Almost one-third of the nonlocal employees and only 10.9 percent of the local workers commuted less than 10

TABLE 3. CITY SIZE OF 156 LOCAL AND 98 NONLOCAL UPA-CPA CONSTRUCTION EMPLOYEE RESIDENCES, NORTH DAKOTA, 1976

City Size	Local		Nonlocal	
		<i>percent</i>		<i>percent<sup>a</sup></i>
City Under 500 Population	3	1.9	0	0.0
City Between 500-1,000 Population	47	30.1	49	50.0
City Between 1,000-5,000 Population	16	10.3	4	4.1
City Between 5,000-10,000 Population	0	0.0	0	0.0
City Over 10,000 Population	82	52.6	27	27.6
No Answer	<u>8</u>	<u>5.1</u>	<u>18</u>	<u>18.4</u>
TOTAL	156	100.0	98	100.1

<sup>a</sup>Percent may not total 100 due to rounding.

miles (Table 4). This indicates that nonlocal workers choose their place of residence as close to their work as available housing will allow. This fact becomes more evident as one examines the place of residence of the workers when the survey was conducted (Table 5). Over one-half of the local but only 27.5 percent of the nonlocal workers lived in Bismarck, Mandan, or Minot--all located at least 50 miles from the site; whereas, almost 39 percent of the nonlocal workers and only 10.9 percent of the local workers lived in the two towns closest to the site--Underwood and Washburn. Location of the communities from the site is shown in Figure 1.

TABLE 4. DISTANCE TRAVELED TO WORK BY 156 LOCAL AND 98 NONLOCAL UPA-CPA CONSTRUCTION EMPLOYEES, NORTH DAKOTA, 1976

Distance Traveled	Local		Nonlocal	
	<i>miles</i>	<i>percent</i>		<i>percent</i>
1-10	17	10.9	31	31.6
11-20	9	5.8	9	9.2
21-30	17	10.9	9	9.2
31-40	23	14.7	5	5.1
41-50	30	19.2	15	15.3
51-60	31	19.9	16	16.3
Over 60	24	15.4	10	10.3
No Answer	<u>5</u>	<u>3.2</u>	<u>3</u>	<u>3.1</u>
TOTAL	156	100.0	98	100.0

TABLE 5. PLACE OF RESIDENCE OF 156 LOCAL AND 98 NONLOCAL UPA-CPA CONSTRUCTION EMPLOYEES, NORTH DAKOTA, 1976

Place of Residence	Local percent <sup>a</sup>	Nonlocal percent <sup>a</sup>
Bismarck-Mandan	37.2	22.4
Minot	15.4	5.1
Underwood	6.4	18.4
Washburn	4.5	20.4
Wilton	0.6	2.0
Garrison	6.4	2.0
Stanton	8.3	3.1
Hazen	3.8	2.0
Center	7.1	3.1
Turtle Lake	0.6	2.0
Riverdale	2.6	1.0
Max	1.9	0.0
No Answer	<u>5.1</u>	<u>18.4</u>
TOTAL	99.9	99.9

<sup>a</sup>Percent may not total 100 due to rounding.

The local workers had lived an average of 13.3 years in their present community, while the nonlocal workers had lived an average of only 5.1 months in their present community. The length of residence of the local workers may indicate that many of them had switched from other jobs in the area to work at the higher paying construction site jobs. The relatively short length of residence of the nonlocal workers appears logical as many of these workers move on to another construction project once their particular phase of construction is completed; also, 1976 was the first year of major construction activity at Coal Creek. With expanded coal development, the nonlocal workers may become more permanent residents, as they may be able to work at different sites in the area.

Over 54 percent of the local workers and 26.5 percent of the nonlocal workers lived in a single family house, while only 14.1 percent of the local workers and 30.6 percent of the nonlocal workers lived in an apartment (Table 6).

The nonlocal workers had slightly more formal education than the local workers. Thirty percent of the local workers had formal education beyond high school compared to almost 35 percent of the nonlocal workers (Table 7).

