SUSITNA HYDROELECTRIC PROJECT

FEDERAL ENERGY REGULATORY COMMISSION
PROJECT No. 7114

UPDATED PROJECTIONS OF SOCIOECONOMIC IMPACTS OF SUSITNA HYDROELECTRIC PROJECT

SOCIOECONOMIC IMPACT PROJECTIONS SUMMARY REPORT

ORTH & ASSOCIATES, INC.
CONTRACT TO
ZA-EBASCO
A JOINT VENTURE

FINAL REPORT

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UPDATE PROJECTIONS OF THE SOCIOECONOMIC IMPACTS OF THE SUSITNA HYDROELECTRIC PROJECT

Report by

Frank Orth & Associates, Inc.

Under Contract to

Harza-Ebasco Susitna Joint Venture

Prepared for

Alaska Power Authority

Final Report
April 1984

NOTICE

ANY QUESTIONS OR COMMENTS CONCERNING
THIS REPORT SHOULD BE DIRECTED TO
THE ALASKA POWER AUTHORITY
SUSITNA PROJECT OFFICE

TABLE OF CONTENTS

INTRODUCTION

SOCIOECONOMIC IMPACT PROJECTIONS SUMMARY REPORT

1.0 INTRODUCTION

1.1 PURPOSE

Summaries of impact projections for the Mat-Su Borough and the communities that are expected to be significantly affected by the construction and operation of the Susitna Hydroelectric Project were conducted as part of the Social Sciences Program to support the needs of the Alaska Power Authority. Annual revisions of impact projections for potentially affected local areas are designed to convey updated information regarding economic, demographic, housing, facilities and services, and fiscal effects of the project as more data related to important assumptions and parameters in the model, survey information on the communities, and annual updates of other baseline data become available. This process is part of a monitoring framework that provides updated and more accurate information about the future for project planning efforts, state agency review, and the public involvement process.

1.2 STRUCTURE OF THE REPORT

The Socioeconomic Impact Projections Summary Report is divided into three major sections. The first section which consists of Chapter 1 describes the purpose and structure of the report. The second section which consists of Chapter 2 describes the key characteristics of the Susitna model, the scenarios that will be compared, and the key modifications incorporated into the model since its development and use for the Federal Energy Regulatory Commission (FERC) License Application.

The discussion of key characteristics focuses on how the data on current conditions and assumptions about the future were combined to produce baseline projections of employment, population, housing, public

facilities and services, and fiscal balances. The description of the scenarios focuses on two transportation programs. The major modifications that significantly affect the projections of socioeconomic variables are discussed in the final section of Chapter 2. In addition, their anticipated effects on the communities of interest are described.

The final section of the report consists of six chapters, each related to an area or community of interest. Areas of interest include: 1) the Mat-Su Borough; 2) Talkeetna; 3) Trapper Creek; 4) Cantwell; 5) Anchorage; and 6) Fairbanks. These chapters describe the key differences in the projections of socioeconomic variables as well as the reason for such differences.

OVERVIEW

2.0 OVERVIEW

2.1 KEY CHARACTERISTICS OF THE MODEL

Economic base theory was relied upon heavily for model construction because its strength lies in estimating how secondary industry sectors will change in response to a change in direct industry sectors. This is relevant for this project because one of the most significant sources of impacts would be employment and population growth that is stimulated by the project's direct employment. As a result, the quantifying approach is deterministic (causal)--relationships between the variables(s) to be forecast and influencing factors are identified and determined, and then incorporated into the forecasting process.

In economic base theory, there are two key concepts. First, the economy is split into two sectors: direct and secondary. Businesses and other economic entities that sell goods and services at places outside of the local economy or whose demand originates from outside of the local economy (e.g., tourism) comprise the direct sector, and those that sell goods and services within the local economy comprise the secondary sector. Second, the amount of secondary activity is determined by the amount of direct activity. Thus, an increase in direct activity (e.g., employment) is accompanied by a corresponding, and roughly predictable, increase in secondary activity. In the model, these predictions are based on aggregate employment multipliers.

The Institute of Social and Economic Research (ISER) projections for employment and population serve as the baseline projections for the State, Railbelt Region, and multi-borough levels. Baseline projections for smaller areas were derived by disaggregating the ISER projections using an historical percent share trend analysis.

The model is composed of three main modules, each containing equations that compute baseline and with-project (construction and operations) projections on an annual basis. This general structure mirrors economic base theory, as the source of impacts rests in the economic-demographic

module where the project's direct jobs induce secondary employment opportunities. Both the direct and secondary jobs may, in turn, cause inmigration of people to balance labor demand and supply in the local areas. These impacts are reflected in the public facilities and services module and in the fiscal module. Project-related population can create demands on the housing and public facilities and services in local impact area communities as well as contribute to fiscal resources and increase fiscal outlays.

In short, the model produces annual forecasts of employment, population, housing demand, effects on operations and capacities of facilities and services, revenues, and expenditures. Effects on housing and other socioeconomic variables are primarily population-driven. That is, changes in population directly influence changes in housing demand, the number of police required for protection, changes in fiscal receipts and outlays, etc.

The present structure of the model (and the computerization of its procedures) was chosen for several reasons. First, it has the ability to quantify impacts in detail, and for small geographic areas. There are approximately 35 smaller impact areas within the region of interest. Second, it has the ability to efficiently handle multiple scenarios such as choice of access corridors, transportation modes to the site, and size of the construction camp/village. Third, the model makes it relatively easy to accommodate changes in important assumptions and to conduct sensitivity analyses. Finally, the model can create a variety of reports and output formats, an important consideration that allows the model to serve the diverse needs of the decision-maker.

2.2 DESCRIPTION OF THE SCENARIOS

Two sets of impact projections are summarized and compared in the following chapters. The first set consists of impact projections that were reported in the Federal Energy Regulatory Commission (FERC) License Application. These projections were prepared in 1982 and were based on the use of personal vehicles by construction workers to gain access to the site. The second set of projections consists of two scenarios that

incorporate updates of baseline information that were available from secondary sources and the socioeconomic surveys conducted in October of 1983, as well as enhancements that were made to the economic/demographic module. The two scenarios are differentiated by the mode of access to the site. One scenario considers personal vehicle transportation and the other considers bus transportation.

The differences between the two scenarios are slight because the bus transportation scenario assumes that stops are made in every community between Fairbanks and the Project site. This set of pickup points does not alter the travel times between the communities and the Project site significantly. The net result is that the travel times for each community are similar under the two scenarios and the observed differences in relocation are slight. However, changes in the pick-up sites could substantially alter travel times and produce substantial differences in the distribution of project-related impacts.

2.3 SUMMARY OF KEY MODIFICATIONS AND THEIR EFFECTS

A summary of the important changes that were made in the model routines and procedures since its development and use in the FERC license application are described below. The section is divided into subsections that correspond to important socioeconomic variables such as employment, population, etc.

2.3.1 Employment

2.3.1.1 Village Assignment Procedures. Explicit consideration of the types of workers (by labor category, origin, and marital status) that would be assigned to the limited number of family housing units at the village was made to account for the effects of different housing unit allocation schemes on population inmigration into areas that may be significantly affected by the construction and operation of the Susitna Hydroelectric Project.

Effect. Reduces the number of workers that permanently relocate to local impact area communities. Because it is assumed that family housing units

at the village will primarily be allocated to out-of-state workers, the amount of inmigration into Anchorage and Fairbanks by these workers is reduced in the revised set of impact projections as compared to the FERC license application.

2.3.1.2 Work Camp Attractiveness Factors. Consideration of the attractiveness of the work camp led to an upward adjustment in the number of single workers that may relocate their residence to places in the local impact area (defined as the Mat-Su Borough and the Railbelt portion of the Yukon-Koyukuk census area). Currently, the number of single workers that will consider relocation within the Railbelt is slightly higher (10 percent) than that assumed for the FERC license application (0 percent) and reflects a judgment by the consultant that the suburbanization of Anchorage is not strictly limited to married people.

Effect. Slight increases in employment by place of residence and population in communities near the project.

2.3.2 Population

2.3.2.1 Baseline Population Updates. Baseline forecasts were revised based on socioeconomic survey results and updated ISER projections.

Effect. Baseline and with-project populations (and hence derived factors) are higher in revised forecasts than in FERC license application, except for Anchorage. Changes vary across locations, but direction of change is consistent, again, with the exception of Anchorage.

2.3.2.2 Addition of a Gravity Model. Changes in community allocation procedures that distribute population to places in the impact area were made. The introduction of an attraction-constrained gravity model creates the ability to trade-off travel time and community amenities, an ability that more accurately reflects a worker's decision-making process about the relocation of a household. Previously, allocation was determined entirely by travel time considerations.

