THE RELATIONSHIP BETWEEN THE ALASKA NATURAL GAS PIPELINE AND STATE AND LOCAL GOVERNMENT EXPENDITURES

Prepared for

State of Alaska
State Pipeline Coordinator's Office

by

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Errata Sheet

for

THE RELATIONSHIP BETWEEN THE ALASKA
NATURAL GAS PIPELINE AND STATE
AND LOCAL GOVERNMENT
EXPENDITURES

Executive Summary

Page iii	Line 20	'migrant' should read 'impact'

Report

Page 11	Line 8-9	Delete 'and wage'
Page 33	Line 3	'75 percent' should read '25 percent'
Page 46	Line 17	Delete 'transient' insert 'itinerant'
Page 56	Line 18	Delete '54 percent' insert '45 percent'
Page 60	Line 22	spelling 'choose'

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FOREWORD

Scope of Work

This study was written under contract to the Alaska State Pipeline Coordinator's Office. Its purpose is to estimate the expenditures that state and local government will incur during and as a result of construction of the Alaskan segment of the Alaska Natural Gas Transportation System. It is intended to be used by the State in negotiations with Northwest Alaska Pipeline Company over compensation for pipeline-related expenses. By prior agreement between the State Pipeline Coordinator's Office and the Institute of Social and Economic Research, government expenditures have been narrowly defined. The definition includes expenditures incurred in providing the prepipeline level and quality of public services to migrants attracted to Alaska by construction of the pipeline. Expenditures on surveillance activities associated with pipeline construction itself and additional costs of maintaining roads suffering from the effects of heavy construction traffic have been specifically excluded from the analysis.

Background for the Study

This study was undertaken in the fall of 1980 and essentially completed in December of 1980 with the preparation of a draft report. In January of 1982, the draft report was reviewed and edited and the final report written. The final report does not differ in any substantive respect from the draft. Two arithmetic errors in the draft were found and corrected which have slightly altered the aggregate cost estimates which appear in Table III of the Executive Summary and in various tables throughout the text of this final report. This foreword has been substantially expanded from the version which appeared in the draft report to incorporate background and explanatory material for the reader.

Several changes have occurred in economic conditions since the completion of the draft report of which the reader should be aware. These do not change the general results of the analysis, but they should be kept in mind in order to correctly interpret the results. The major changes are as follows:

- The Northwest Gas Pipeline construction schedule has been delayed and estimates of construction employment have changed. The schedule delay does not affect the analysis because all costs are in 1980 dollars. New employment figures will change the cost estimates approximately by the ratio of revised-to-original estimated man years of construction employment.

- The budget of the State of Alaska increased in real per capita terms between FY 1981 and FY 1982. An expenditure limit in the form of a constitutional amendment has been proposed by the governor which would limit expenditure growth in future years to changes in prices and population. If calculated using the FY 1982 budget, the cost figures in this report would be considerably higher.

- The Alaskan economy is more healthy in early 1982 than it was in late 1980. Excess unemployment, as defined in this study, has been reduced from the 1980 level. At the same time, the condition of the national economy has deteriorated. The increase in the level of unemployment nationally during the past year means that migration to Alaska by gas pipeline job seekers may be significantly greater than estimated in 1980.

- In 1980, the gas conditioning plant was not included as part of the pipeline. The analysis in the draft report considered the effects of gas pipeline construction activity only. Now, however, the gas conditioning plant, to be located at Prudhoe Bay, has been incorporated into the pipeline project. Employing the same methods used in the calculation of costs in the draft report estimates of costs to state and local government of gas conditioning plant construction activity have been made. These estimates are presented in the next section of the Foreword.

The Gas Conditioning Plant

Impact population and government expenditures associated with gas conditioning plant construction were not included in the original study because the gas conditioning plant was not a part of the pipeline. Estimates of impact population and expenditures associated with gas conditioning plant construction were done by request of the State Pipeline Coordinator's Office after the gas conditioning plant facility was incorporated into the pipeline project.

Table A presents the results of that analysis in a format comparable to the estimates of expenditures for pipeline construction activity presented in Table III of the Executive Summary. The assumptions underlying the analysis are the same ones used throughout the body of this report with these modifications:

- Direct gas conditioning plant construction employment estimates were taken from the Amendment to the Alaskan Northwest Natural Gas Transportation Company submission to the Federal Energy Regulatory Commission dated October 1981. Average annual employment estimates are as follows:

Year	Average Annual Employment Gas Conditioning Plant Construction
1982	200
1983	500
1984	900
1985	1,100
1986	650

- Excess unemployed construction workers in Alaska available to construct the gas conditioning plant are assumed to be zero.

- The regional distribution of residence of gas conditioning plant construction employees and the proportion which are migrants and itinerants are assumed to be the same as gas pipeline construction employees.

- The total migrant effect of gas conditioning plant construction activity was calculated using the same ratio of migrants-to-direct jobs that was used for gas pipeline construction activity. This analysis is thus based upon but does not directly utilize the econometric model (MAP model).

TABLE A
STATE AND LOCAL EXPENDITURES ASSOCIATED WITH
GAS CONDITIONING PLANT CONSTRUCTION

(thousands of 1980 dollars)

A. Migrant and Itinerant Gas Plant Employees

	Impact Population		State		Local		
			Operating =	Capital =	Operating =	Capital =	Total =
Year	Migrants	Itinerants	$1235/Migrant $617/Itinerant	$69/Migrant $34/Itinernat	$228/Migrant $0/Itinerant	$28/Migrant $0/Itinerant	$1560/Migrant $651/Itinerant
1982	60	20	86	5	14	2	107
1983	150	50	216	12	34	4	266
1984	270	90	389	22	62	8	481
1985	330	110	476	27	75	9	587
1986	195	65	281	15	44	5	345
TOTAL			$1,448	$81	$229	$28	$1,786

B. Migrant Gas Plant Employees, Their Families, and Itinerant Gas Plant Employees

	Impact Population		State		Local		
			Operating =	Capital =	Operating =	Capital =	Total =
Year	Migrants	Itinerants	$1956/Migrant $617/Itinerant	$73/Migrant $34/Itinernat	$288/Migrant $0/Itinerant	$56/Migrant $0/Itinerant	$2373/Migrant $651/Itinerant
1982	120	20	247	10	35	7	299
1983	300	50	618	24	86	17	745
1984	540	90	1,112	42	155	30	1,339
1985	660	110	1,359	52	190	37	1,638
1986	390	65	803	30	112	22	967
TOTAL			$4,139	$158	$578	$113	$4,988

TABLE A (continued)

C. Migrant and Itinerant Gas Plant Employees and Migrant Employees Who Fill Jobs Vacated by Residents Who Obtain Gas Plant Employment

			State		Local		
	Impact Population		Operating = $1235/Migrant	Capital = $69/Migrant	Operating = $228/Migrant	Capital = $28/Migrant	Total = $1560/Migrant
Year	Migrants	Itinerants	$617/Itinerant	$34/Itinernat	$0/Itinerant	$0/Itinerant	$651/Itinerant
1982	180	20	234	13	41	5	293
1983	450	50	587	33	103	13	736
1984	810	90	1,056	59	185	23	1,323
1985	990	110	1,291	72	226	28	1,617
1986	585	65	762	42	133	16	953
TOTAL			$3,930	$219	$688	$85	$4,922

D. Migrant and Itinerant Gas Plant Employees, Migrant Employees Who Fill Jobs Vacated by Residents Who Obtain Gas Plant Employment, and Their Families

			State		Local		
	Impact Population		Operating = $1956/Migrant	Capital = $73/Migrant	Operating = $288/Migrant	Capital = $56/Migrant	Total = $2373/Migrant
Year	Migrants	Itinerants	$617/Itinerant	$34/Itinernat	$0/Itinerant	$0/Itinerant	$651/Itinerant
1982	360	20	716	27	104	20	867
1983	900	50	1,791	68	259	50	2,168
1984	1,620	90	3,225	121	467	91	3,904
1985	1,980	110	3,941	149	570	111	4,771
1986	585	65	2,329	87	337	66	2,819
TOTAL			$12,002	$452	$1,737	$338	$14,529

TABLE A (continued)

E. All Migrants Who Result from Direct and Indirect Employment Associated with the Gas Plant Construction

		State		Local		
	Impact Population	Operating =	Capital =	Operating =	Capital =	Total =
Year	Migrants	$1956/Migrant	$73/Migrant	$354/Migrant	$72/Migrant	$2455/Migrant
1982	316	618	23	112	23	776
1983	891	1,743	65	315	64	2,187
1984	2,488	4,867	182	881	179	6,109
1985	3,752	7,339	274	1,328	270	9,211
1986	2,779	5,436	203	984	200	6,823
TOTAL		$20,003	$747	$3,620	$736	$25,106

Total expenditures in 1980 dollars to state and local government associated with gas conditioning plant construction were estimated at between $1.8 million and $25 million depending upon the definition of impact population chosen.

Table B presents a summary of total expenditures for the combined construction activity of the gas conditioning plant and pipeline. The expenditures associated with the two facilities can be combined even though the pipeline estimate is based upon a schedule which has since been revised because all expenditure amounts are in 1980 dollars.

Glossary of Terms Used in this Study

Alaskan resident. A person whose place of residence was Alaska before the start of pipeline construction activity.

Alyeska. The trans-Alaska oil pipeline constructed over the period 1974 to 1977.

Annualized capital cost. The initial cost of an item of capital equipment divided by the number of years of useful life for that item.

Borough. The unit of local government in Alaska equivalent to a county in other states. Some parts of Alaska are not included within boroughs.

Client (user, service recipient). An individual who utilizes a particular state or local government service.

Construction activity. The construction activity associated with the natural gas pipeline which physically occurs in Alaska. Specifically excluded are operation of the gas pipeline as well as construction and operation of the gas conditioning plant.

Dependent ratio. Average number of dependents per member of the work force.

Direct effect. An effect which directly results from pipeline construction activity.

Direct employee. A person directly employed in the construction of the gas pipeline within Alaska in a craft or staff position.

Execution contractor. A construction contractor charged with the responsibility of actual construction of a section of the gas pipeline.

TABLE B
STATE AND LOCAL EXPENDITURES ASSOCIATED WITH
COMBINED CONSTRUCTION ACTIVITY OF GAS CONDITIONING
PLANT AND GAS PIPELINE PROJECT

(millions of 1980 dollars)

	State Government		Local Government		Total
	Operations	Capital	Operations	Capital	
Impact Population					
A. Migrant and Itinerant Project Employees	12.7	.7	2.0	.2	15.6
B. Migrant Project Employees, Their Families, and Itinerant Project Employees	36.2	1.4	5.1	1.0	43.6
C. Migrant and Itinerant Project Employees and Migrant Employees Who Fill Jobs Vacated by Residents Who Obtain Project Employment	28.9	1.6	5.0	.6	36.2
D. Migrants and Itinerant Project Employees and Migrant Employees Who Fill Jobs Vacated by Residents Who Obtain Project Employment, and Their Families	87.7	3.3	12.6	2.5	106.1
E. All Migrants Resulting from Direct and Indirect Employment Associated with the Project	220.7	8.2	39.9	8.1	277.0

Excess unemployment. Unemployed resident Alaskan construction workers with the requisite skills who are available to be hired for a gas pipeline construction job.

Impact expenditures. State and/or local government expenditures attributable to pipeline construction activity.

Impact population. Increase in population in Alaska attributable to pipeline construction activity.

Indirect effect. An effect which is the indirect result of pipeline construction activity.

Itinerant. An individual who commutes to Alaska for employment purposes but who maintains a permanent residence outside the state.