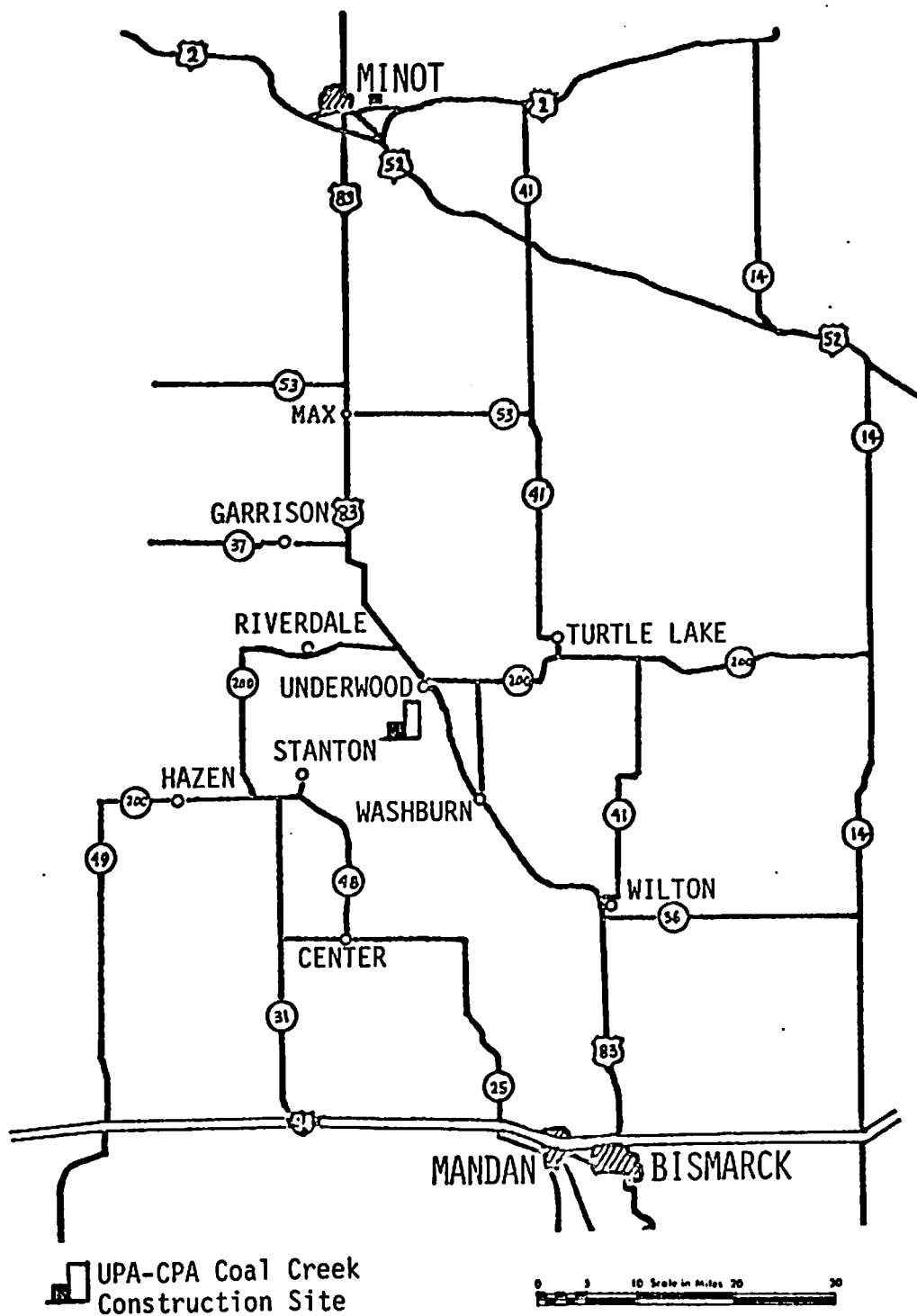


Figure 1. Location of UPA-CPA Coal Creek Construction Project, McLean County, North Dakota



TABLE 6. HOUSING OF 156 LOCAL AND 98 NONLOCAL UPA-CPA CONSTRUCTION EMPLOYEES, NORTH DAKOTA, 1976

Housing	Local <i>percent</i>	Nonlocal <i>percent<sup>a</sup></i>
House	54.5	26.5
Apartment	14.1	30.6
Mobile Home	17.3	21.4
Sleeping Room	6.4	17.4
Other	1.9	1.0
No Answer	<u>5.8</u>	<u>3.1</u>
TOTAL	100.0	99.9

<sup>a</sup>Percent may not total 100 due to rounding.

TABLE 7. YEARS OF FORMAL EDUCATION OF 156 LOCAL AND 98 NONLOCAL UPA-CPA CONSTRUCTION EMPLOYEES, NORTH DAKOTA, 1976

Years of Education	Local <i>percent</i>	Nonlocal <i>percent</i>
8 Years or Less	13.5	7.1
9-11 Years	8.3	11.2
12 Years	43.6	48.0
13-15 Years	23.7	30.6
16 or More Years	6.4	4.1
No Answer	<u>4.5</u>	<u>1.0</u>
TOTAL	100.0	100.0

The yearly family income of the workers included the combined income from all members of the household. Over 19 percent of the local and 20.4 percent of the nonlocal employees had a family income of over \$17,999. The median family income was \$12,000 to \$13,999 for both local and nonlocal workers (Table 8).