Effect. Varies across communities; tends to increase the with-project population in communities with more amenities and decrease them in communities with fewer amenities.

2.3.2.3 Inclusion of Additional Communities. The community allocation model was modified between the FERC license application and the revised impact projections to include more communities, thus distributing population among a larger number of communities. Communities that were recently added include: Healy, McKinley Park, Nenana, Glennallen, Copper Center, Gulkana, Valdez, and Paxson. The additional communities provided a more comprehensive listing for places into which workers may choose to relocate.

Effect. In the revised forecasts, communities that were included in the FERC license application show lower population effects since impact population is distributed across more communities.

2.3.2.4 Relocation Prior To 1987. In the FERC license application, construction workers living in the Railbelt were not allowed to relocate into the local impact area (Mat-Su Borough and Railbelt portion of the Yukon-Koyukuk census area) until 1987. In the revised set of impact projections, it was assumed that Railbelt workers could start relocation in 1985. Potential Railbelt employees would have an incentive to reduce their commuting time as quickly as possible once employment on the project is obtained. Some workers would also want to move quickly in order to act on their preference for rural lifestyle.

Effect. Varies across communities depending on whether they are inside or outside the local impact area. Communities within the local impact area would experience higher population impacts in 1985 and 1986 while Anchorage and Fairbanks would experience lower population due to higher rates of outmigration (since these communities are sending workers into the local impact area in 1985 and 1986).

2.3.2.5 Outmigration of Direct Workers. Assumptions regarding the outmigration of direct workers from places of relocation following termination of employment were changed to reflect more current information from other projects. In the FERC license application, the outmigration rate for direct workers was 0 percent. Modifications to the model increased the outmigration rate for workers of Railbelt origin to 20 percent and the outmigration rate for workers of other Alaska and out-of-state origin to 50 percent. Studies of other construction projects have shown that between 20 and 60 percent of relocating workers leave after their work on a project is completed.

Effect. For the local impact area communities, increasing the outmigration rate (reducing the retention rate) for the direct inmigrating workers will cause population to be lower in the revised set of impact projections than in the FERC license application projections after 1990. For Anchorage and Fairbanks, this change tends to increase the revised population projections compared to the projections in the FERC license application after the year 1990.

2.3.2.6 Outmigration of Secondary Workers. Assumptions regarding the outmigration of secondary workers from places of relocation were also changed to reflect both the desire of these workers to remain in places more rural than Anchorage and their knowledge of local employment opportunities. Accordingly, outmigration rates of secondary workers who relocated to the local impact area were changed from 100 percent in the FERC license application to 30 percent in the revised impact projections.

Effect. For local impact area communities, the effect of reducing the outmigration rate for secondary workers resulted in an increase in the population impact of the project on these communities after 1990 for the revised impact projections as compared to the projections in the FERC license application. These workers are still tracked as project-related population because it is assumed that they would not have relocated in the local impact area unless they obtained long-term jobs on the Susitna Project.

For Anchorage and Fairbanks, the effect of reducing the outmigration rate for secondary workers resulted in an increase in the population effect of the project after 1990. Because secondary employment multipliers are estimated to be high for these communities, this change reflects a substantial percentage of the difference between the two sets of projections.

2.3.2.7 Dependents Per Construction Worker. Based on additional studies of construction workers and their characteristics, the household size for the project-related population during construction was increased from 3.11 persons per household in the FERC license application projections to 3.51 persons per household in the revised projections. Data from three surveys of construction workers supported the change in the assumption.

Effect. The population associated with a given number of inmigrating construction workers is higher in the revised set of projections for communities experiencing net inmigration than with the assumptions used in the FERC license application.

2.3.2.8 Labor Force Participation Of Secondary Household Members. In the revised forecasts, statewide data on the number of jobholders per household were used to estimate labor force participation of other members of secondary worker households, thus lowering the population inmigration for secondary employment. No such adjustments were made for the projections in the FERC license application.

Effect. This modification lowers the impact population and with-project population forecasts for communities receiving secondary inmigration as compared to the forecasts of population in the FERC license application.

2.3.2.9 Adjustment for Vacated Local Jobs. In the revised forecasts, an adjustment was made to account for jobs that would be vacated by local residents who obtained employment on the Susitna Hydroelectric Project. An estimate of vacated local jobs, based on employment rates, was made in order to determine the number of jobs that might require inmigration of nonlocal residents. These jobs are not counted as secondary employment

benefits of the project since they existed prior to the project. However, consideration of these jobs allows a more comprehensive approach to be taken in specifying the labor demand in relevant impact areas, matching this with the available local supply of labor, and forecasting the amount of in-migration.

Effect. The effect of this modification is to raise the population impacts forecast in the revised set of projections when compared to those in the FERC license application.

2.3.2.10 Support Operations Workers. The number of secondary operations workers that would reside in Mat-Su Borough communities and in Anchorage were reestimated in the revised forecasts by developing an adjustment for income spent by direct operations workers. First, the percentage of income spent in each community that would provide goods and services to the operations workers was determined. Second, these percentages were applied to the total direct operations work force to determine the size of the income effect and to define it in terms of employment. Third, these employment estimates were used to project the number of secondary operations workers that would reside in each community.

Effect. Population projections for the Mat-Su Borough and Anchorage are higher during the operations period in the revised forecasts than compared to the forecasts in the FERC license application.

2.3.2.11 Changes in Community Boundaries. In order to keep certain community boundaries compatible with on-going survey and data collection efforts, several community boundaries were changed.

Effect. The effect of this change varies by community. For example, in the revised forecasts, the boundaries of Talkeetna were contracted to include only the townsite rather than the area being considered for incorporation in 1981. Trapper Creek boundaries were changed to exclude one area on west Petersville Road and to include an area extending six miles south on Oilwell Road. The net effect was a reduction in the areas of Talkeetna and Trapper Creek, which reduced the population of these communities in the revised forecasts.

2.3.3 Housing

2.3.3.1 Changes in Household Size. Average household sizes for the baseline population of the local impact area communities, Anchorage, and Fairbanks were revised to reflect changes made by the Institute of Social and Economic Research (ISER) in their projections for the state household size in 2005 as well as updated information on current conditions in the communities. It was assumed that household sizes for communities would converge to the state household size by the year 2005. The ISER projection for Alaska's household size in 2005, which was used in the FERC license application, was 2.556 people per household. ISER's revised figure of 2.844 was used in the revised impact projections. Estimated 1983 household sizes were revised downward slightly for all communities of interest, except Cantwell which dropped significantly from 2.8 to 2.38.

Effect. The net result of increased household size is that every community except Cantwell experiences less housing demand from its baseline population in the revised impact projections than in the projections in the FERC license application. For Cantwell, housing demand is lower prior to 1995 and greater thereafter when compared to the FERC license application projections.

2.3.4 Facilities and Services

2.3.4.1 Change in Recreation Standard. The recreation standard in the FERC license application is based on housing units. However, because of the large number of vacant housing units in the Mat-Su Borough, it was determined that households would be a better indicator of the need for such facilities.

Effect. The effect of this change is to lower the need for recreation facilities in the revised projections as compared to the projections in the FERC license application.

2.3.4.2 Change in Number of Inmigrating Married Workers. The number of married workers moving into the community of Cantwell was raised to be comparable to the proportion of married workers inmigrating into other communities.

Effect. This change raises the number of school children forecast for Cantwell compared to the FERC license application projections.

2.3.4.3 Change in School Children Calculations. The number of school children per accompanied inmigrating worker was raised from 0.89 in the FERC license application to 1.003 in the revised set of projections.

Effect. This modification raises the number of school children forecast for the Mat-Su Borough and the communites of Trapper Creek, Talkeetna, and Cantwell compared to the forecasts in the FERC license application.

2.3.5 Fiscal.

2.3.5.1 Changes in Per Capita Multipliers. Per capita multipliers of all services and for all sources of revenues were adjusted in the revised set of impact projections to reflect updated information from budgets.

Effect. Varies across services in the Mat-Su Borough.

2.3.5.2 Changes In The Growth Rate For Areawide Assessed Valuation. The growth rate for areawide assessed valuation in the Mat-Su Borough was adjusted upward from 4 percent per year to 7 percent per year to reflect more current data on property valuation.

Effect. Raises the revenue side of the fiscal balance equation for the Mat-Su Borough in the revised 1983 forecasts compared to the forecasts in the FERC license application.