MAP. Acronym for Man-in-the-Arctic Program, a National Science Foundation-sponsored research program undertaken by the Institute of Social and Economic Research at the University of Alaska which investigated, among other things, the economic and social effects of resource development in Alaska.

Marginal cost. The addition to total cost of a public good attributable to the provision of that good to one additional individual.

Migrant. A person who establishes residence in Alaska as a result of pipeline construction activity.

Newcomer. A migrant or itinerant.

Population sensitive. A state or local government program for which the level of expenditure must increase to provide the same level of service to an additional person as all persons previously enjoying the service.

Public capital (public capital stock). Fixed assets and durable goods owned by state and local governments.

Railbelt. The region of central Alaska encompassing the majority of the population of the state stretching roughly along the Alaska Railroad between Anchorage and Fairbanks.

Resident. See Alaska resident.

Service recipient. See client.

Simulation. A projection of the Alaskan economy using the MAP econometric model.

User. See client.

The Institute of Social and Economic Research

Established in 1961 by the Alaska Legislature, the Institute of Social and Economic Research (ISER) operates as a principal research organization within the University of Alaska system. Since its early beginnings on the Fairbanks campus, ISER has developed into a full-scale economic and social science research institute, dedicated to applying its multidisciplinary skills to the problems of social and economic change in Alaska. Presently headquartered in downtown Anchorage at 707 A Street, with offices in Fairbanks and Juneau, the institute now comprises a select staff of professionals whose academic backgrounds and research experiences encompass a broad spectrum of professional disciplines and policy issues.

ISER investigates such issues as the economics of natural resource development, principally petroleum and fisheries, and multiple-use land management; the social and economic impacts of resource developments such as oil and gas pipelines, petrochemical facilities, and hydroelectric projects; the state's transportation and energy requirements; the development of human resources; and the effects of modernization on Alaska Native peoples and cultures and on the quality of life in Alaska.

Other important ISER objectives are to:

- Provide professional assistance to public and private organizations to help meet socioeconomic needs of Alaska's population. Staffmembers serve as advisors to or members of the Alaska Native Foundation, the Cook Inlet Native Foundation, the Women's Resource Center, the Alaska Permanent Fund, and the Alaska Census Advisory Committee.

- Sponsor discussion of public issues. Examples: the Alaska Growth Policy Symposium, the Alaska Constitutional Review (both co-sponsored by the Alaska Humanities Forum), and the Alaska Science Conference.

- Contribute to the academic program of the University of Alaska and assist in the establishment of graduate programs in the Social Sciences. In addition to their institute responsibilities, staffmembers often teach within their disciplines. Correspondingly, members of the University's teaching faculty are affiliated with ISER and participate in its research activities.

- Promote the exchange of information between the University of Alaska and other institutions. Examples: sponsoring faculty exchanges and visting professors; exchanging institute publications with other research institutes in the United States through membership in such professional organizations as the Association for University Business and Economic Research (AUBER); and exchanging information with the USSR Academy of Sciences.

The MAP (Man-in-the-Arctic Program) Economic Model

The economic model utilized in this study, known as the MAP model, was originally developed in the early 1970s at the Institute of Social and Economic Research with assistance from the National Bureau of Economic Research in Cambridge, Massachusetts. Its development was a major component of a large National Science Foundation study known as the MAN in the ARCTIC PROGRAM established to investigate the process and problems associated with economic, social, and political change brought about by rapid resource development in Alaska.

Due to continuous demand for its use, the economic model subsequently developed into a modeling system including several econometric models as well as demographic models, special function simulation models, and a large data base. The models have been used extensively by federal, state, and local governments as well as the private sector. Current Institute research directly utilizing the models includes contracts with the following clients: Municipality of Anchorage, Alaska State Legislature, Alaska Office of the Governor and Alaska Power Authority, Alaska Department of Transportation, and the U.S. Department of Interior Bureau of Land Management. In 1975-76, the model was used by Gulf Interstate, Inc., to analyze the impacts of an Alaskan highway gas pipeline route as a part of the original submission to the Federal Power Commission (Goldsmith, Oliver S.; John Kruse; and Michael Scott. "A Preliminary Overview of the Economic and Social Effects of the Proposed Northwest Gas Pipeline on Alaska," for Gulf Interstate, 1976) and in the environmental impact statement in the Federal Power Commission gas pipeline route selection deliberations (Scott, Michael J. "Analysis of Economic and Social Impact of Alternative Routes for the Alaska Arctic Gas Pipeline" for the U.S. Department of Interior, Bureau of Land Management, 1975).

This study utilized the statewide version of the econometric model of the Alaskan economy as well as the demographic and fiscal model components. These models are described in detail elsewhere. The interested reader should consult the following for descriptions and full documentation:

- Goldsmith, Oliver S. "Man-in-the-Arctic Program Economic Model Documentation." Institute of Social and Economic Research, 1979.
- Kresge, David T.; Thomas A. Morehouse; and George W. Rogers. Issues in Alaskan Development. Seattle: University of Washington Press, 1977.
- Kresge, David T., and Daniel A. Seiver. "Planning for a Resource-Rich Region: The Case of Alaska," American Economic Review Papers and Proceedings, Vol. 68, No. 2 (May 1978).
- Kresge, David T., et al. Regional Policies for Resource Development, Boston, MIT Press, Summer 1982.

Authors

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Margaret Mogford. Ms. Mogford is currently a graduate student in the Ph.D. program in economics at the University of Aberdeen, Scotland. She came to Alaska to study the effect of the trans-Alaska oil pipeline on the distribution of income and wealth as a special student at the University of Alaska, Anchorage. Ms. Mogford has a bachelor's degree in economics and geography with honors from Sheffield University, England, and has worked as an economic analyst for several government agencies as well as the Impact Study Research Group, University of Aberdeen.

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EXECUTIVE SUMMARY

The purpose of this report is to provide the Alaska State Pipeline Coordinators Office (SPCO) with estimates of the cost to state and local governments in Alaska resulting from construction of the Alaska segment of the natural gas pipeline as proposed by Northwest Alaskan Pipeline Company (NWA). The cost projections are intended as input into the negotiations between the State of Alaska and NWA concerning compensation for public costs generated by pipeline construction activity.

This analysis is restricted to an estimation of those state and local government expenditures which would be incurred to provide those services which are currently enjoyed by Alaskan residents to newcomers (migrants and itinerant workers) attracted to the state by pipeline construction activity. We define the level of government services to newcomers as equal to the prepipeline per capita level enjoyed by current residents (using the FY 1981 state budget and most current local budgets). Past experience suggests that in all likelihood expenditures for residents and migrants will continue to grow from the pre-pipeline level, so that the true population and government expenditure impacts would probably be larger than indicated in this report.

This report differs from an economic impact analysis in several respects. Such an analysis would project the likely changes in population and government expenditures during both the construction and operation phases of the gas pipeline project. In addition, it would quantify the state and local government revenues which the project would produce.

Expenditure estimates in this report do not include certain categories of services and do not take into consideration certain subtle effects which can be expected to occur. Expenditures on direct surveillance activities and on highway maintenance required because of

use of the roads by heavy construction traffic are subject to separate compensation negotiations between the state and NWA, and, consequently, they are specifically excluded from this analysis. Pipeline construction activity will have a number of subtle effects on government costs such as increasing the price level. This would change the real value of taxes collected as well as the cost of government services.

Expenditures for each of four components of public costs are presented on a per user (average migrant or itinerant) basis. This permits the reader to calculate the total cost associated with any of several impact population definitions. Public costs are analyzed in four components: state operating expenditures, state capital costs, local government operating expenditures, and local capital costs.

The average per user expenditure level is not the same for all definitions of impact population because the components of government services which would be provided to newcomers will vary with the demographic characteristics of the group. Costs for three groups are presented in this study. The first is applicable to all migrants defined to include a full cross-section of the incoming population, including dependents and unemployed but excluding itinerants. The average cost per migrant in this group includes expenditures on education and on the full range of social services. The second applies only to employed adults and, consequently, excludes payments for services they would not require. The third applies to employed itinerants who would work, but not establish a residence, in Alaska. They would have relatively small public service requirements. These cost figures are shown in Table I. A detailed analysis of the state operating and capital budgets is included as an appendix to the report to allow calculation of different per migrant costs for migrant groups with other service demands.

Estimates of total employment effects and population impacts of pipeline construction activity were derived from the Man-in-the-Arctic Program (MAP) econometric model as well as studies of the effects of

TABLE I
ANNUAL EXPENDITURES BY STATE AND LOCAL GOVERNMENT
PER NEWCOMER

(1980 dollars)

Category of Newcomer	State Expenditures		Local Expenditures		Total
	Operating	Capital	Operating	Capital	
Avg. Migrant (incl. School Children & Unemployed Adults)	1,956	73	354	72	2,455
Adult Employed Migrant	1,235	69	228	28	1,560
Adult Employed Itinerant	617	34	0	0	651

Note: Newcomers receive the same services as current residents with the same demographic characteristics.

similar projects such as the construction of the Alyeska oil pipeline. Several definitions of impact population were identified, and estimates were produced for each of these impact groups. Table II shows the annual estimate for each impact population. In the peak year of construction, 1984, average annual direct construction employment is estimated by NWA to be 10,339. Assuming 30 percent (3,102) would be migrants to the state with an average family size of 2, migrant direct employees and their families account for 6,204 increase in population in that year. The total population impact in 1984, including the direct and indirect economic effects of pipeline construction activity is estimated to be 35,267.

Table III combines the expenditure-per-person estimates with the impact population estimates to produce total expenditure estimates in 1980 dollars for five impact populations. These are as follows: (1) Migrants and itinerants directly employed on pipeline construction; (2) Migrants directly employed on the pipeline, their families, and itinerants; (3) Migrants and itinerants directly employed on the pipeline and migrants working in jobs vacated by Alaskan residents who go to work on the pipeline; (4) Population group Number (3) plus the families of the employed migrants; and (5) Total impact population resulting from the direct and indirect effects of pipeline construction activity. Expenditure estimates for other impact populations can be calculated by applying the per user expenditures to the appropriate estimate for a different impact population.

The total cost in 1980 dollars of providing services to migrants and itinerants who find employment on pipeline construction jobs is estimated to be less than $14 million over the seven-year construction period. Assuming the average family size of employed migrants is two, the level of expenditures for migrant direct employees and their families and itinerant direct employees is about $39 million. If the impact population is defined as migrant and itinerant pipeline employees and migrants who take jobs vacated by Alaskan residents who

TABLE II
VARIOUS IMPACT POPULATION MEASURES FOR PIPELINE CONSTRUCTION ACTIVITY

	1980	1981	1982	1983	1984	1985	1986
1.A. Migrants in the labor force: direct and indirect employment impact and induced impact of state government operations spending to maintain current service levels	158	327	1,835	8,819	17,634	12,982	9,557
B. Migrants as in 1.A. plus their families	316	654	3,669	17,637	35,267	25964	19,114
2.A. Migrants in labor force: direct and indirect employment impact (excluding government spending impact)	158	327	1,642	7,755	15,468	10,985	7,573
B. Migrants as in 2.A. plus their families	316	654	3,284	15,510	30,936	21,969	15,145
3.A. All employees directly employed on pipeline construction	217	413	2,060	6,378	10,339	6,072	468
B. All direct employees (resident, migrant, and itinerant) plus their families	478	909	4,534	14,038	22,747	13,367	1,029
4.A Migrants directly employed on pipeline construction and in jobs vacated by residents directly employed on pipeline	87	166	854	4,740	8,305	4,467	321
B. Migrants as in 4.A. plus their families	174	332	1,708	9,480	16,610	8,930	642
5.A. Migrants directly employed on pipeline construction	65	124	618	1,913	3,102	1,822	140
B. Migrants as in 5.A. plus their families	130	248	1,236	3,826	6,204	3,644	280
6. Itinerants directly employed on pipeline construction	22	41	206	638	1,034	607	47

Note: Additional definitions of impact population are possible.