The two largest job classifications (Table 9) for local workers were carpenter/millwrights (25.6 percent) and general laborers (17.9 percent). For the nonlocal workers the largest job classifications (Table 9) were ironworkers (30.6 percent), carpenter/millwrights (19.4 percent), and general laborers (17.3 percent).

TABLE 8. YEARLY FAMILY INCOME FROM PREVIOUS YEAR FOR 156 LOCAL AND 98 NONLOCAL UPA-CPA CONSTRUCTION EMPLOYEES, NORTH DAKOTA, 1976

Family Income <i>dollars</i>	Local <i>percenta</i>	Nonlocal <i>percent</i>
Under 6,000	10.9	15.3
6,000-7,999	8.3	4.1
8,000-9,999	7.7	11.2
10,000-11,999	11.5	10.2
12,000-13,999	11.5	9.2
14,000-15,999	10.9	13.3
16,000-17,999	9.6	10.2
Over 17,999	19.2	20.4
No Answer	<u>10.3</u>	<u>6.1</u>
TOTAL	99.9	100.0

<sup>a</sup>Percent may not total 100 due to rounding.

TABLE 9. JOB CLASSIFICATIONS OF 156 LOCAL AND 98 NONLOCAL UPA-CPA CONSTRUCTION EMPLOYEES, NORTH DAKOTA, 1976

Job Classifications	Local <i>percenta</i>	Nonlocal <i>percent</i>
Equipment Operators	11 7.1	3 3.1
Ironworkers	20 12.8	30 30.6
Mechanics, Welders, and Pipefitters	18 11.5	4 4.1
Carpenter/Millwrights	40 25.6	19 19.4
General Laborers	28 17.9	17 17.3
Electricians	13 8.3	2 2.0
Cement Finishers	10 6.4	4 4.1
Supervisors	2 1.3	0 0.0
Others	5 3.2	11 11.2
No Answer	<u>9 5.8</u>	<u>8 8.2</u>
TOTAL	156 99.9	98 100.0

<sup>a</sup>Percent may not total 100 due to rounding.

#### Summary

A comparison of selected worker characteristics from Basin Electric's and Minnkota Power Company's construction work forces (Agricultural Economics Statistical Series, Issue No. 22) with results of the Coal Creek Project reveal some interesting comparisons (Table 10).

TABLE 10. A COMPARISON OF SELECTED WORKER CHARACTERISTICS FROM BASIN-MINNKOTA AND UPA-CPA CONSTRUCTION PROJECTS

	Basin and Minnkota		UPA-CPA	
	Local	Nonlocal	Local	Nonlocal
Age (Years)	34.80	37.80	36.40	33.20
Percent Married	78.80	79.70	71.20	62.20
Family Size <sup>a</sup>	2.50	2.20	2.78	2.29
Length of Residence (Months)	219.00	19.00	159.00	5.00
Percent High School Graduates	72.00	91.70	73.70	83.70
Percent Owning a Home	46.20	10.50	54.50	26.50
Commuting Distance (Miles)	33.20	24.90	41.90	32.40

<sup>a</sup>Family size refers to the employee plus any dependents living with them in the coal development area.

The nonlocal workers on the average were older than local workers at Basin and Minnkota, while the reverse was true at UPA-CPA (Table 10). There were fewer married workers for both local and nonlocal workers at the UPA-CPA site. However, average family size of UPA-CPA employees for both local and nonlocal workers was greater than at Basin and Minnkota. Average length of residence was less for both local and nonlocal UPA-CPA employees than for the Basin and Minnkota employees. One reason for differences in length of residence of nonlocal employees is that the surveys were conducted at different stages of construction. Both Basin and Minnkota were within a year and one-half of completing their plants, while major construction on the UPA-CPA project had begun only six months before the survey was administered.

local workers at both Basin and Minnkota and UPA-CPA. Over 26 percent of the nonlocal employees at UPA-CPA and 10.5 percent of those at Basin and Minnkota owned their own home. Reasons for this difference may be that more housing was available in the surrounding area due either to better planning or the relatively close proximity of the larger communities of Bismarck and Minot.

Nonlocal workers commuted shorter distances than local workers in both instances. This may indicate nonlocal workers prefer to live as close to the site as possible. Local workers appear willing to commute long distances for good paying jobs.