MATANUSKA-SUSITNA BOROUGH

3.0 MATANUSKA-SUSITNA BOROUGH (OFF-SITE)

SUMMARY OF SOCIOECONOMIC IMPACT PROJECTIONS

3.1 INTRODUCTION

This chapter summarizes and compares the projected impacts of the Susitna Hydroelectric Project on the Matanuska-Susitna Borough. The following tables present the baseline, with-project, and impact forecasts for the FERC License Application and for the two transportation scenarios in the 1983 revised projections. Table 1 presents the population forecasts for each of these scenarios annually from 1985 to 2002. Tables 2 and 3 show the employment, population, and housing demand forecasts for the years 1990 (peak construction) and 2002 (full operations). Tables 4 through 11 summarize the facilities/services/fiscal forecasts for the same two years.

3.2 KEY CHANGES

Table 1 presents the baseline, with-project, and impact population projections for each of the three scenarios under consideration. In all cases, the impact population peaks in 1990 and falls until 1995 before rising to a lower peak in 1999. Thereafter, population falls toward a more stable long-term pattern during the operations period for the hydroelectric project.

As shown in tables 1 through 11, the main differences between the FERC license application projections and the revised forecasts developed in 1983 were:

1. higher baseline population projections in the 1983 forecasts, although differences narrow after 1994;

2. higher impact population projections in every year in the 1983 forecasts except for 1987 to 1989 under the car transportation scenario;

3. higher with-project and impact population forecasts for the bus

transportation scenario than the revised car transportation scenario, impact population is 5 to 9 percent higher over the projection period under the bus transportation scenario;

4. higher impact employment by place of residence in the 1983 forecasts through 2002, revised car and bus transportation scenarios are 6 percent and 11 percent higher, respectively, in 1990;

5. higher baseline household projections in the 1983 forecasts until 1996;

6. lower impact household projections in the 1983 forecasts until 1995 (see changes in outmigration rates, section 2.3.2.6)

7. higher baseline and impact police manpower requirements in the 1983 forecasts;

8. lower baseline and impact recreation facility requirements in the 1983 forecasts (see recreation standards, section 2.3.4.1);

9. higher baseline and impact school children enrollments for both the primary and secondary ages groups and higher school capacity estimates in the 1983 forecasts;

10. higher baseline and impact revenues and expenditures for the general fund in the 1983 forecasts, leading to lower deficits or higher surpluses in the fiscal balance in the 1983 forecasts;

11. lower baseline and impact service fund outlays and higher baseline and lower impact service fund revenues, leading to greater, positive revised baseline and impact fiscal balance forecasts;

12. higher baseline revenues and lower baseline expenditures for the school district, leading to greater positive baseline fiscal balances in the 1983 forecasts; and

13. higher impact revenues and mixed effect on impact outlays for the school district in the 1983 forecasts, leading to greater surpluses or lower deficits with differences narrowing over time.

TABLE 1

MATANUSKA-SUSITNA BOROUGH (OFF-SITE)
POPULATION PROJECTIONS, FERC LICENSE APPLICATION SCENARIO,
AND 1983 REVISED CAR AND BUS TRANSPORTATION SCENARIOS,
1985-2002

Year	FERC License Application With-Project and Impact Population Projections			Revised Impact Projections With-Project and Impact Population Projections				
	Personal Vehicle Transportation Scenario			Transportation Scenario				
				Car			Bus	
	Baseline	W-Proj.	Impact	Baseline	W-Proj.	Impact	W-Proj.	Impact
1985	31,202	31,312	110	35,224	35,620	396	35,655	431
1986	33,950	34,096	146	37,624	38,143	519	38,181	557
1987	36,894	37,615	721	39,610	40,261	651	40,304	694
1988	39,323	40,308	985	42,004	42,495	941	42,559	1,005
1989	41,543	42,650	1,107	44,163	45,248	1,085	45,327	1,164
1990	42,964	44,353	1,389	47,246	48,639	1,393	48,735	1,489
1991	45,263	46,600	1,337	49,168	50,530	1,362	50,620	1,452
1992	47,112	48,322	1,210	52,401	53,676	1,275	53,764	1,363
1993	49,734	50,747	1,013	54,797	55,964	1,167	56,040	1,243
1994	51,988	52,925	937	56,990	58,118	1,128	58,199	1,209
1995	54,607	55,498	891	58,975	60,074	1,099	60,151	1,176
1996	57,191	58,115	924	61,235	62,362	1,127	62,442	1,207
1997	60,272	61,247	975	63,675	64,858	1,183	64,929	1,254
1998	63,000	64,032	1,032	66,062	67,275	1,213	67,356	1,294
1999	66,338	67,385	1,047	68,514	69,734	1,220	69,819	1,305
2000	69,334	70,355	1,021	71,079	72,278	1,199	72,355	1,276
2001	72,731	73,661	930	73,718	74,843	1,125	74,927	1,209
2002	76,295	77,132	837	76,452	77,531	1,079	77,590	1,138

Source: Frank Orth & Associates, Inc., 1983.

TABLE 2

MATANUSKA SUSITNA BOROUGH (OFF SITE)
ECONOMIC/DEMOGRAPHIC IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Employment (Manpower) [1/]			
Baseline	6,914	7,857	7,857
With-Project	7,857	8,856	8,904
Impact	943	999	1,047
Population (People)			
Baseline	42,964	47,246	47,246
With-project Population	44,353	48,639	48,735
Impact	1,389	1,393	1,489
Households (Occupied Units)			
Baseline	14,417	15,375	15,375
With-project	14,903	15,791	15,822
Impact	486	416	447

[1/] Employment is by place of residence.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 3

MATANUSKA-SUSITNA BOROUGH (OFF-SITE)
ECONOMIC/DEMOGRAPHIC IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Employment (Manpower) [1]			
Baseline	[2]	10,976	10,976
With-Project	[2]	11,021	11,021
Impact	6	45	45
Population (People)			
Baseline	76,295	76,452	76,452
With-project Population	77,132	77,531	77,590
Impact	837	1,079	1,138
Households (Occupied Units)			
Baseline	28,715	26,454	26,454
With-project	29,004	26,781	26,799
Impact	289	327	345

[1] Employment is by place of residence.

[2] Employment was not projected for the Mat-Su Borough (off-site) in the FERC license application.

Source: Frank Orth & Associates, Inc., 1983.

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TABLE 4

MATANUSKA-SUSITNA BOROUGH (OFF-SITE)
FACILITIES/SERVICES IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Solid Waste Disposal (Cumulative Acres):			
Baseline	44.7	49.1	49.1
With-project	45.3	49.8	49.9
Impact of Project	0.6	0.7	0.8
Capacity [1]	217.0	212.0	212.0
Project-related Increase (%) [2]	1.3%	1.4%	1.6%
% of Capacity Utilization [3]	21.4%	23.5%	23.5%
Police Protection (Manpower Requirements):			
Baseline	48	52.4	52.4
With-project	49	54.1	54.1
Impact of Project	1	1.7	1.7
Number of Police Personnel [1]	20	29.0	29.0
Project-related Increase (%) [2]	2.1%	3.2%	3.2%
% Inc. Over Existing Staff [3]	145.0%	86.6%	86.6%
Recreation Facilities (Acres of Community Parks): [4]			
Baseline	80.0 acres	73.8	73.8
With-project	82.0 acres	75.4	75.5
Impact of Project	2.0 acres	1.6	1.7
Hospital Requirements (Number of Beds):			
Baseline	60.0	60.5	60.5
With-project	61.0	62.3	62.4
Impact of Project	1.0	1.8	1.9
Capacity [1]	23.0	30.0	30.0
Project-related Increase (%) [2]	1.7%	1.4%	1.6%
% of Capacity Utilization [3]	260.9%	207.7%	208.0%

[1] Capacity/personnel numbers used in FERC projections were from 1981; the similar numbers used in the revised projections were from 1983.

[2] Calculated by dividing the impact number by the baseline number.

[3] Calculated by dividing the with-project number by the capacity number.