SOURCE: See text.

TABLE III
STATE AND LOCAL EXPENDITURES ASSOCIATED WITH
GAS PIPELINE CONSTRUCTION

(thousands of 1980 dollars)

A. Migrant and Itinerant Pipeline Employees

	Impact Population		State		Local		
			Operating =	Capital =	Operating =	Capital =	Total =
			$1235/Migrant	$69/Migrant	$228/Migrant	$28/Migrant	$1560/Migrant
Year	Migrants	Itinerants	$617/Itinerant	$34/Itinernat	$0/Itinerant	$0/Itinerant	$651/Itinerant
1980	65	22	94	5	15	2	116
1981	124	41	178	10	28	3	219
1982	618	206	890	50	141	17	1,098
1983	1,913	638	2,757	154	436	54	3,401
1984	3,102	1,034	4,469	250	707	87	5,513
1985	1,822	607	2,624	147	415	51	3,237
1986	140	47	202	11	32	4	249
TOTAL			$11,214	$627	$1,774	$218	$13,833

TABLE III (continued)

B. Migrant Pipeline Employees, Their Families, and Itinerant Pipeline Employees

(expenditures in thousands of 1980 dollars)

	Impact Population		State		Local		
			Operating =	Capital =	Operating =	Capital =	Total =
Year	Migrants	Itinerants	$1956/Migrant $617/Itinerant	$73/Migrant $34/Itinernat	$288/Migrant $0/Itinerant	$56/Migrant $0/Itinerant	$2373/Migrant $651/Itinerant
1980	130	22	268	10	37	7	322
1981	248	4I	510	20	71	14	615
1982	1,236	206	2,545	47	356	69	3,067
1983	3,826	638	7,878	301	1,102	214	9,495
1984	6,204	1,034	12,774	489	1,787	347	15,397
1985	3,644	607	7,502	287	1,049	204	9,042
1986	280	47	577	22	81	16	696
TOTAL			$32,054	$1,226	$4,483	$871	$38,634

TABLE III (continued)

C. Migrant and Itinerant Pipeline Employees and Migrant Employees Who Fill Jobs Vacated by Residents Who Obtain Pipeline Employment

(expenditures in thousands of 1980 dollars)

	Impact Population		State		Local		
			Operating =	Capital =	Operating =	Capital =	Total =
Year	Migrants	Itinerants	$1235/Migrant $617/Itinerant	$69/Migrant $34/Itinernat	$228/Migrant $0/Itinerant	$28/Migrant $0/Itinerant	$1560/Migrant $651/Itinerant
1980	87	22	121	7	20	2	150
1981	166	41	230	13	38	5	286
1982	854	206	1,182	66	195	24	1,467
1983	4,740	638	6,248	349	1,081	133	7,811
1984	8,305	1,034	10,895	609	1,894	233	13,631
1985	4,465	607	5,889	329	1,018	125	7,361
1986	321	47	425	24	73	9	531
TOTAL			$24,990	$1,397	$4,319	$531	$31,237

Note: Impact population consists of total pipeline employment net of 1,000 excess unemployed residents among the first 2,000 employed workers. Itinerants are 10 percent of total employment.

TABLE III (continued)

D. Migrant and Itinerant Pipeline Employees, Migrant Employees Who Fill Jobs Vacated by Residents Who Obtain Pipeline Employment, and Their Families

(expenditures in thousands of 1980 dollars)

			State		Local		
	Impact Population		Operating = $1956/Migrant	Capital = $73/Migrant	Operating = $288/Migrant	Capital = $56/Migrant	Total = $2373/Migrant
Year	Migrants	Itinerants	$617/Itinerant	$34/Itinernat	$0/Itinerant	$0/Itinerant	$651/Itinerant
1980	174	22	354	13	50	10	427
1981	332	41	675	26	96	19	819
1982	1,708	206	3,468	132	492	96	4,188
1983	9,480	638	18,937	714	2,730	531	22,912
1984	16,610	1,034	33,128	1,248	4,784	930	40,090
1985	8,930	607	17,842	673	2,572	500	21,587
1986	642	47	1,285	48	185	36	1,554
TOTAL			$75,689	$2,854	$10,909	$2,122	$91,574

TABLE III (continued)

E. All Migrants Who Result from Direct and Indirect Employment Associated with the Pipeline

(expenditures in thousands of 1980 dollars)

		State		Local		
	Impact Population	Operating	Capital	Operating	Capital	Total
		=	=	=	=	=
Year	Migrants	$1956/Migrant	$73/Migrant	$354/Migrant	$72/Migrant	$2455/Migrant
1980	316	618	23	112	23	776
1981	654	1,279	47	232	47	1,605
1982	3,669	7,177	268	1,299	264	9,008
1983	17,631	34,486	1,287	6,241	1,269	43,283
1984	35,267	68,982	2,574	12,485	2,539	86,580
1985	25,964	50,796	1,895	9,191	1,870	63,752
1986	19,114	37,387	1,395	6,766	1,376	46,924
TOTAL		$200,725	$7,489	$36,326	$7,388	$251,928

get pipeline jobs, expenditures are $31 million. If their families are included, the level of expenditures rises to $92 million. If the impact population is defined to include all migrants who move to Alaska as a direct and indirect result of pipeline construction activity, expenditures over the seven-year period would be approximately $252 million.

I. INTRODUCTION

State and local government expenditures associated with construction of the Northwest Alaskan Pipeline Company (NWA) gas pipeline may be divided into two categories. First, there are expenditures which arise directly from the construction activity itself. The most significant of these include costs of surveillance and enforcement functions performed by the state and local governments and highway maintenance costs resulting from road deterioration caused by heavy construction traffic. The second group of expenditures are the costs of providing services to the additional population which will be in Alaska because of the pipeline construction. This report presents an analysis of the second category of costs. Direct surveillance expenditures and the cost of pipeline construction-related highway maintenance are subject to separate negotiations between the state and NWA and are not discussed in this report.

The first step in the analysis is to determine the population impact resulting from pipeline construction activities as well as its composition. Pipeline construction activity will attract migrants and itinerants to the state both directly as people come to Alaska in search of a job on the pipeline and indirectly because of the new jobs created by the general economic growth which pipeline construction stimulates. The total population impact would include all migrants and itinerants (including their dependents) who find work on the pipeline, who fill jobs vacated by Alaskans who transfer to pipeline construction employment, who fill jobs created indirectly by pipeline construction (activities,

for example, in service or transport industries some of which are created by the growth of government spending itself), who fill jobs directly created by the growth in government expenditures, and who move to the state but are unable to find employment. Thus, the total population impact is the sum of all population growth which directly or indirectly results from pipeline construction. The proportion of this total population impact for which NWA should be responsible is a policy decision. The broadest view would be that all changes in population which were expected to occur if the pipeline were built should be counted. Another view would be that only migrants and itinerants who directly obtained employment on the pipeline should be defined as the relevant population impact group. Many other definitions are possible. It is beyond the scope of this report to suggest which is the correct definition of impact population; rather, a number of different population impact groups will be identified and quantified.

The second stage of the analysis is the estimation of state and local government expenditures associated with each population impact group. To allow maximum flexibility in the use of the results of this study, all expenditures have been calculated on the basis of average cost per service recipient. Thus, the expenditures associated with an impact population not defined in this report could be calculated easily by multiplying the impact population by the proper average cost-per-service-recipient figures. The basic assumption underlying this method of estimation of impact expenditures is that service levels will be maintained at their pre-pipeline level for long-term residents and newcomers alike.

This constant service level assumption results in impact expenditures and impact population which may be less than would result from an analysis which predicted what would be likely to occur as a result of pipeline construction activity. This is because the assumption of constant service levels makes no allowance for upgrading of services or the initiation of new services although, based upon the historical experience of the growth of state and local government during the oil pipeline construction years, both could be predicted over the seven-year pipeline construction period. In addition, the impacts do not include those which result from the surveillance costs and highway maintenance costs not covered by this analysis.

The decision to define impact expenditures on a constant cost-of-service basis was not a result of this study. That definition was provided by the State Pipeline Coordinator's Office. The level of service chosen was that incorporated in the most current state budget for fiscal year 1981 (July 1980 to June 1981).

The impact expenditures are limited to those attributable to population growth. Costs might also result from Alaskan residents relocating or altering their lifestyles as a result of pipeline construction. Provision of public services to newcomers in small bush communities might be more expensive than in urban areas, and a significant movement of population to those communities might increase average costs. A change in family work patterns to a situation where one or both parents

work away from the home for extended periods in construction camps could create a situation resulting in increased demands for government services. While these effects may occur, the present level of our knowledge of the effects of large projects does not allow us to state that the opposite will not occur to an equal or larger extent. For example, there could be a shift in population to larger communities with lower government service costs. The fact that presently unemployed individuals might obtain jobs resulting from pipeline construction may reduce family tensions and the need for government services. There are many subtle effects which a detailed analysis of impact could identify. Given the time and budget constraints of this study, we must assume these effects to be of minor importance.

II. POPULATION AND EMPLOYMENT EFFECTS OF PIPELINE CONSTRUCTION

II.A. DIRECT EMPLOYMENT AND WAGE BILL INFORMATION

The Man-in-the-Arctic Program (MAP) statewide econometric model developed by the Institute of Social and Economic Research (ISER) was used to predict many of the employment and population effects of pipeline construction activity. Employment and wage and salary payments data for pipeline construction were required as inputs to the model. Employment estimates on a quarterly basis were obtained from NWA, and these were converted to an annual average for input into the model. Peak employment in each year would be considerably higher than the average figure used in the model. In 1984, for example, annual average employment is estimated at 10,339; peak employment occurs in the second quarter of the year and is 13,171. The planning estimates provided by NWA have been used without any adjustment for a possible underestimation. Initial estimates of manpower requirements for construction of the Alyeska oil pipeline in the mid-1970s were low by as much as 50 percent. It should be noted that Alyeska was constructing a pipeline in a region where there had been none before. NWA has the benefit of the Alyeska experience and intends to employ conventional buried-pipe techniques, so there is reason to hope that their planning estimates will be more accurate. For planning for impact, however, the possibility of a larger-than-expected work force as well as a peak seasonal work force considerably larger than the annual figure should be kept in mind. In addition, job turnover may be rapid as it was during Alyeska construction. This

could further increase the peak population impact associated with a particular level of annual employment.

NWA manpower figures contained considerable detail on the type of craft labor required by pipeline component and some information on location of work. For the purposes of the model, only simple annual average employment figures were required. The NWA data by quarters are shown in Table 1 (also in Information Sheet 1, Appendix A) and the annual data in Table 2. Using additional information supplied by Mr. Travis Smith of NWA, the location of employment was determined, as well as staff requirements.

Wage and salary information, which is an important determinant of the indirect economic effect of pipeline construction, was less easily obtained. NWA has developed planning estimates of the wages and salaries for pipeline construction because aggregate labor costs are presented in the documents filed with the Federal Energy Regulatory Commission (FERC).[1] The assumptions on which the aggregate figures are based, however, are not included in the published volumes of the filing, and the information breaking down the wage bill by area, time, and type of labor was not available from NWA for this study.