[4] Recreation facility requirements are lower in the revised projections due to a refinement in the projection methodology.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 5

MATANUSKA-SUSITNA BOROUGH (OFF-SITE)
FACILITIES/SERVICES IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario Car	Bus
Solid Waste Disposal (Cumulative Acres):			
Baseline	182.4	194.0	194.0
With-project	185.3	197.4	197.6
Impact of Project	2.9	3.4	3.6
Capacity [1]	217.0	212.0	212.0
Project-related Increase (%) [2]	1.6%	1.8%	1.9%
% of Capacity Utilization [3]	85.4%	93.1%	93.2%
Police Protection (Manpower Requirements):			
Baseline	87	87.3	87.3
With-project	88	88.6	88.6
Impact of Project	1	1.3	1.3
Number of Police Personnel [1]	20	29.0	29.0
Project-related Increase (%) [2]	1.1%	1.5%	1.5%
% Inc. Over Existing Staff [3]	345.0%	205.5%	205.5%
Recreation Facilities (Acres of Community Parks): [4]			
Baseline	154.2 acres	126.9	126.9
With-project	155.6 acres	128.2	128.3
Impact of Project	1.4 acres	1.3	1.3
Hospital Requirements (Number of Beds):			
Baseline	128.0	128.5	128.5
With-project	129.0	130.3	130.4
Impact of Project	1.0	1.8	1.9
Capacity [2]	23.0	30.0	30.0
Project-related Increase (%) [1]	0.7%	1.4%	1.5%
% of Capacity Utilization [3]	560.9%	434.3%	434.8%

[1] Capacity/personnel numbers used in FERC projections were from 1981; the similar numbers used in the revised projections were from 1983.

[2] Calculated by dividing the impact number by the baseline number.

[3] Calculated by dividing the with-project number by the capacity number.

[4] Recreation facility requirements are lower in the revised projections due to a refinement in the projection methodology.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 6

MATANUSKA-SUSITNA BOROUGH (OFF-SITE)
FACILITIES/SERVICES IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario Car	Bus
Primary School Children:			
Baseline	5,406	5,911	5,911
With-project	5,608	6,117	6,131
Impact of Project	202	206	220
Capacity 1/	3,136	4,835	4,835
Project-Related Increase 2/	3.7%	3.5%	3.7%
Percent of Capacity Utilization 3/	178.8%	126.5%	126.8%
Secondary School Children:			
Baseline	4,605	5,036	5,036
With-project	4,764	5,211	5,224
Impact of Project	159	175	188
Capacity 1/	3,380	4,080	4,080
Project-Related Increase 2/	3.5%	3.5%	3.7%
Percent of Capacity Utilization 3/	140.9%	127.7%	128.0%
Total School Enrollment:			
Baseline	10,011	10,947	10,947
With-project	10,372	11,328	11,355
Impact of Project	361	381	408
Capacity 1/	6,516	8,915	8,915
Project-Related Increase (%) 2/	3.6%	3.5%	3.7%
Percent of Capacity Utilization 3/	159.2%	127.0%	127.3%

1/ Includes existing and planned capacity. Capacity estimates for FERC projections were from 1981. Estimates for revised projections were from 1983.

2/ Calculated by dividing the impact number by the baseline number.

3/ Calculated by dividing the with-project number by the capacity number.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 7

MATANUSKA-SUSITNA BOROUGH (OFF-SITE)
FACILITIES/SERVICES IMPACTS
FIRST FULL YEAR OF OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario Car	Bus
Primary School Children:			
Baseline	10,300	10,321	10,321
With-project	10,402	10,483	10,492
Impact of Project	102	162	171
Capacity 1/	3,136	4,835	4,835
Project-Related Increase 2/	1.0%	1.6%	1.7%
Percent of Capacity Utilization 3/	331.7%	216.8%	217.0%
Secondary School Children:			
Baseline	8,774	8,792	8,792
With-project	8,861	8,930	8,937
Impact of Project	87	138	145
Capacity 1/	3,380	4,080	4,080
Project-Related Increase 2/	1.0%	1.6%	1.6%
Percent of Capacity Utilization 3/	262.2%	218.8%	219.0%
Total School Enrollment:			
Baseline	19,074	19,113	19,113
With-project	19,263	19,413	19,429
Impact of Project	189	300	316
Capacity 1/	6,516	8,915	8,915
Project-Related Increase (%) 2/	3.6%	3.5%	3.7%
Percent of Capacity Utilization 3/	295.6%	217.7%	217.9%

1/ Includes existing and planned capacity. Capacity estimates for FERC projections were from 1981. Estimates for revised projections were from 1983.

2/ Calculated by dividing the impact number by the baseline number.

3/ Calculated by dividing the with-project number by the capacity number.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 8

MATANUSKA-SUSITNA BOROUGH (OFF-SITE)
FISCAL IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
General Fund (thousands of dollars):			
Baseline Revenues	28000	39068	39068
With-project Revenues	29000	40220	40301
Impact on Revenues	1000	1151	1231
Baseline Expenditures	33100	42873	42873
With-project Expend.	34200	44138	44224
Impact on Expend.	1100	1265	1351
Net Fiscal Balance (baseline)	-5100	-3805	-3805
Net Fiscal Balance (w-project)	-5200	-3918	-3923
Project Impact	- 100	- 113	- 118
Service Area Fund (thousands of dollars):			
Baseline Revenues	2700	5186	5186
With-project Service Area Rev.	3400	5229	5233
Impact on Service Area Revenues	700	44	47
Baseline Service Area Expend.	9400	5025	5025
With-project Ser. Area Expend.	9600	5064	5067
Impact on Service Area Expend.	200	39	42
Net Fiscal Balance (baseline)	-6700	161	161
Net Fiscal Balance (w-project)	-6200	165	166
Project Impact	500	4	5

Note: Sums may not equal totals due to independent rounding.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 9

MATANUSKA-SUSITNA BOROUGH (OFF-SITE)
FISCAL IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
General Fund (thousands of dollars):			
Baseline Revenues	46500	86202	86202
With-project Revenues	47400	87420	87487
Impact on Revenues	900	1216	1283
Baseline Expenditures	58800	76247	76247
With-project Expend.	59400	77324	77382
Impact on Expend.	600	1076	1135
Net Fiscal Balance (baseline)	-12300	9955	9955
Net Fiscal Balance (w-project)	-12000	10096	10105
Project Impact	300	141	150
Service Area Fund (thousands of dollars):			
Baseline Revenues	4200	20223	20223
With-project Service Area Rev.	5200	20275	20278
Impact on Service Area Revenues	1000	51	54
Baseline Service Area Expend.	19200	19284	19284
With-project Ser. Area Expend.	19300	19322	19325
Impact on Service Area Expend.	100	38	40
Net Fiscal Balance (baseline)	-15000	939	939
Net Fiscal Balance (w-project)	-14100	953	953
Project Impact	900	14	14

Note: Sums may not equal totals due to independent rounding.

Source: Frank Orth & Associates, Inc., 1983.

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TABLE 10

MATANUSKA-SUSITNA BOROUGH SCHOOL DISTRICT
FISCAL IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
School District Fund (thousands of dollars):			
Baseline Revenues	50300	57972	57972
With-project Revenues	53400	62523	62648
Impact on Revenues	3100	4552	4676
Baseline Expenditures	61100	56804	56804
With-project Expend.	65100	60608	60742
Impact on Expend.	4000	3804	3938
Net Fiscal Balance (baseline)	-10800	1168	1168
Net Fiscal Balance (w-project)	-11700	1915	1906
Project Impact	- 900	747	738

Note: Sums may not equal totals due to independent rounding.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 11

MATANUSKA-SUSITNA BOROUGH SCHOOL DISTRICT
FISCAL IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
School District Fund (thousands of dollars):			
Baseline Revenues	93400	110885	110885
With-project Revenues	95100	113509	113595
Impact on Revenues	1700	2624	2711
Baseline Expenditures	116400	99177	99177
With-project Expend.	118600	101533	101611
Impact on Expend.	2200	2356	2434
Net Fiscal Balance (baseline)	-23000	11708	11708
Net Fiscal Balance (w-project)	-23500	11976	11985
Percent Increase in Deficits	- 500	268	277

Note: Sums may not equal totals due to independent rounding.

Source: Frank Orth & Associates, Inc., 1983.

COMMUNITY OF TALKEETNA

4.0 COMMUNITY OF TALKEETNA

SUMMARY OF SOCIOECONOMIC IMPACT PROJECTIONS

4.1 INTRODUCTION

This chapter summarizes and compares the projected impacts of the Susitna Hydroelectric Project on the community of Talkeetna. The following tables present the baseline, with-project, and impact forecasts for the FERC License Application and for the two transportation scenarios in the 1983 revised projections. Table 1 presents the population forecasts for each of these scenarios annually from 1985 to 2002. Tables 2 and 3 show the employment, population, and housing demand forecasts for the years 1990 (peak construction) and 2002 (full operations). Tables 4 through 5 summarize the facilities/services forecasts for the same two years.

4.2 KEY CHANGES

Table 1 presents the baseline, with-project, and impact population projections for each of the three scenarios under consideration. In all cases, the impact population peaks in 1990 and falls until 1995 before rising to a lower peak in 1999. Thereafter, population falls toward a more stable long-term pattern during the operations period for the hydroelectric project.

As shown in these tables, the main differences between the FERC license application projections and the revised forecasts developed in 1983 are:

1. lower baseline population projections in the 1983 forecasts (see changes in community boundaries, section 2.3.2.11);

2. lower with-project and impact population projections in the 1983 forecasts except for 1985 and 1986;

3. higher with-project and impact population forecasts for the bus transportation scenario than the revised car transportation scenario, impact population is 5 to 14 percent higher over the projection period under the bus transportation scenario;

4. lower impact employment by place of residence in the 1983 forecasts, revised car and bus transportation scenarios are 40 percent and 43 percent of the FERC projections, respectively, in 1990;

5. lower baseline, with-project, and impact household projections in the 1983 forecasts;

6. lower baseline and impact school children enrollments for both the primary and secondary ages groups but higher percent increase over baseline in the 1983 forecasts; and

7. lower school capacity estimates in the 1983 forecasts.

TABLE 1

COMMUNITY OF TALKEETNA
POPULATION PROJECTIONS, FERC LICENSE APPLICATION SCENARIO,
AND 1983 REVISED CAR AND BUS TRANSPORTATION SCENARIOS,
1985-2002

Year	FERC License Application With-Project and Impact Population Projections			Revised Impact Projections With-Project and Impact Population Projections				
	Personal Vehicle Transportation Scenario			Transportation Scenario				
				Car			Bus	
	Baseline	W-Proj.	Impact	Baseline	W-Proj.	Impact	W-Proj.	Impact
1985	780	805	25	358	410	52	416	58
1986	820	853	33	376	446	70	456	80
1987	862	1,036	174	395	485	90	493	98
1988	906	1,143	237	415	547	132	557	142
1989	952	1,219	267	436	588	152	599	163
1990	1,000	1,335	335	457	652	195	666	209
1991	1,051	1,374	323	480	670	190	684	204
1992	1,104	1,398	294	504	684	180	694	190
1993	1,160	1,410	250	529	691	162	698	169
1994	1,219	1,452	233	556	711	155	721	165
1995	1,281	1,503	222	584	732	148	746	162
1996	1,347	1,576	229	613	768	155	778	165
1997	1,415	1,655	240	643	805	162	815	172
1998	1,487	1,740	253	676	841	165	859	183
1999	1,563	1,820	257	709	873	164	891	182
2000	1,642	1,893	251	745	909	164	924	179
2001	1,726	1,956	230	782	933	151	950	168
2002	1,814	2,023	209	821	968	147	975	154

Source: Frank Orth & Associates, Inc., 1983.

TABLE 2

COMMUNITY OF TALKEETNA
ECONOMIC/DEMOGRAPHIC IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Employment (Manpower) [1]			
Baseline	[2]	[2]	[2]
With-Project	[2]	[2]	[2]
Impact	240	95	103
Population (People)			
Baseline	1,000	457	457
With-project Population	1,335	652	666
Impact	335	195	209
Households (Occupied Units)			
Baseline	334	149	149
With-project	451	208	214
Impact	117	59	65

[1] Employment is by place of residence.

[2] Employment at the community level was not projected.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 3

COMMUNITY OF TALKEETNA
ECONOMIC/DEMOGRAPHIC IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario Car	Bus
Employment (Manpower) [1]			
Baseline	[2]	[2]	[2]
With-Project	[2]	[2]	[2]
Impact	6	4	4
Population (People)			
Baseline	1,814	821	821
With-project Population	2,023	968	975
Impact	209	147	154
Households (Occupied Units)			
Baseline	683	284	284
With-project	755	330	332
Impact	72	46	48

[1] Employment is by place of residence.

[2] Employment at the community level was not projected.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 4

COMMUNITY OF TALKEETNA [1]
FACILITIES/SERVICES IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Primary School Children:			
Baseline	126	57	57
With-project	164	86	88
Impact of Project	48	29	31
Capacity [2]	120	100	100
Project-Related Increase [3]	30.2%	50.8%	54.3%
Percent of Capacity Utilization [4]	136.6%	86.0%	88.0%
Secondary School Children: [5]			
Baseline	107	49	49
With-project	138	74	75
Impact of Project	41	25	26
Project-Related Increase [3]	38.3%	44.9%	53.0%
Total School Enrollment:			
Baseline	233	106	106
With-project	302	160	163
Impact of Project	69	54	57
Project-Related Increase [3]	29.6%	50.9%	53.7%

[1] The Talkeetna area was defined differently in the license application and in the current version of the Susitna model. In the current version, the Talkeetna area corresponds to the townsite area or that used in the socioeconomic surveys. In the license application, the Talkeetna area also included the area along the Talkeetna Spur Road.

[2] Includes existing and planned capacity. Capacity estimates for FERC projections were from 1981. Estimates for revised projections were from 1983.

[3] Calculated by dividing the impact number by the baseline number.

[4] Calculated by dividing the with-project number by the capacity number.

[5] There are no secondary schools located in Talkeetna.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 5

COMMUNITY OF TALKEETNA [1]
FACILITIES/SERVICES IMPACTS
FIRST FULL YEAR OF OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Primary School Children:			
Baseline	245	111	111
With-project	270	133	135
Impact of Project	25	22	24
Capacity [2]	120	100	100
Project-Related Increase [3]	10.2%	19.8%	21.6%
Percent of Capacity Utilization [4]	225.0%	133.0%	135.0%
Secondary School Children: [5]			
Baseline	209	94	94
With-project	231	113	114
Impact of Project	22	19	20
Project-Related Increase [3]	11.0%	20.2%	21.2%
Total School Enrollment:			
Baseline	454	205	205
With-project	501	246	249
Impact of Project	47	41	44
Project-Related Increase [3]	10.4%	20.0%	21.4%

[1] The Talkeetna area was defined differently in the license application and in the current version of the Susitna model. In the current version, the Talkeetna area corresponds to the townsite area or that used in the socioeconomic surveys. In the license application, the Talkeetna area also included the area along the Talkeetna Spur Road.

[2] Includes existing and planned capacity. Capacity estimates for FERC projections were from 1981. Estimates for revised projections were from 1983.

[3] Calculated by dividing the impact number by the baseline number.

[4] Calculated by dividing the with-project number by the capacity number.

[5] There are no secondary schools located in Talkeetna.

Source: Frank Orth & Associates, Inc., 1983.

COMMUNITY OF TRAPPER CREEK

5.0 COMMUNITY OF TRAPPER CREEK

SUMMARY OF SOCIOECONOMIC IMPACT PROJECTIONS

5.1 INTRODUCTION

This chapter summarizes and compares the projected impacts of the Susitna Hydroelectric Project on the community of Trapper Creek. The following tables present the baseline, with-project, and impact forecasts for the FERC License Application and for the two transportation scenarios in the 1983 revised projections. Table 1 presents the population forecasts for each of these scenarios annually from 1985 to 2002. Tables 2 and 3 show the employment, population, and housing demand forecasts for the years 1990 (peak construction) and 2002 (full operations). Tables 4 through 5 summarize the facilities/services forecasts for the same two years.

5.2 KEY CHANGES

Table 1 presents the baseline, with-project, and impact population projections for each of the three scenarios under consideration. In all cases, the impact population peaks in 1990 and falls until 1995 before rising to a lower peak in 1999. Thereafter, population falls toward a more stable long-term pattern during the operations period for the hydroelectric project.

As shown in these tables, the main differences between the FERC license application projections and the revised forecasts developed in 1983 are:

1. lower baseline population projections in the 1983 forecasts (see changes in community boundaries, section 2.3.2.11);

2. lower with-project and impact population projections in the 1983 forecasts except for 1985 and 1986, although differences in impact population narrow after 1990 (see changes in outmigration rates, section 2.3.2.6);

3. higher with-project and impact population forecasts for the bus transportation scenario than the revised car transportation scenario, impact population is 6 to 10 percent higher over the projection period under the bus transportation scenario;

4. lower impact employment by place of residence in the 1983 forecasts, revised car and bus transportation scenarios are 46 percent and 50 percent of the FERC projections, respectively, in 1990;

5. lower baseline, with-project, and impact household projections in the 1983 forecasts;

6. lower baseline and impact school children enrollments for both the primary and secondary ages groups in the 1983 forecasts but differences in the number of impact school children become smaller under 1983 forecasts after 1990; and

7. higher school capacity estimates in the 1983 forecasts.