Sufficient detail was included in the FERC filings to allow calculation of the hourly craft wage costs. The total labor cost figure divided by employment, making allowance for overtime rates, gave an

TABLE 1
LOCATION OF DIRECT CONSTRUCTION EMPLOYMENT FOR
NORTHWEST ALASKA GAS PIPELINE

Man/Quarters

	FAIRBANKS		CAMPS		TOTAL
	Staff	Craft Labor	Staff	Craft Labor	
1980 1st Q	46		80		126
2nd Q	72		155	11	238
3rd Q	86		217	24	327
4th Q	73		91	13	177
1981 1st Q	204		108	13	325
2nd Q	218		179	33	430
3rd Q	221	5	175	48	449
4th Q	220	33	113	78	444
1982 1st Q	472	33	300	176	981
2nd Q	584	20	521	1,135	2,260
3rd Q	633	187	596	1,104	2,520
4th Q	745	288	645	798	2,476
1983 1st Q	1,006	409	1,073	1,911	4,399
2nd Q	1,119	535	1,518	3,768	6,940
3rd Q	1,208	608	1,700	4,728	8,244
4th Q	1,195	467	1,488	2,777	5,927
1984 1st Q	1,301	692	1,702	5,197	8,892
2nd Q	1,329	970	2,165	8,707	13,171
3rd Q	1,324	859	2,174	7,915	12,273
4th Q	1,280	491	1,793	3,453	7,017
1985 1st Q	1,200	622	1,704	4,933	8,459
2nd Q	1,152	655	1,705	5,632	9,144
3rd Q	1,066	397	1,254	2,202	4,919
4th Q	820	21	603	325	1,769
1986 1st Q	222		65	110	397
2nd Q	170		130	470	770
3rd Q	100		67	386	553
4th Q	52		41	56	149

TABLE 2
ASSUMPTIONS FOR DIRECT PIPELINE CONSTRUCTION EMPLOYMENT
AVERAGE ANNUAL EMPLOYMENT

Year	Staff	Craft	Total
1980	205	12	217
1981	360	53	413
1982	1,125	935	2,060
1983	2,577	3,801	6,378
1984	3,268	7,071	10,339
1985	1,377	3,697	6,072
1986	212	256	468
1987			
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
2000			

SOURCE: NWA, FERC Filing and Affirmative Action Plan, 1980.

average hourly rate for all crafts of $20 an hour. A similar calculation for staff salaries was not possible because the total noncraft labor costs included staff working on the Alaska segment of the pipeline but physically located outside the state. The best guide to salaries which will be paid to staff actually working in Alaska is current typical salaries being offered in the Alaskan labor market. Information gathered from executive recruitment agencies suggested that staff salaries will range from $16,000 annually for clerical employees to $75,000 annually for managers.[2] Using the staff employment proportions estimated for execution contractors (main construction contractors who will be responsible either for one pipeline spread or for a compressor station) of 25 percent managerial, 45 percent technical, and 30 percent clerical, the annual average staff salary is calculated to be $37,650 per annum in 1980 dollars. (See Information Sheet 2, Appendix A, for a more detailed explanation of wage cost calculations.)

An alternate estimate of construction wage rates was developed from wage information during the Alyeska construction as reported in the Statistical Quarterly, Alaska Department of Labor. The ratio of wage rates in nonhighway heavy construction to other construction categories averaged 1.61 for oil pipeline construction years. Applying that ratio to current average annual wage rates in construction yields a somewhat lower figure for the wage bill than is obtained from calculations using the NWA data. In the analysis which follows, the wage rate calculated by this method was used because of its historic validity, although the

discrepancy between the two measures was not clarified. This wage rate is internally calculated within the economic model.

II.B. DIRECT AND INDIRECT POPULATION EFFECTS

After estimating direct employment, the next step was to calculate total employment and population impacts of pipeline construction activity. First, a model simulation using the MAP economic model was done (P. Base) projecting future economic activity in Alaska without the effects of pipeline construction activity (Base Case).

Then a series of simultations, including the effects of pipeline construction activity, were made. In each, a particular response function was varied to determine the sensitivity of the projected impacts to the assumptions used. In the first three, state expenditures on operations and on capital remained at the Base Case level, while assumptions about unemployment were varied. This is to reflect the possibility of a pool of skilled but unemployed resident Alaskan construction workers filling some of the jobs. The first simulation (P.PNG.1) assumes that there is no excess unemployment; that is, there is no pool of skilled but unemployed workers in the state so that as soon as jobs become available on the pipeline, they begin to attract migrants and itinerants immediately. Migration occurs in response to job creation in Alaska and the difference in real wage rates between Alaska and the rest of the United States. Migration is the mechanism which restores labor market equilibrium and prevents the unemployment rate from falling significantly during boom periods.

The second simulation (P.PNG.2) assumes that there are 1,000 excess unemployed in construction in Alaska immediately available for pipeline jobs when construction begins and that half of the first 2,000 jobs on the pipeline will be taken by these Alaskans currently unemployed. Migration in the early stages of construction is consequently reduced.

Similarly, a third simulation (P.PNG.3) is based on excess unemployment of 2,000 with 50 percent Alaskan hire for the first 4,000 jobs. As with the other simulations, the remaining pipeline jobs may be taken by itinerant workers, migrants, Alaskan residents who switch jobs, or unemployed Alaskan residents with no special job skills or qualifications which would put them at the head of the job queue.

Table 3 shows how sensitive the estimates of population impact are to the different assumptions about unemployment in the three cases. As might be expected, changing the assumptions about excess unemployment has greatest effect in the early years of construction when 50 percent of the work force is being drawn from the pool of the unemployed. In 1984, the peak year of population impact, the difference between simulation P.PNG.1 and P.PNG.3 is 12 percent. Consequently, the effect of changing unemployment assumptions has a relatively minor effect on population effects over the life of the project.

Analysis of unemployment statistics suggested that the medium assumption of 1,000 excess unemployment is a reasonable case. Table 4

TABLE 3
IMPACT POPULATION FROM PIPELINE CONSTRUCTION ACTIVITY
USING DIFFERENT ASSUMPTIONS ABOUT LEVEL OF
SKILLED UNEMPLOYED LABOR POOL

Year	No Skilled Unemployed (P.PNG1)	1,000 Skilled Unemployed (P.PNG2)	2,000 Skilled Unemployed (P.PNG3)
1980	502	316	316
1981	1,030	654	654
1982	5,159	3,284	3,284
1983	17,419	15,510	13,649
1984	32,884	30,939	29,004
1985	23,949	21,969	20,039
1986	15,665	15,145	15,039

Note: In these simulations, state government spending does not increase in response to population growth.

SOURCE: See text.

TABLE 4
ANNUAL AVERAGE UNEMPLOYMENT INSURANCE CLAIMS:
CLAIMANTS PREVIOUS INDUSTRY OF ATTACHMENT
LISTED AS CONTRACT CONSTRUCTION

Year	Average
1973	1,818 (Oct.-Dec. only)
1974	1,777
1975	1,912
1976	3,866
1977	6,845
1978	5,491
1979	2,912
1980	3,363 (Jan.-June only)

SOURCE: Alaska Department of Labor, Characteristics of the Insured Unemployed, Alaska Economic Trends to Dec. 1977. Recent months Department of Labor data tapes.

gives the average number of Unemployment Insurance (UI) claims for each year since 1973 in which the claimant's last employment was in contract construction. The 1980 average for UI claims is considerably higher than the rate that was recorded before TAPS construction started, although it has fallen from a peak of nearly 7,000 in 1977. There are a number of drawbacks to using UI claims as a guide to levels of unemployment among residents of the state. On the one hand, they may underestimate since only those who qualify by having made sufficient contributions are counted, and unemployed persons whose benefits have been exhausted are also missed. Industry of last attachment may be a poor indication of experienced unemployed construction workers, if they have been forced to take jobs in other industries because of a shortage of construction employment. On the other hand, they may be high since it is not necessary to be a current resident to receive benefits. The fact that UI claims increased during the years of Alyeska construction (1975-1977) does not imply that those unemployed before the construction boom did not obtain jobs on the pipeline, but it does indicate that unemployment in the construction labor force did not decline, largely because the size of the labor force increased.

Since the MAP model has been calibrated using the years of Alyeska construction and currently reported UI claims in construction are approximately 1,000 greater than in the years immediately preceding Alyeska construction, there is some basis for using an estimate of 1,000 for an excess unemployment figure.

Another source of information on unemployed construction workers is the union out-of-work list compiled by the Alaska Department of Labor. The list is a compilation of voluntary returns made by each union, and the Department of Labor does not check the figures or guarantee consistency of reporting. The June 1980 list included the following statistics:

	Out-of-work
Teamsters, Local 959	4,570
Laborers, Local 942	2,350
Operating Engineers, Local 302	1,963

This might suggest that at a minimum there are over 8,000 unemployed workers in Alaska available for construction employment. In addition, other unions which supply labor to construction projects reported having unemployed members, for example, painters, pipefitters, and caterers unions. However, these figures almost certainly exaggerate the number of unemployed workers in the state. Many of the union members counted as out-of-work may in fact be working outside of Alaska or in nonunion jobs but choose to maintain their Alaska union membership.[3] In addition, these figures are not comparable to annual average employment figures since there is no way of knowing what proportion of a year the typical unemployed union member would choose to work.

II.C THE ECONOMIC EFFECT OF GOVERNMENT EXPENDITURES

The foregoing simulations in which state government spending remained unchanged at the Base Case level fail to include a significant component of employment and population impact associated with pipeline construction activity. Population growth resulting from pipeline construction will increase demand for government services and cause expenditures on them to rise. This, in turn, will generate jobs in government and in industries providing services to government employees which, in turn, will stimulate some additional population growth. Projection of the economic effect of government expenditures is difficult because the pattern of future state spending is difficult to predict. With significant petroleum revenues available to the state, it may be expected that real per capita expenditures will continue to rise through the next decade consistent with historical experience.

However, a basic assumption of this study is that the cost of the pipeline construction activities to the state consists only of those expenditures required to maintain the present service level to existing residents and to provide the same service level to newcomers. Therefore, in all simulations done for this study, state real per capita operating expenditures are held constant at the level of the most recent budget (FY 1981).

The delivery of public services requires both operating expenditures and expenditures to maintain the capital stock such as school

buildings, books, and cars. Thus, the real per capita capital stock is also constrained to the 1981 level in all simulations. Note that a constant capital stock per capita is very different from a constant level of capital expenditures. The latter may vary considerably from year-to-year to maintain the stock at a constant per capita level.

Three simulations of the effects of pipeline construction activity were made under various assumptions about government spending. All assume 1,000 excess unemployment. In the first simulation (P.P.O.), both operating and capital expenditures increase in response to population growth in such a way to maintain constant real per capita operating expenditure and capital stock levels. In the second simulation (P.P.1.), only operating expenditures respond to the increase in population. The final simulation (P.P.2.) assumes that operating expenditures increase and expenditures on capital also increase, but these expenditures do not themselves stimulate employment in Alaska. Capital goods are in effect purchased ready for use from outside the state. The significant impact of government expenditures on population and employment can be seen by comparing the population impact of these simulations with those done assuming no growth of state government. In 1984, the population effect of the pipeline alone is 32,884 (P.PNG.1); with operating expenditures increasing, it is 38,863. With both operating and capital expenditures increasing, it is 43,478. The population impact of state operating expenditures is 18 percent of the size of the pipeline construction

activity population impact, and that of capital expenditures is 14 percent. (Since population in the absence of the pipeline would be about 430 thousand, all of these are significant impacts ranging upwards from 9 percent.)

The assumption of real per capita state expenditures constant at the prepipeline level provides only a first approximation of the actual effect of government spending on the economy. Government spending may respond on a constant real per capita basis to new population, but only a portion of that budget increase may be necessary to maintain constant service levels for the residents and newcomers. Thus, the simulation results must be refined by identifying the proportion of state expenditures which must be maintained at their former per capita level to provide equal quality of service. Some budget items need not directly increase as population grows (for example, debt service) because the expenditure is not related to population. To determine exactly what proportion of state expenditures are population sensitive, an analysis of the 1981 operating budget was undertaken. This analysis is presented in Appendix B.

The budget analysis was done at the level of individual budget request units (BRUs), each of which is a separately defined agency activity set up to achieve a specific goal. In Table B.1 of Appendix B the BRUs are listed in order of decreasing total budget. The 199 BRUs range from a high of $216.4 million for the education foundation program to $55,000 for cross-cultural education.

Each total BRU budget has been subdivided into its four sources of funding: general fund appropriations, federal funds, receipts from program users, and other funds. (The source document for this analysis, The Summary of Appropriations,[4] does not provide full details of sources of funding; and in cases where it is not clear, the funding has been divided in the same proportion as in the Executive Budget.[5] These figures are marked by an asterisk to indicate that they are approximations.) Budget expenditures financed from each funding source can be population sensitive; however, the state general fund budget impact of population growth is most important to fiscal analysts. In other words, if nongeneral fund expenditures increase with population, state government revenues will generally increase automatically through an increase in federal transfers, direct user fees, etc. Therefore, to calculate the budget impact, we need to determine the population-sensitive component of the general fund. However, to calculate the employment and population impacts of government spending, it is necessary to identify the population-sensitive component of the entire budget because it is this larger budget concept (including federal transfers, user fees, etc.) of increased spending which will stimulate a private sector multiplier response.

The first nine columns of Table B.1 in Appendix B contain budget expenditures from the general fund. In the budget analysis, the general fund component and population-sensitive component of each BRU is determined. Four types of population-sensitive programs are defined. Entitlements contains all expenditures which are mandated by state or

federal law and the administrative services required to support these programs. Expenditures in entitlement programs will rise in direct proportion to an increase in the particular group they serve. The second category, Direct User Group Correlation, contains expenditures which are also likely to vary directly with the size of the client group, although these expenditures are not mandatory and the variation may be more or less than proportional. Quasi-public Goods will show some change in the budget as population changes, but the change may be much less than proportional. The marginal cost of providing the service to one extra client could be less than the average cost to present clients. (A pure public good is defined by economists as one which can be provided to additional population at zero marginal cost, such as a radio signal. There are few such goods at the state or local level.)

The final category, General Government Administration includes functions which are not specific to a particular service but which would be expected to increase as the overall size of the operating budget increases. The remaining expenditure categories include items which are unresponsive to population change for a number of reasons. For example, they may be pure public goods which can serve extra clients at no extra cost, or they may support basic export industries such as fisheries which are unaffected by the size of the state's population.

A summary of this analysis is shown in Table 5 along with that of a similar exercise to identify the population-sensitive component of the

TABLE 5
1981 OPERATING BUDGET: POPULATION SENSITIVE
EXPENDITURES BY FUNDING SOURCE

(thousands of dollars)

Funding Source	Population Sensitive[a]	Government Support	Nonpopulation Sensitive	Total
General Fund	809,872.1	78,016.9	260,378.6	1,148,267.6
Federal Funded	165,151.6	3,360.7	34,008.2	202,520.5
User Fee Funded	45,170.1	0	0	45,170.1
Other	47,224.3	48,067.8	17,383.7	112,675.8
Total	1,067,418.1	129,445.4	311,770.5	1,508,634.0
(Percent)	(70.75)	(8.58)	(20.67)	(100)

[a]Entitlements, Direct User Group Correlation, Quasi-Public Goods.

SOURCE: Appendix B

nongeneral fund budget of the state. If it is assumed that all Entitlements, User Group Correlation Goods, and Quasi-public Goods vary proportionately with population, then 70.75 percent of state government operating expenditures are population sensitive. It is reasonable to apply the same ratio of 70.75 percent to government support activities to calculate the proportion of those expenditures which are population sensitive. Combining these two components together yields an estimate of population-sensitive state operating expenditures of 76.8 percent.

Based upon this calculation of the population responsive portion of the operating budget, the simulation estimating the population and employment impacts of pipeline construction activity, including growth in state government expenditures, was revised. Since only about 77 percent of operating expenditures are population sensitive, the population and employment impacts attributed to government spending were revised downward accordingly. Table 6 shows the final estimates of impacts.

TABLE 6
FINAL ESTIMATES OF THE TOTAL EMPLOYMENT AND POPULATION IMPACTS FROM PIPELINE CONSTRUCTION ACTIVITY

Year	Employment	Population
1980	319	316
1981	634	654
1982	3,966	3,669
1983	14,137	17,637
1984	27,439	35,267
1985	20,313	25,964
1986	14,111	19,114

These figures exclude three probable components of employment and population change and include two that are usually overlooked. First, the effect of any spending for new state capital budget items is not included. For a number of reasons discussed below, it may not be desirable or possible to maintain capital stocks at their preconstruction per capita level. Second, state government spending to improve the quality or expand the range of services is not considered. Third, speculative migration prior to the actual beginning of construction is not reflected. Included are, first, the expenditure response of local government-to-population growth and, second, a modest increase in the amount of unemployment as a result of the labor force's increasing by a larger absolute amount than the work force. This is consistent with historical experience during the Alyeska pipeline construction years as shown in Table 7.

TABLE 7
ALASKA UNEMPLOYMENT RATES AND QUANTITIES

Year	Unemployment Rate	Unemployed
1970	7.1	6,474
1971	8.2	8,037
1972	8.3	8,586
1973	8.5	9.251
1974	7.9	9,894
1975	6.9	10,750
1976	8.3	14,000
1977	9.2	16,000
1978	11.0	20,000
1979	8.9	16,000
1980	9.6	18,000 (to September)

SOURCE: Alaska Department of Labor. In 1977 the method of estimating unemployment was adjusted to the Current Population Survey procedures. The series before 1977 is not comparable with later years.

III. ALTERNATIVE MEASURES OF IMPACT POPULATION

Impact population defined as the population change resulting from pipeline construction activities may be defined in several ways. One definition would be that all changes in population in the state which could be directly or indirectly traced to the pipeline should be counted. Using this definition, the peak annual population impact would occur in 1984 and would be somewhat greater than the 35,267 people shown in Table 6. In addition to the population measured in Table 6, it would include the population effect of government capital expenditures, migration which might have preceded the construction period encouraged by rumors about the pipeline, and effects of state government spending on new and improved services. Another definition would include only individuals who are newcomers to the state and find employment directly on pipeline construction. At no time could this amount exceed 10,339 (assuming that each pipeline job were filled by one person each year). Assuming that some Alaskans would be hired, the number would be less. Figure 1 shows diagrammatically how to arrive at various definitions of impact employment attributable to pipeline construction activity. Estimates of the impact population due to pipeline construction activity are given in Table 8.

The analysis presented in Chapter II, employing the MAP model, provides estimates for only three possible impact populations. These are, first, the population impact of direct and indirect job creation

FIGURE 1. RESIDENT AND NONRESIDENT SOURCES OF WORKERS TO FILL JOBS DIRECTLY AND INDIRECTLY CREATED BY PIPELINE CONSTRUCTION ACTIVITY

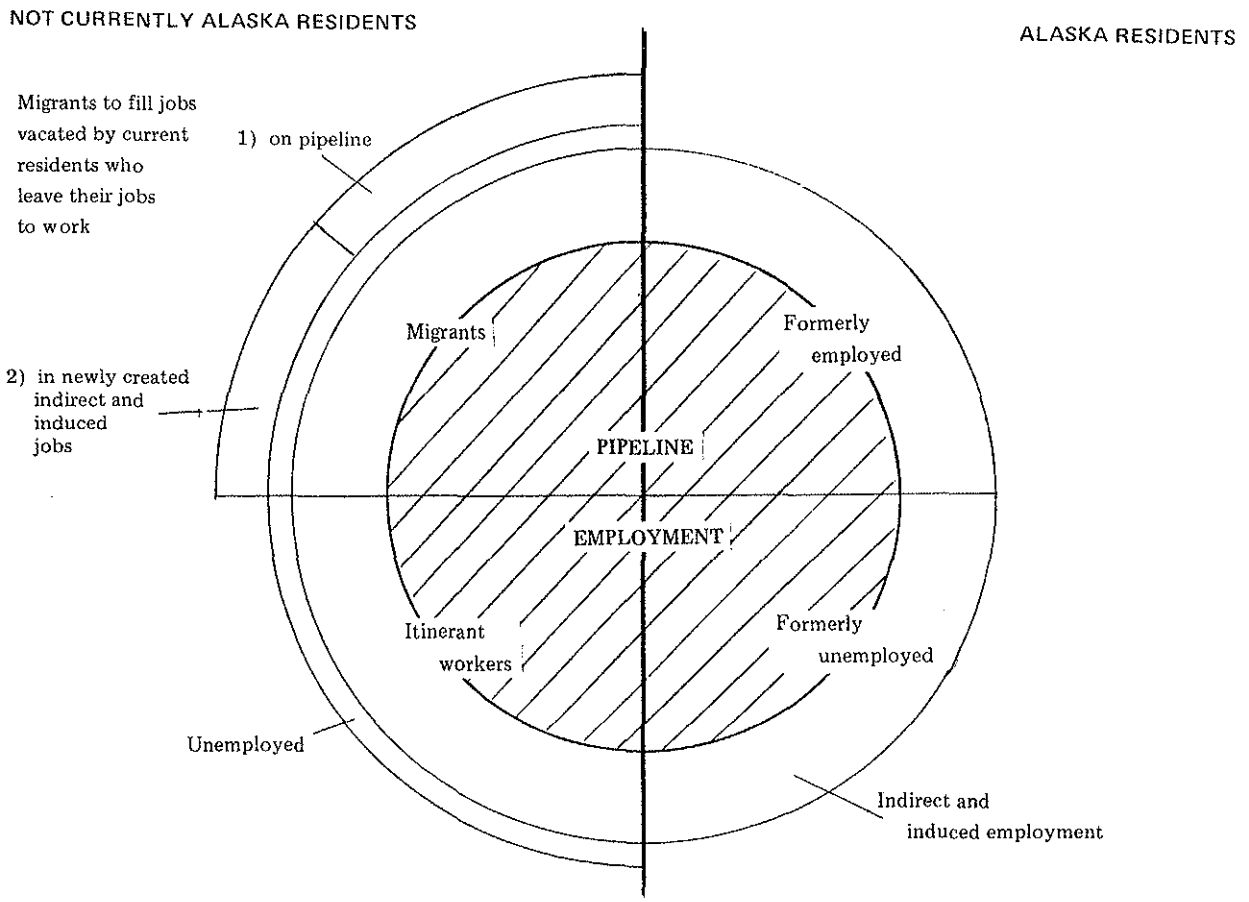

TABLE 8
VARIOUS IMPACT POPULATION MEASURES FOR PIPELINE CONSTRUCTION ACTIVITY

	1980	1981	1982	1983	1984	1985	1986
1.A. Migrants in the labor force: direct and indirect employment impact and induced impact of state government operations spending to maintain current service levels	158	327	1,835	8,819	17,634	12,982	9,557
B. Migrants as in 1.A. plus their families	316	654	3,669	17,637	35,267	25964	19,114
2.A. Migrants in labor force: direct and indirect employment impact (excluding government spending impact)	158	327	1,642	7,755	15,468	10,985	7,573
B. Migrants as in 2.A. plus their families	316	654	3,284	15,510	30,936	21,969	15,145
3.A. All employees directly employed on pipeline construction	217	413	2,060	6,378	10,339	6,072	468
B. All direct employees (resident, migrant, and itinerant) plus their families	478	909	4,534	14,038	22,747	13,367	1,029
4.A Migrants directly employed on pipeline construction and in jobs vacated by residents directly employed on pipeline	87	166	854	4,740	8,305	4,467	321
B. Migrants as in 4.A. plus their families	174	332	1,708	9,480	16,610	8,930	642
5.A. Migrants directly employed on pipeline construction	65	124	618	1,913	3,102	1,822	140
B. Migrants as in 5.A. plus their families	130	248	1,236	3,826	6,204	3,644	280
6. Itinerants directly employed on pipeline construction	22	41	206	638	1,034	607	47

Note: Additional definitions of impact population are possible.