TABLE 1

COMMUNITY OF TRAPPER CREEK
POPULATION PROJECTIONS, FERC LICENSE APPLICATION SCENARIO,
AND 1983 REVISED CAR AND BUS TRANSPORTATION SCENARIOS,
1985-2002

Year	FERC License Application With-Project and Impact Population Projections			Revised Impact Projections With-Project and Impact Population Projections				
	Personal Vehicle Transportation Scenario			Transportation Scenario Car			Bus	
	Baseline	W-Proj.	Impact	Baseline	W-Proj.	Impact	W-Proj.	Impact
1985	263	295	32	246	324	78	332	86
1986	274	317	43	255	362	107	368	113
1987	285	526	241	266	396	130	409	143
1988	296	633	337	276	469	193	479	203
1989	308	686	378	287	504	217	528	241
1990	320	795	475	299	584	285	608	309
1991	333	784	451	311	589	278	613	302
1992	346	733	387	323	583	260	604	281
1993	360	648	288	336	569	233	589	253
1994	375	625	250	349	571	222	592	243
1995	390	617	227	363	582	219	595	232
1996	406	653	247	378	600	222	620	242
1997	422	700	278	393	628	235	644	251
1998	439	745	306	409	650	241	667	258
1999	456	770	314	425	666	241	689	264
2000	474	776	302	442	679	237	696	254
2001	493	749	256	460	680	220	700	240
2002	513	725	212	478	689	211	702	224

Source: Frank Orth & Associates, Inc., 1983.

TABLE 2

COMMUNITY OF TRAPPER CREEK
ECONOMIC/DEMOGRAPHIC IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Employment (Manpower) [1]			
Baseline	[2]	[2]	[2]
With-Project	[2]	[2]	[2]
Impact	239	110	120
Population (People)			
Baseline	320	299	299
With-project Population	795	584	608
Impact	475	285	309
Households (Occupied Units)			
Baseline	107	97	97
With-project	275	183	191
Impact	168	86	94

[1] Employment is by place of residence.

[2] Employment at the community level was not projected.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 3

COMMUNITY OF TRAPPER CREEK
ECONOMIC/DEMOGRAPHIC IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario Car	Bus
Employment (Manpower) [1]			
Baseline	[2]	[2]	[2]
With-Project	[2]	[2]	[2]
Impact	6	4	4
Population (People)			
Baseline	513	478	478
With-project Population	725	689	702
Impact	212	211	224
Households (Occupied Units)			
Baseline	193	165	165
With-project	266	230	234
Impact	73	65	69

[1] Employment is by place of residence.

[2] Employment at the community level was not projected.

Source: Frank Orth & Associates, Inc., 1983.

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TABLE 4

COMMUNITY OF TRAPPER CREEK
FACILITIES/SERVICES IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Primary School Children:			
Baseline	40 [1]	37	37
With-project	153	78	81
Impact of Project	75	41	44
Capacity [2]	30	50	50
Project-Related Increase [3]	282.5%	110.8%	118.9%
Percent of Capacity Utilization [4]	510.0%	156.0%	162.0%
Secondary School Children: [5]			
Baseline	34	32	32
With-project	92	67	70
Impact of Project	58	35	38
Project-Related Increase [3]	170.5%	109.3%	118.7%
Total School Enrollment:			
Baseline	112	69	69
With-project	245	145	151
Impact of Project	133	76	82
Project-Related Increase [3]	118.8%	110.1%	118.8%

[1] The FERC License Application projections included an estimate of school children from Trapper Creek, shown above, and in addition, a projection of the enrollment in the Trapper Creek elementary school of 78 students in 1990. The Trapper Creek elementary school serves a wide area in the northern part of the Mat-Su Borough. The numbers in this table only refer to the school children expected to be living in Trapper Creek.

[2] Includes existing and planned capacity. Capacity estimates for FERC projections were from 1981. Estimates for revised projections were from 1983.

[3] Calculated by dividing the impact number by the baseline number.

[4] Calculated by dividing the with-project number by the capacity number.

[5] There are no secondary schools located in Trapper Creek.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 5

COMMUNITY OF TRAPPER CREEK
FACILITIES/SERVICES IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Primary School Children:			
Baseline	69 [1]	65	65
With-project	94	96	98
Impact of Project	25	31	33
Capacity [2]	30	50	50
Project-Related Increase [3]	36.2%	47.6%	50.7%
Percent of Capacity Utilization [4]	313.0%	192.0%	196.0%
Secondary School Children: [5]			
Baseline	59	55	55
With-project	81	82	83
Impact of Project	22	27	28
Project-Related Increase [3]	37.7%	49.0%	50.9%
Total School Enrollment:			
Baseline	128	120	120
With-project	175	178	181
Impact of Project	47	58	61
Project-Related Increase [3]	26.9%	48.3%	50.8%

[1] The FERC License Application projections included an estimate of school children from Trapper Creek, shown above, and in addition, a projection of the enrollment in the Trapper Creek elementary school of 78 students in 1990. The Trapper Creek elementary school serves a wide area in the northern part of the Mat-Su Borough. The numbers in this table only refer to the school children expected to be living in Trapper Creek.

[2] Includes existing and planned capacity. Capacity estimates for FERC projections were from 1981. Estimates for revised projections were from 1983.

[3] Calculated by dividing the impact number by the baseline number.

[4] Calculated by dividing the with-project number by the capacity number.

[5] There are no secondary schools located in Trapper Creek.

Source: Frank Orth & Associates, Inc., 1983.

COMMUNITY OF CANTWELL

6.0 COMMUNITY OF CANTWELL

SUMMARY OF SOCIOECONOMIC IMPACT PROJECTIONS

6.1 INTRODUCTION

This chapter summarizes and compares the projected impacts of the Susitna Hydroelectric Project on the community of Cantwell. In the Federal Energy Regulatory Commission (FERC) license application, two scenarios related to the presence or absence of a land constraint in Cantwell were reported. Presently, the Ahtna Native Regional Corporation owns most of the private land in the community so that any significant expansion will require the consent of, and support by, the Corporation. This aspect of the community's response to the Susitna Hydroelectric Project was discussed in the FERC license application and has not been repeated here.

In the 1983 revised projections, two transportation scenarios that include a "no land constraint" assumption were presented. One scenario considers personal vehicle transportation and the other considers bus transportation. These two scenarios reflect updates of baseline information that were available from secondary sources and the socioeconomic surveys conducted in October 1983, as well as enhancements that were made to the economic-demographic module used for project planning.

The present model uses an attraction-constrained gravity model to redistribute population among local impact area communities and is not capable of dealing with supply constraints such as the availability of land. However, it is expected that impact projections using updated baseline information would be about the same as those shown in the FERC license application scenario that includes a land constraint.

The following tables present the baseline, with-project, and impact forecasts for the FERC License Application and for the two transportation scenarios in the 1983 revised projections.

Table 1 presents the population forecasts for each of these scenarios annually from 1985 to 2002. Tables 2 and 3 show the employment, population, and housing demand forecasts for the years 1990 (peak construction) and 2002 (full operations). Tables 4 through 5 summarize the facilities/services forecasts for the same two years.

6.2 KEY CHANGES

Table 1 presents the baseline, with-project, and impact population projections for each of the four scenarios under consideration. In all cases, the impact population peaks in 1990 and falls until 1995 before rising to a lower peak in 1999. Thereafter, population falls toward a more stable long-term pattern during the operations period of the hydroelectric project.

As shown in these tables, the main differences between the FERC license application projections and the revised forecasts developed in 1983 are:

1. higher baseline population projections in the 1983 forecasts;

2. lower with-project and impact population projections in the 1983 forecasts except for 1986, although differences in impact population narrow after 1990 (see changes in outmigration rates, section 2.3.2.6);

3. higher with-project and impact population forecasts for the bus transportation scenario than the revised car transportation scenario, impact population is 6 to 8 percent higher over the projection period under the bus transportation scenario;

4. lower impact employment by place of residence in the 1983 forecasts, revised car and bus transportation scenarios are 88 percent and 95 percent of the FERC projections, respectively, in 1990;

5. higher baseline and lower with-project and impact household projections in the 1983 forecasts; and

6. higher baseline, with-project, and impact school children enrollments in the 1983 forecasts.