SOURCE: See text.

not including a state government spending response (2.B) and, second, the population impact of direct and indirect job creation as well as the impact resulting from government spending to maintain operating service levels at prepipeline levels (1.B) and, third, all employment directly on the pipeline (3.A). Estimation of all other impact populations depends on assumptions about the proportion of Alaskans who would actually be hired to work on the pipeline and the dependent ratio (ratio of total population to full-time employed). These questions are discussed in the remainder of this section.

III.A. ALASKA, MIGRANT, AND ITINERANT HIRE ON THE PIPELINE

The MAP model does not have a detailed labor market component capable of estimating the number of Alaskans compared to newcomers who would obtain jobs on the pipeline. Migrants enter the Alaskan labor market and compete with residents. It has already been assumed that there would be 1,000 excess unemployed in Alaska who would get pipeline work in the first stages of pipeline construction and hold it throughout. Although there is no reason to believe that the same 1,000 people would remain working on the pipeline thoroughout the construction period, at least 1,000 jobs are assumed to be continuously filled by previously unemployed Alaskans. The total number of Alaskan residents employed on the pipeline will, of course, be much higher because when pipeline jobs become available, some currently employed Alaskans will switch jobs to work on the pipeline.

Comparison of local hire on the Alyeska pipeline with local hire in this analysis encounters definitional problems. The residency qualification which was used to define local hire changed over the course of the Alyeska construction project. In the early stage possession of an Alaskan driver's license was considered proof of residency; but following implementation of the Alaska Hire Law in March 1975, one-year residency in the state was required to qualify. In 1978, the law was overturned and the residency qualification was reduced to 30 days. In addition to these problems of changing definition, there are no good records available on the number of Alaskans hired to work on the pipeline.

In the absence of statistical evidence of the proportion of Alaskans hired, the impressions of people involved in the project were sought. Glen Lundell, then personnel manager for Alyeska Pipeline Company and now deputy commissioner of the Alaska Department of Labor, estimates that at the time of peak employment, between 45 and 55 percent of all employees were Alaskans who had lived in the state before pipeline construction was initiated. He suggested that for the gas line the percentage would be a little higher, perhaps 60-to-65 percent, because the Alaskan construction work force was now larger than it had been in the early 1970s and has had the benefit of Alyeska experience in terms of training.[6] Official figures for Alaska hire which are available on the Alyeska pipeline are higher than Glen Lundell's estimate; in the three months between April and June 1976, Alyeska reports to the Alaska Department of Labor indicate the proportion was as high as 79 percent. Bob Smathers, who operated the Alaska Hire Program for the state, estimated

that at the peak the proportion was between 60 and 75 percent.[7] In interpreting these estimates, it must be remembered that they include people who migrated to Alaska in the early years of Alyeska pipeline construction activity and by 1976 had satisfied the one-year residency requirement. They also include residents who had other jobs before construction of the pipeline. When those prepipeline positions were vacated, they were often filled by migrants.

The Alyeska experience provides some indication of the number of migrants and itinerants who would find direct employment on the gas pipeline. (The minimum number could be zero if all migrants simply fill jobs vacated by Alaskans who have moved to pipeline employment. The maximum number consistent with the assumption of 1,000 excess unemployment would be 9,339 in the peak year of 1984.) On the basis of these views of experts directly involved in the Alyeska project and knowledge about the current Alaska labor market, we assume 60 percent local hire for each year of pipeline construction. Thus, 40 percent of direct employment goes to migrants and itinerants.

Newcomers who would fill the remaining 40 percent of pipeline jobs fall into two categories. First, there will be workers who choose to migrate to Alaska and establish a temporary or permanent home in the state. They may or may not be accompanied by their families. Second, some employees from outside the state will maintain their former residence and simply commute to jobs in work camps along the pipeline route.

Apart from a few days when they are passing through Anchorage or Fairbanks on the way to or from work, these itinerants will spend periods of leave outside the state. These two categories of workers clearly impose quite different demands on state and local government services.

There is minimal evidence from the Alyeska pipeline experience on the percentage of itinerant employees who lived out of the state. A survey of camp workers in Valdez conducted by Dr. Baring-Gould of the University of Alaska in 1975[8] found that 60 percent were Alaskan residents when they were hired, which supports the local-hire assumption made in this report. However, 75 percent of those questioned identified themselves as Alaskans at the time of the survey. The remaining 25 percent considered that they were still residents of other states.

There are several reasons why assuming 25 percent of the direct employment will continue to reside outside Alaska may overestimate the size of this category of employees. The Valdez survey was conducted in September 1975, which was almost at the employment peak (October 1975, the highest month, exceeded it by less than 300 employees, according to Alyeska figures). The proportion of itinerant employees from out of the state may have been higher during employment peaks when the more stable resident work force was supplemented by temporary hiring of itinerant workers. Taken over the lifetime of the project, the non-Alaskan percentage may be lower. The survey was also conducted relatively early in the construction period; and as the project progressed, some employees

who obtained regular employment on the pipeline may have chosen to change their residence to Alaska. Finally, the circumstances of the gasline will be somewhat different from those of the Alyeska pipeline. Cities and communities in Alaska are able to offer more amenities now than in the past, and the cost of living differential between Alaska and the Lower 48 has narrowed; both of these factors may encourage migration to the state in preference to commuting from a home outside. In view of these considerations, 25 percent appears to be a high estimate of non-Alaskan employment on the pipeline. We assume instead that 10 percent of the direct employees will reside outside the state. In summary, the composition of gas pipeline construction employment over the life of the project is assumed to be as follows:

60 percent - Alaskan residents

30 percent - Migrants who settle in Alaska

10 percent - Itinerants who maintain residence in other states and commute to pipeline jobs

III.B. DEPENDENT POPULATION RATIO

One population of interest consists of direct pipeline construction employees and their families, composed of both resident Alaskan employees and their families and migrant employees and their families. An estimate of this population results from applying an estimate of the average number of dependents per employee to the direct employment figure. In this study, considerable attention was paid to estimating the typical family size of migrants to Alaska and determining whether it varied from

the family size of long-term residents. The relationship between family size and dependent ratio is complicated by the fact that a family may have more than one employed person. The average number of dependents per working Alaskan is 1.17. Unfortunately, data on migrants is generally in the form of family or household size. The national average estimate of family size in the 1970 Census is 3.58 for primary families and 1.25 for primary individuals. The weighted average family size was 3.14. The comparable figures for Alaska were 3.91, 1.5, and 3.52, respectively.

More recent evidence on the average family size in Alaska is available from the Survey of Income and Education (SIE),[9] conducted in 1976. This source has two important advantages with respect to the current study. It contains information both on family characteristics and length of residence, allowing the family size of migrants and longer-term residents to be distinguished, and it was conducted during the Alyeska construction period. The data tapes from the survey were used to analyze family characteristics. The analysis which was confined to the non-Native civilian population indicated that the average family size of migrants who had arrived in Alaska within a year of the survey was 1.8; of those with one-to-two years residence in Alaska, 2.1; and of longer-term residents, 2.7.

Two other sources of information on family size are surveys conducted in Fairbanks[10] and Valdez during Alyeska construction. These

surveys confirm the tendency of migrants to be younger and to have smaller families than longer-term residents. Unlike the SIE study, these studies were both established household surveys which under-represented unrelated individuals (see Information Sheet 3, Appendix A). Statistics from other areas, especially the energy boom towns of the midwest also suggest that migrants tend to have smaller families than the population as a whole.[11]

A source of information about the family size of families entering Alaska is a survey of people entering the state in 1975, conducted by Human Resources Planning Institute.[12] The survey consisted of a head count of people entering the state at selected gateways by air, road, and ferry on four occasions during the year. The total number of adult males counted was 461; there were 88 women and 62 children. Assuming all the women and children were in families with an adult male, the maximum average family size would be 1.33. This figure is considerably lower than the average family size obtained from the SIE data or other sources. However, it must be remembered that this survey was a measure of a gross flow of people into the state and does not account for the gross flow out of the state. Family size for net migration (gross flow in-gross flow out) will be larger than indicated by the gross flows because those without families would be more likely to both in-migrate and out-migrate.

Finally the MAP model provides a demographic breakdown of the migrant population (see Information Sheet 5, Appendix A). The demographic characteristics of the migrants are based on recent migration patterns among western states, and thus they are only approximately representative of migration into Alaska during a construction boom. In particular, 44 percent of the adult migrants projected by the MAP model are women, which is higher than other evidence would suggest.

The range of estimates of the typical family size for Alaskan migrants, based upon this data, lies somewhere between 1.33 and 3.0. An approximate average of the various sources of information, relying particularly on the SIE results, yields an estimate of approximately 2.0. Residents' family size is somewhat higher, about 2.5. These figures refer to migrant and resident population as a whole and not to families of pipeline employees from within these groups. The conditions of employment on the gas pipeline may attract a disproportionate number of young, unmarried people and, consequently, the average family size of migrants who are direct employees could be lower. An analysis of the results of the Fairbanks and Valdez studies suggests that an individual was more likely to have worked on the Trans-Alaska Pipeline System (TAPS) if he was married but did not have any children, two characteristics which have opposite effects on the average family size.[13] Therefore, it is indeterminate whether family size is likely to be higher or lower among pipeline employees than the rest of the migrant or resident population. It is fairly clear, however, that the family size of migrants will be less than the family size of residents.

III.C. CALCULATION OF MIGRANT AND RESIDENT DIRECT PIPELINE EMPLOYEES AND THEIR FAMILIES

The number of direct pipeline employees and their families who would be migrants to Alaska depends on two variables: first, the proportion of migrants hired to work on the pipeline and, second, the average family size of migrants. Table 9 demonstrates how sensitive the estimate of migrants for 1984 is to the values chosen for these two variables. Taking in-migrant hire to fall between 20 percent and 50 percent and average family size between 1.5 and 3.0, the total direct employee impact ranges between 3,071 and 15,509, a spread of 500 percent. The values that have been suggested in the preceding sections are 30 percent migrants among direct employees and average migrant family size of 2.0. Given these assumptions, the population impact of migrant employment directly on the pipeline in 1984 would be 6,204. In this case, the total number of resident employees plus their families would be 15,509. This assumes 60 percent Alaskan hire and 2.5 family size. Summing both migrant and resident population impacts results in a total of 21,713 in 1984. (These results are shown in Table 8.)