TABLE 1

COMMUNITY OF CANTWELL
POPULATION PROJECTIONS, FERC LICENSE APPLICATION SCENARIO,
AND 1983 REVISED CAR AND BUS TRANSPORTATION SCENARIOS,
1985-2002

Year	FERC License Application With-Project and Impact Population Projections					Revised Impact Projections With-Project and Impact Population Projections				
		Land Constraint		No Land Constraint		Transportation Scenario Car			Bus	
	Basel.	W-Proj.	Impact	W-Proj.	Impact	Basel.	W-Proj.	Impact	W-Proj.	Impact
1985	194	424	230	624	430	201	569	368	596	395
1986	198	428	230	653	455	205	693	488	720	515
1987	202	367	165	840	638	209	581	372	611	402
1988	206	384	178	980	774	213	748	535	786	573
1989	210	394	184	1,053	843	217	835	618	880	663
1990	214	412	198	1,214	1,000	222	1,019	797	1,080	858
1991	219	416	197	1,203	984	226	1,006	780	1,068	842
1992	223	417	194	1,184	961	231	964	733	1,020	789
1993	228	418	190	1,148	920	235	901	666	949	714
1994	232	362	130	1,026	794	240	880	640	930	690
1995	237	366	129	1,022	785	245	872	627	919	674
1996	241	370	129	1,026	785	250	891	641	941	691
1997	246	375	129	1,039	793	255	926	671	975	720
1998	251	381	130	1,047	796	260	952	692	1,001	741
1999	256	386	130	1,044	788	265	966	701	1,019	754
2000	261	391	130	1,028	767	270	962	692	1,013	743
2001	267	395	128	1,011	744	276	925	649	973	697
2002	262	387	125	1,016	744	281	900	619	938	657

Source: Frank Orth & Associates, Inc., 1983.

TABLE 2

COMMUNITY OF CANTWELL
ECONOMIC/DEMOGRAPHIC IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)		Revised Impact Projections (Projected in 1983)	
	Land Constraint	No Land Constraint	Transportation Scenario Car	Bus
Employment (Manpower) [1]				
Baseline	[2]	[2]	[2]	[2]
With-Project	[2]	[2]	[2]	[2]
Impact	85	287	253	272
Population (People)				
Baseline	214	214	222	222
With-project Population	412	1,214	1,019	1,080
Impact	198	1,000	797	858
Households (Occupied Units)				
Baseline	78	78	88	88
With-project	139	411	329	349
Impact	61	333	241	261

[1] Employment is by place of residence.

[2] Employment at the community level was not projected.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 3

COMMUNITY OF CANTWELL
ECONOMIC/DEMOGRAPHIC IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)		Revised Impact Projections (Projected in 1983)	
	Land Constraint	No Land Constraint	Transportation Scenario Car	Bus
Employment (Manpower) [1]				
Baseline	[2]	[2]	[2]	[2]
With-Project	[2]	[2]	[2]	[2]
Impact	7	16	10	10
Population (People)				
Baseline	272	272	281	281
With-project Population	397	1,016	900	938
Impact	125	744	619	657
Households (Occupied Units)				
Baseline	99	99	101	101
With-project	141	349	287	298
Impact	42	250	186	197

[1] Employment is by place of residence.

[2] Employment at the community level was not projected.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 4

COMMUNITY OF CANTWELL
FACILITIES/SERVICES IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)		Revised Impact Projections (Projected in 1983)	
	Land Constraint	No Land Constraint	Transportation Scenario Car	Bus
School Children: [1]				
Baseline	[2]	39	40	40
With-project	[2]	189	257	274
Impact of Project	[2]	150	217	234
Capacity [3]	[2]	60	60	60
Project-Rel. Increase [4]	[2]	384.6%	542.5%	585.0%
% of Cap. Utilization [5]	[2]	315.0%	428.3%	456.7%
Police: [6]				
Baseline	[2]	1	1	1
With-project	[2]	6	6	6
Impact of Project	[2]	5	5	5
No. of Police Personnel	[2]	1	1	1
Project-Rel. Increase [4]	[2]	500.0%	500.0%	500.0%
% Inc. Over Existing Staff [5]	[2]	600.0%	600.0%	600.0%

[1] Cantwell has only one school that contains grades K-12.

[2] Facility and service requirements were only projected for the No Land Constraint scenario.

[3] Includes existing and planned capacity. Capacity estimates for FERC projections were from 1981. Estimates for revised projections were from 1983.

[4] Calculated by dividing the impact number by the baseline number.

[5] Calculated by dividing the with-project number by the capacity number.

[6] The requirements for police at the Cantwell State Trooper post, related to the project, are calculated by adding the requirements related to project personnel projected to live in Cantwell and the requirements of the work camps. The work camps/village are expected to affect the Cantwell post because it will be the closest post to the work sites, by road.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 5

COMMUNITY OF CANTWELL
FACILITIES/SERVICES IMPACTS
FIRST YEAR OF FULL OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)		Revised Impact Projections (Projected in 1983)	
	Land Constraint	No Land Constraint	Transportation Scenario Car	Bus
School Children: 1/				
Baseline	2/	49	50	50
With-project	2/	117	218	228
Impact of Project	2/	68	168	178
Capacity 3/	2/	60	60	60
Project-Rel. Increase 4/	2/	138.8%	336.0%	356.0%
% of Cap. Utilization 5/	2/	195.0%	363.3%	380.0%
Police: 6/				
Baseline	2/	1	1	1
With-project	2/	6	6	6
Impact of Project	2/	5	5	5
No. of Police Personnel	2/	1	1	1
Project-Rel. Increase 4/	2/	500.0%	500.0%	500.0%
% Inc. Over Existing Staff 5/	2/	600.0%	600.0%	600.0%

1/ Cantwell has only one school that contains grades K-12.

2/ Facility and service requirements were only projected for the No Land Constraint scenario.

3/ Includes existing and planned capacity. Capacity estimates for FERC projections were from 1981. Estimates for revised projections were from 1983.

4/ Calculated by dividing the impact number by the baseline number.

5/ Calculated by dividing the with-project number by the capacity number.

6/ The requirements for police at the Cantwell State Trooper post, related to the project, are calculated by adding the requirements related to project personnel projected to live in Cantwell and the requirements of the work camps. The work camps/village are expected to affect the Cantwell post because it will be the closest post to the work sites, by road.

Source: Frank Orth & Associates, Inc., 1983.

MUNICIPALITY OF ANCHORAGE

7.0 MUNICIPALITY OF ANCHORAGE

SUMMARY OF SOCIOECONOMIC IMPACT PROJECTIONS

7.1 INTRODUCTION

This chapter summarizes and compares the projected impacts of the Susitna Hydroelectric Project on the municipality of Anchorage. The following tables present the baseline, with-project, and impact forecasts for the FERC License Application and for the two transportation scenarios in the 1983 revised projections. Table 1 presents the population forecasts for each of these scenarios annually from 1985 to 2002. Tables 2 and 3 show the employment, population, and housing demand forecasts for the years 1990 (peak construction) and 2002 (full operations).

7.2 KEY CHANGES

Table 1 presents the baseline, with-project, and impact population projections for each of the three scenarios under consideration. For the FERC forecasts, the cumulative population influx peaks in 1990 and falls until 1995 before rising to a lower peak in 1999. Thereafter, population falls toward a more stable long-term pattern during the operations period for the hydroelectric project. For the 1983 forecasts, the impact population grows after 1990 until 1995, before declining to a lower level in 1999. Thereafter, the impact population grows until 2002 before stabilizing.

As shown in these tables, the main differences between the FERC license application projections and the revised forecasts developed in 1983 are:

1. lower baseline population projections in the 1983 forecasts except for 1985 and 1994;

2. lower with-project population projections in the 1983 forecasts except for 1985 and 1992 to 1995;

3. lower impact population projections in the 1983 forecasts until 1992, differences between impact population projections widen until 1995, narrow until 1999, and widen after 1999 (see changes in outmigration rates, sections 2.3.2.5 and 2.3.2.6);

3. higher with-project and impact population forecasts for the bus transportation scenario than the revised car transportation scenario in the years 1985, 1992, 1999, and 2002, travel time to project site does not change between scenarios, but relative travel time compared to Fairbanks does change slightly;

4. lower impact employment by place of residence in the 1983 forecasts until 1994, revised car and bus transportation scenarios are each 83 percent of the FERC projections in 1990;

5. lower baseline and with-project household projections in the 1983 forecasts except in 1990 to 1995; and

6. lower impact household projections in the 1983 forecasts until 1992.