TABLE 9
MIGRANTS AND THEIR FAMILIES AMONG DIRECT
PIPELINE CONSTRUCTION EMPLOYEES
SENSITIVITY ANALYSIS

Percentage of Direct Pipeline Jobs Filled by Migrants	Average Family Size of Migrant Employees				
	1.5	1.75	2.0	2.5	3.0
50	7,754	9,047	10,339	12,924	15,509
40	6,230	7,237	8,271	10,339	12,407
30	4,653	5,428	6,204	7,754	9,305
20	3,071	3,583	4,095	5,118	6,142

Note: Direct pipeline construction employment in 1984 is 10,339.

IV. STATE EXPENDITURES

The costs of providing government services are determined by many factors, including the general price level, the cost structure for each service, and the time period within which service delivery must adapt to changes in demand. Because of the large number and variety of services provided by government, it is not possible to construct a model to adequately capture all these factors. Certain simplifying assumptions were made, therefore, at the outset of the analysis.

This analysis is concerned with determining the cost of the continuation of the same level and quality of services to existing residents and the extension of that level and quality to newcomers during pipeline construction activity years. The first simplifying assumption to make the analysis manageable was to use government expenditures on a service as a proxy for the quality and level of that service. It is often difficult to measure the value of a government service which is not provided through a market where price in exchange would indicate value. Thus, it would be an impossible task to obtain a consistent measure of the level and quality for the whole range of government services. Expenditures, therefore, are used as a proxy for the value of a service. There are limitations to the usefulness of the measure; the obvious one is that through increased productivity, it may be possible to maintain or increase the quality of service while reducing expenditures. In general, however, productivity increases in government lag behind the private sector.

The second assumption is that there will be constant costs associated with the provision of extra units of each service. In fact, some services may be provided at decreasing cost because excess capacity currently exists or because the service includes very large fixed costs and relatively small incremental costs to accommodate additional users. Facilities for the provision of other services may, however, be operating at capacity and increased demand would result in higher-than-average costs because of congestion or the need for investment in new facilities to increase capacity.

This idea can be illustrated by the demand for education. When there is some spare capacity in existing classrooms, extra children may be accommodated at less than the average cost for all children because incremental costs will be limited to books, materials, and teachers. Once existing classrooms are full, however, the extra children will require new schools, which will push the cost of accommodating the extra child above the average cost for all children since new schools cost more than old ones. Without additional expenditures for new schools, the level of service to all students, including previous residents, will decline because of overcrowding.

Different services will display different cost structures, depending on the amount of excess capacity in the facilities providing that service at a particular point in time and the importance of fixed costs as a portion of the total. In order to simplify the analysis, we assumed

that in all cases the marginal or incremental cost of providing the service to one additional user will be equal to the average cost of provision to existing users; that is, all services are provided at constant per capita costs, and those with excess capacity or economies of scale balance those which are subject to congestion or diseconomies of scale.

Third, government services are provided through a combination of variable inputs such as salaries and capital facilities such as buildings. Maintenance of a constant service quality is achieved when per-user operating expenditures and per-user capital stock remain constant. In theory, substitution is possible between variable and fixed factors of production in the production of a given output level. For example, rather than build new schools if the facilities become overcrowded, it may be possible to maintain the same quality of education by increasing the teaching staff. In this analysis, however, for simplicity it is assumed that there is no substitution between capital and operating expenditures.

Fourth, unlike operating expenditures which can be changed year-by-year in response to population change, once the capital stock has been increased, it is fixed for a number of years and must be paid off. Methods of reducing excess capital stock are limited and even when surplus capital can be disposed of, the adjustment takes time. There are many forms of public capital stock for which there is no market; and

if the demand for a facility falls, the state has no option but to carry the spare capacity. For example, if a school is built to provide for a school-age population which subsequently falls by 20 percent, the school will have 20 percent excess capacity. The state usually cannot divest itself of the portion of the facility no longer required. Thus, in making investment decisions during a boom period, the long-term costs of carrying spare capacity must be weighed against short-term congestion, service deterioration, and other costs which will be experienced if investments are not made. There is growing literature on the optimal investment strategy in such circumstances.[14] Because it is impossible, in the present case, to quantify what the result of this tradeoff for each service will be, we assume that the price of a capital stock addition divided by its years of useful life represents the cost associated with the least-cost method of maintaining service levels.

A difficulty with this assumption is that the public capital stock is heterogeneous and its components have useful lives which vary from a few years for certain vehicles and equipment to over fifty years for buildings. The state government maintains no records for determining average useful life of various items. Inquiries made with insurance companies and the Internal Revenue Service suggest that there is no "rule of thumb" depreciation rate or expected life of investments for such items. Each item will last as long as the wear and tear it receives allows. Therefore, there is no easy way of determining the cost of an investment on an annual basis. If a car costs $10,000 and lasts 5 years,

the annual cost would be $2,000; whereas, $10,000 spent on building improvements may have a lifetime of 25 years and an annual cost of $400.

The effects of pipeline construction activity on government expenditures will go beyond the maintenance of service levels. Some of these effects which will not be discussed in this analysis have been mentioned above, for example, the costs resulting from relocation of Alaska residents. An important consideration, which is beyond the scope of this report, is the impact of construction activity on the regional price level. In the past, construction booms have caused prices to rise faster than they otherwise would, reducing the real value of taxes collected by state and local governments and increasing costs. The increased demand for certain factors, for example construction labor, resulted in higher costs in the provision of all government services. These indirect impacts on government expenditures will not be quantified in this analysis.

Using these simplifying assumptions, the state operating and capital budgets were analyzed to determine what elements of each could be expected to grow with population (see Section II). For the operating budget, only the general fund is relevant for this analysis since we assume that nongeneral fund expenditures will be automatically matched by nongeneral fund revenues commensurate with the amount necessary to maintain service levels. For the capital budget, general obligation bonds were included as well as general fund capital expenditures.

This analysis was further refined to identify the particular users (service recipients) for each population-sensitive service within the general fund component of the total budget (described in Appendix B, Table B.2). For many services, the user population will be total population, as in the provision of recreation services and many health services. In others, it will be a particular sub-population--for example, school-age children for most education expenditures or working-age adults for many Department of Labor services. For this task, the 1979 population figures published by the Alaska Department of Labor were broken into age/sex cohorts using the 1980 demographic distribution generated by the MAP model. Having estimated the population-sensitive budget and an estimate of the size of the user group for each service, the cost per individual (service recipient) was calculated.

The MAP model provides an estimate of the demographic characteristics of the migrant population resulting from pipeline construction activity as an integral part of simulation analysis (see Information Sheet 5, Appendix A). The SIE data on the age-sex distribution of recent migrants is very similar to and supports the MAP distribution. However, the increase in school enrollments during Alyeska pipeline construction activity was smaller than the MAP age structure of migrants would suggest. This may be explained, in part, however, by the falling birth rate among Alaskan residents during the preceding decade. The MAP age distribution was used to determine the proportion of the total migrant population in each cohort. This information was converted to the probability

that an average or typical migrant would use each service. From this demographic information on migrants, an average cost of state government services per migrant could be calculated using the probability than an average migrant would be a user of each particular service. The sum of each per-user service cost weighted by the probability that the average migrant would consume that service yields the cost of state government services to the average migrant.

For those services for which the user group was assumed to be the whole population, the weighting factor is 1. At the other extreme, services which cater to old people have a weighting factor of zero because it is anticipated that no one in an age cohort over 65 years of age will migrate to Alaska because of pipeline construction activity. Government support activities had a weight of .7075, which is the portion of the budget which is population sensitive. This analysis appears in Appendix B as Tables B.2 and B.4.

IV.A. STATE OPERATING EXPENDITURES

The average migrant weighting factors were applied to the cost of service per user for each service to produce a cost per average migrant for each service. These individual BRU costs per migrant were summed to give a total per capita cost for each migrant for state operating services provided through the general fund. That per capita annual cost in 1980 dollars was calculated to be $1,956 per average migrant. If the average employed migrant was used as the weighting factor, the average cost fell to $1,235 because of the elimination of the need for expenditures on certain services such as education and unemployment services.

Several alternative measures of per capita service costs are shown in Table 10. They represent different "per capita definitions." Itinerant workers who live outside Alaska and commute to jobs, for example in the pipeline camps, would impose certain costs on state and local governments but would not demand the full range of services provided to residents and migrants. They would consume such items as public protection services at work or enroute to work. The state would also incur administrative costs associated with these employees, for example through the employment security program. No attempt was made to specify exactly which government programs itinerant workers would use. As an approximation, we assume that they require 50 percent of the operating and capital costs which employed migrants demand.

In Table 11, the total cost by year (in 1980 dollars) of maintaining constant real per capita operating expenditures at the FY 1981 level for three population impacts groups is given. The total cost in 1980 dollars for all direct and indirect migration (including that which results from increased government spending itself) is slightly greater than $200 million. If only costs associated with migrant direct employees are considered, the total falls to under $11 million.

TABLE 10
FY 1981 PER CAPITA STATE GOVERNMENT EXPENDITURES

(1980 dollars)

	Operations	Capital[a]
1. All Items - Average Resident		
A. Total budget	$3,713	$186
B. General fund budget	2,826	106
2. Population Sensitive - Average Migrant		
A. Total budget	2,764	106
B. General fund budget	1,956	73
3. Population Sensitive - Employed Migrant		
A. Total budget	1,626	102
B. General fund budget	1,235	69
4. Population Sensitive - Employed Itinerant		
A. Total budget	813	51
B. General fund budget	617	35

[a]Annual cost of maintaining the pre-pipeline per capita level of nonhighway capital stock, assuming an average twenty-year capital life. Per capita nonhighway capital stock in 1980 is estimated as $3,710 (1980 dollars).

TABLE 11
TOTAL STATE OPERATING EXPENDITURES ASSOCIATED WITH
PIPELINE CONSTRUCTION ACTIVITY

(thousands of 1980 dollars)

	IMPACT POPULATION		
	All Migrants Who Result from Direct and Indirect Employment Associated with the Pipeline	Migrant Pipeline Employees, Their Families, and Itinerant Pipeline Employees	Migrant and Itinerant Pipeline Employees
1980	618.096	267.865	93.860
1981	1,279.224	510.385	178.458
1982	7,176.564	2,544.821	890.435
1983	34,486.236	7,877.621	2,756.520
1984	68,982.252	12,773.519	4,469.465
1985	50,785.584	7,502.183	2,624.375
1986	37,386.984	576.803	201.161
Total	200,714.930	32,053.197	11,214.274

SOURCE: See Text.

IV.B STATE CAPITAL EXPENDITURES

A difficulty with estimation of the per user cost of maintaining a constant level of public capital facilities is the lack of solid information about the replacement cost of the public capital stock owned by the state. Table 12 presents information on the type and value of capital stock owned by the state. The list was assembled from a number of sources; it is not a comprehensive inventory of all state capital nor is it a consistent measure of value used for all categories. Some are acquisition cost based while others are replacement cost based. One purpose of the table is to obtain an indication of the relative importance of different types of capital (for example, buildings, vehicles) within the total capital stock in order to estimate useful life for the stock on average. (Roads are subject to separate negotiations with NWA, so they will be omitted from the discussion which follows.)

Information obtained from an insurance agent suggested that the average lifetime of buildings would be in excess of 30 years, and vehicles between 3 and 10 years. The useful life of equipment, vessels, and aircraft depended entirely on the use to which they were put and the care they received.[15] The average age of the present Alaska Marine Highway fleet is about ten years.[16] Based on this sketchy information, the average lifetime of the state capital stock is assumed to be 20 years.