TABLE 1

MUNICIPALITY OF ANCHORAGE
POPULATION PROJECTIONS, FERC LICENSE APPLICATION SCENARIO,
AND 1983 REVISED CAR AND BUS TRANSPORTATION SCENARIOS,
1985-2002

Year	FERC License Application With-Project and Impact Population Projections			Revised Impact Projections With-Project and Impact Population Projections				
	Personal Vehicle Transportation Scenario			Transportation Scenario Car			Bus	
	Baseline	W-Proj.	Impact	Baseline	W-Proj.	Impact	W-Proj.	Impact
1985	200,962	201,394	432	203,106	203,248	142	203,251	145
1986	209,820	210,409	589	208,061	208,214	153	208,214	153
1987	217,298	217,623	325	210,290	210,111	-179	210,111	-179
1988	222,731	223,213	482	212,003	212,012	9	212,012	9
1989	224,822	225,359	537	216,719	216,811	92	216,811	92
1990	224,027	224,690	663	223,196	223,376	180	223,376	180
1991	226,005	226,561	556	223,780	223,977	197	223,977	197
1992	227,024	227,278	254	229,944	230,275	331	230,279	335
1993	229,940	229,721	-219	232,002	232,842	840	232,842	840
1994	232,299	231,894	-405	232,952	234,216	1,264	234,216	1,264
1995	234,507	233,984	-523	232,879	234,245	1,366	234,245	1,366
1996	237,668	237,257	-411	233,733	234,996	1,263	234,996	1,263
1997	241,086	240,867	-219	235,060	236,282	1,222	236,282	1,222
1998	244,125	244,050	- 75	235,981	237,175	1,194	237,175	1,194
1999	247,759	247,723	- 36	236,936	238,116	1,180	238,119	1,183
2000	251,102	251,010	- 92	238,077	239,277	1,200	239,277	1,200
2001	254,617	254,284	-333	239,256	240,540	1,284	240,540	1,284
2002	258,182	257,650	-532	240,532	242,205	1,673	242,208	1,676

Source: Frank Orth & Associates, Inc., 1983.

TABLE 2

MUNICIPALITY OF ANCHORAGE
ECONOMIC/DEMOGRAPHIC IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Employment (Manpower) [1/]			
Baseline	131,705	129,493	129,493
With-Project	134,715	131,995	131,995
Impact	3,010	2,502	2,502
Population (People)			
Baseline	224,027	223,196	223,196
With-project Population	224,690	223,376	223,376
Impact	663	180	180
Households (Occupied Units)			
Baseline	79,028	79,232	79,232
With-project	79,241	79,295	79,295
Impact	213	63	63

[1/] Employment is by place of residence.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 3

MUNICIPALITY OF ANCHORAGE
ECONOMIC/DEMOGRAPHIC IMPACTS
FIRST FULL YEAR OF OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario Car	Bus
Employment (Manpower) [1/]			
Baseline	160,611	146,105	146,105
With-Project	160,765	146,417	146,417
Impact	154	312	312
Population (People)			
Baseline	258,182	240,532	240,532
With-project Population	257,650	242,205	242,208
Impact	-532	1,673	1,676
Households (Occupied Units)			
Baseline	97,209	84,724	84,724
With-project	97,038	85,313	85,314
Impact	-171	589	590

[1/] Employment is by place of residence.

Source: Frank Orth & Associates, Inc., 1983.

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MUNICIPALITY OF FAIRBANKS

8.0 MUNICIPALITY OF FAIRBANKS

SUMMARY OF SOCIOECONOMIC IMPACT PROJECTIONS

8.1 INTRODUCTION

This chapter summarizes and compares the projected impacts of the Susitna Hydroelectric Project on the municipality of Fairbanks. The following tables present the baseline, with-project, and impact forecasts for the FERC License Application and for the two transportation scenarios in the 1983 revised projections. Table 1 presents the population forecasts for each of these scenarios annually from 1985 to 2002. Tables 2 and 3 show the employment, population, and housing demand forecasts for the years 1990 (peak construction) and 2002 (full operations).

8.2 KEY CHANGES

Table 1 presents the baseline, with-project, and impact population projections for each of the three scenarios under consideration. In the FERC forecasts, the project's population impact is positive only in 1985 and 1986. The project causes net outmigration in all other years of the projection. In the 1983 forecasts, the population impact of the project is negative between 1985 and 1993 and between 1998 and 2000. The project causes a positive population impact between 1994 and 1997 and after 2001.

As shown in these tables, the main differences between the FERC license application projections and the revised forecasts developed in 1983 are:

1. higher baseline and with-project population projections in the 1983 forecasts;

2. lower impact population projections in the 1983 forecasts until 1991;

3. slightly lower with-project and impact population forecasts for the bus transportation scenario than the revised car transportation scenario in most years; travel time to project site increases slightly in the bus transportation scenario compared to the car transportation scenario;

4. higher impact employment by place of residence in the 1983 forecasts until 2002, revised car and bus transportation scenarios are over 13 percent higher than the FERC projections in 1990, net outmigration occurs because all workers originally from Fairbanks do not remain, some relocate to the local impact area;

5. higher baseline and with-project household projections in the 1983 forecasts; and

6. higher impact household projections in the 1983 forecasts after 1989.

TABLE 1

MUNICIPALITY OF FAIRBANKS
POPULATION PROJECTIONS, FERC LICENSE APPLICATION SCENARIO,
AND 1983 REVISED CAR AND BUS TRANSPORTATION SCENARIOS,
1985-2002

Year	FERC License Application With-Project and Impact Population Projections			Revised Impact Projections With-Project and Impact Population Projections				
	Personal Vehicle Transportation Scenario			Transportation Scenario Car			Bus	
	Baseline	W-Proj.	Impact	Baseline	W-Proj.	Impact	W-Proj.	Impact
1985	28,798	28,880	82	30,370	30,322	- 48	30,318	- 52
1986	31,807	31,914	107	31,536	31,457	- 79	31,453	- 83
1987	31,392	31,303	- 89	32,654	32,476	-178	32,469	-185
1988	29,485	29,365	-120	33,478	33,238	-240	33,232	-246
1989	29,568	29,432	-136	34,631	34,363	-268	34,360	-271
1990	29,628	29,455	-173	36,266	36,070	-196	36,066	-200
1991	29,892	29,721	-171	37,149	36,986	-163	36,982	-167
1992	30,312	30,099	-213	38,295	38,135	-160	38,131	-164
1993	30,887	30,607	-280	39,803	39,766	- 37	39,763	- 40
1994	31,366	31,060	-306	41,358	41,411	53	41,411	53
1995	31,886	31,563	-323	42,177	42,270	93	42,266	89
1996	32,496	32,184	-312	43,198	43,257	59	43,257	59
1997	33,145	32,850	-295	44,320	44,348	28	44,345	25
1998	33,844	33,568	-276	45,391	45,363	- 28	45,360	- 31
1999	34,555	34,284	-271	46,483	46,452	- 31	46,449	- 34
2000	35,266	34,993	-273	47,681	47,675	- 6	47,672	- 9
2001	36,300	35,991	-309	49,097	49,021	76	49,021	76
2002	37,041	36,700	-341	50,241	50,422	181	50,418	177

Source: Frank Orth & Associates, Inc., 1983.

TABLE 2

MUNICIPALITY OF FAIRBANKS
ECONOMIC/DEMOGRAPHIC IMPACTS
WATANA PEAK CONSTRUCTION YEAR, 1990

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario	
		Car	Bus
Employment (Manpower) [1]			
Baseline	[2]	[2]	[2]
With-Project	[2]	[2]	[2]
Impact	705	800	798
Population (People)			
Baseline	29,628	36,266	36,266
With-project Population	29,455	36,070	36,066
Impact	-173	-196	-200
Households (Occupied Units)			
Baseline	11,104	13,537	13,537
With-project	11,048	13,505	13,504
Impact	- 56	- 32	- 33

[1] Employment is by place of residence.

[2] Employment at the community level was not projected.

Source: Frank Orth & Associates, Inc., 1983.

TABLE 3

MUNICIPALITY OF FAIRBANKS
ECONOMIC/DEMOGRAPHIC IMPACTS
FIRST FULL YEAR OF OPERATION, 2002

Socioeconomic Variable	FERC License Application Impact Projections (Projected in 1982)	Revised Impact Projections (Projected in 1983)	
		Transportation Scenario Car	Bus
Employment (Manpower) [1]			
Baseline	[2]	[2]	[2]
With-Project	[2]	[2]	[2]
Impact	40	31	30
Population (People)			
Baseline	37,041	50,241	50,241
With-project Population	36,700	50,422	50,418
Impact	-341	181	177
Households (Occupied Units)			
Baseline	15,287	17,874	17,874
With-project	15,177	17,905	17,904
Impact	-110	31	30

[1] Employment is by place of residence.

[2] Employment at the community level was not projected.

Source: Frank Orth & Associates, Inc., 1983.

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