Table 13 shows nonhighway capital expenditures for the period 1964-1979 plus an estimate of 1980 capital expenditures. Using an index of

TABLE 12
STATE GOVERNMENT CAPITAL STOCK

(millions of dollars)

Description	Costs	Notes
Total Capital Outlay[a] 1959-79	2,733.161	General, special revenue and capital projects funds
Roads[b]	1,600.000	Construction costs since 1959
Buildings[c]	389.042	1980 Insured replacement cost
Vessels[c]	180.500	1980 Insurance valuation
Aircraft[c]	2.204	1980 Insurance valuation
Vehicles[b]	78.046	1980 Replacement cost
Equipment[d]	557.305	Acquisition cost
University of Alaska[e]	170.936	1980 Value
Rural Education Attendance Area Property[d]	245.398	1980 Replacement cost

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[a] Executive Budget 1981, Exhibit II page 8.

[b] Department of Transportation and Public Facilities.

[c] Department of Administration, Division of Risk Management.

[d] Department of Administration, General Services and Supply.

[e] 1978 Financial Statement. Statement 1978, page 152 (excluding land).

TABLE 13
NONHIGHWAY CAPITAL EXPENDITURES AND CAPITAL STOCK
1964-1980

(thousands of dollars)

	Expenditures		Capital Stock
Year	Original Cost[a]	Cost in 1979 Dollars[b]	Values in 1979 Dollars[c]
1964	16,280	49,503.6	49,503.6
1965	11,556	33,940.1	80,968.5
1966	12,684	36,331.2	113,127.5
1967	19,866	54,131.6	161,270.4
1968	28,861	75,105.7	227,680.8
1969	35,330	84,776.8	300,007.0
1970	36,659	82,152.4	365,469.9
1971	46,465	97,004.4	441,677.2
1972	78,666	154,795.9	570,825.8
1973	89,395	160,824.8	698,192.9
1974	83,573	132,274.7	789,109.9
1975	85,712	123,810.3	864,878.2
1976	137,607	191,045.0	1,001,690.3
1977	127,024	161,890.5	1,099,796.2
1978	102,382	116,310.1	1,144,227.0
1979	151,101	151,101.0	1,217,633.1
1980	129,529[d]	129,529	1,347,162.1

[a]State of Alaska, Annual Financial Report.

[b]Adjusted to 1979 dollar value, using the Department of Commerce Composite Construction Index.

[c]Depreciated over 20 years.

[d]1980 capital expenditures were not available; this estimate is an average of the four preceding years.

construction costs and assuming twenty-year straight line depreciation, the 1979 value of the capital stock was calculated and adjusted to 1980 using the Alaska relative price index from the MAP model. That yielded an estimate of $1,507.669 million as the 1980 value of the state capital stock excluding highways (and land). This estimate is a slight underestimation because the value of pre-1964 investment has not been counted. Note that this is an estimate of the actual rather than replacement value since it has been depreciated. This is consistent with the notion of constant expenditure levels.

The determination of the proportion of the capital stock that is financed through the state general fund and is population sensitive was hampered by lack of detail on the composition of the capital stock and the uses to which it is put. As a substitute for analysis of the whole stock of capital, the two most recent capital budgets, those for 1979 and 1981, were analyzed. The 1981 budget analysis is presented in Appendix B, Table B.3. (Highway capital expenditures are omitted from the main body of the Table B.3 but are included at the end for completeness.) Excluding highways (and the Native Land Claims Fund which is a large one-time expense), 39 percent of all capital expenditures were estimated to be both population sensitive and either funded by general obligation (GO) bonds or directly from the general fund. The analysis of the 1979 capital budget (not reproduced here) produced a similar result. On the basis of these two budgets, it is assumed that 39 percent of the state capital stock is population sensitive and funded out of the general fund.

Given the assumptions discussed above--that 1980 nonhighway capital stock is worth 1.508 billion; that the average life of capital is 20 years; and that 39 percent of the capital stock is population sensitive and locally financed--it is possible to develop a measure of the annualized capital cost associated with each migrant and itinerant. The annualized cost of maintaining the per-user level of population-sensitive capital stock is simply one-twentieth of the total population-sensitive capital stock. Consequently, if a population boom were to last two years, the capital costs attributable to the boom population would be two-twentieths of the population-sensitive capital stock. On the basis of these assumptions, the cost per year per average migrant of expanding the nonhighway capital stock is $73, and the annual cost per working migrant is $69. These figures appear low because, historically, a large portion of the capital stock was funded by the federal government and has consisted of highway construction. It should be recognized that expenditures to maintain per capita capital stocks during pipeline construction activity are likely to lead to excess capacity for a number of years following completion of the pipeline. In determining the annual cost per migrant, the costs of these years of excess capacity have not been included.

Table 14 presents the annual cost of maintaining the capital stocks for three definitions of population impact using the per capita figures derived above. For the most comprehensive definition of impact population, the cost is a modest $7.5 million over the seven year period from 1980 to 1986.

TABLE 14
TOTAL STATE NONHIGHWAY CAPITAL EXPENDITURES
ASSOCIATED WITH PIPELINE CONSTRUCTION ACTIVITY

(thousands of 1980 dollars)

	IMPACT POPULATION		
	All Migrants Who Result from Direct and Indirect Employment Associated with the Pipeline	Migrant Pipeline Employees, Their Families, and Itinerant Pipeline Employees	Migrant and Itinerant Pipeline Employees
1980	23.068	10.249	5.244
1981	47.742	19.519	9.971
1982	276.837	97.335	49.749
1983	1,287.063	301.309	154.008
1984	2,574.491	488.565	249.711
1985	1,895.372	286.650	146.625
1986	1,395.322	22.062	11.282
Total	7,499.895	1,225.689	626.590

SOURCE: See Text.

The costs presented in Table 14 are not intended to represent the actual expenditures the state might incur to maintain the per capita capital stock. The decision on whether or not to invest for a boom population is based upon a tradeoff between the costs of short-term congestion and longer-term excess capacity. There has been no attempt here to quantify the costs either of congestion or excess capacity. The calculated costs represent the amount of investment that would be required to avoid congestion. It could be that residents may decide that overuse of existing facilities could be tolerated for a few years and no investment made for the impact population. On the other hand, the slightest degree of congestion may be unacceptable to residents and the capital stock consequently expanded to accommodate the impact population. The actual outcome would probably lie between these extremes cases. These calculations of costs to the state assume that the annualized cost of the additional investment is less expensive than the cost of congestion suffered by service users (the decline in service levels).

V. LOCAL EXPENDITURES

V.A. THE LOCATION OF NEW RESIDENTS

The analysis of state expenditures did not include explicit assumptions about where the new residents associated with the gas pipeline would live beyond the assumption of an urban location. Thus, expenses related solely to rural areas (for example, the Village Public Safety Officer Program) were not included in the population-sensitive category. Apart from excluding such programs, the simplifying assumption was made that state operating and capital expenses would not be affected by the location of residence of migrants.

In assessing local government costs attributable to pipeline construction activity, however, the location of population impact is important. Again the experience of the Alyeska construction period is the best source of information on migrant location patterns which might occur during pipeline construction activity. Table 15 shows the regional allocation of civilian population change from 1973-1976 within Alaska; 1973 was the year immediately prior to the start of construction of the oil pipeline, and 1976 was the year of peak population impact. As can be seen from the table, 45 percent of the population growth was centered in Anchorage. The next largest increases were in Valdez and on the North Slope with 11 percent and 8 percent of the total state population increase, respectively. The significance of population change in Fairbanks may be somewhat understated because by 1976 the population of

TABLE 15
LOCATION OF CIVILIAN POPULATION INCREASE, 1973-76
(EXCLUDING ACTIVE DUTY MILITARY AND DEPENDENTS)

Census Division	Population Change (1973-76)	Average Annual Growth Rate (1973-76)	Percentage of Total State Population Change
State	88,555	10.8	100
Railbelt Census Divisions			
Anchorage	39,660	11.0	45
Matanuska-Susitna Borough	5,424	21.1	6
Kenai Peninsula Borough	2,945	7.2	3
Seward	949	13.1	1
Fairbanks	7,827	7.9	9
Southeast Fairbanks	2,739	37.5	3
Valdez-Chitina-Whittier	9,432	88.1	11
Barrow-North Slope	7,007	98.6	8
Juneau	2,020	4.2	2
Rest of the State	10,552	5.0	12

SOURCES: For total resident population: Alaska Department of Labor, Alaska Population Overview, Appendix F, page 51, 1979; For active duty military: Alaska Department of Labor, Alaska Population Overview, Appendix E, page 50, 1979. Total active duty military and dependents estimated using a ratio of 1.15 dependents to active duty personnel, based on 1970 Census of Population data.

Fairbanks had already begun to decline. The year earlier, Fairbanks was the home of 13.4 percent of the statewide post-1973 population increase. In addition, there was considerable movement of population through Fairbanks which is not counted in the resident population figures. Costs associated with this transient population are not included in this calculation of local expenditures.

The distribution of changes in the civilian population from 1973 to 1976 was calculated from Alaska Department of Labor figures for total resident population.[17] Active duty military personnel and their dependents who were estimated using the ratio of 1.15 dependents per head of household for military personnel (derived from the 1970 Census of Population) were deducted from the total population. The importance of measuring changes in civilian population is that reductions in the military population in an area may mask the full population effect of the pipeline. During the Alyeska period, military manpower was declining throughout the state. In Anchorage, for example, in the three years from 1973 to 1976 active duty personnel was reduced by 1,824 (3,922 including dependents at the ratio of 1.15). In Fairbanks during the same period, military personnel fell 878 (1,888 with dependents). A reduction in the off-base military population may have mitigated some of the effects of civilian population growth associated with the Alyeska pipeline, but it cannot be assumed that the gas pipeline construction will also coincide with military manpower reductions.

It was assumed that the Railbelt area of the state would be the likely location of most migrants and that Juneau would receive much of the state government-induced migration. During Alyeska construction activity, considerable population impact was felt outside these areas in Valdez and the North Slope Borough. However, the gasline project does not include a large terminal facility like the Valdez marine terminal for the oil pipeline, so a similar concentration of construction employees and their families at Valdez is not likely. The population impact in the North Slope Borough consisted mostly of construction and oil field workers living in camps. Although this population growth may be repeated to some extent during the gas pipeline construction period, it is not likely to be the permanent home of migrants or to impose appreciable costs on the borough. Therefore, analysis of local government costs will be limited to costs borne by taxpayers in Anchorage, Fairbanks, the Kenai Peninsula Borough, the Matanuska-Susitna Borough, and Juneau.

Two simplifying assumptions are utilized in this analysis. First, it is assumed that all migrants who do not live in the Railbelt or in Juneau will live outside the presently organized boroughs. No allowance has been made for the differential cost effect on local expenditures associated with those migrants who may choose to live in other boroughs, for example, Kodiak, rural areas, or in small communities outside of boroughs. The services required by these migrants who would choose to live outside the presently organized boroughs would be provided by the

state because there is no tax base in areas which are not included in organized boroughs. The cost of these services is implicitly included in the analysis of state expenditures. Second, it is assumed that local government service requirements are generated where people live rather than where they work or play.

On the basis of the observed distribution of population growth during the Alyeska construction years, the settlement pattern of migrants associated with pipeline construction activity was estimated. A distribution identical to that associated with the oil pipeline activity was not used. Rather allowance was made for the differences between the two projects, for example, the absence of an Alaskan terminal facility on the gas pipeline. The distribution of the location of residence of migrant direct pipeline employees and their families will differ from that of the migrant indirect impact population. The largest proportion of the migrant direct employees will live in Fairbanks while indirect employment opportunities and, therefore, migrants will be more concentrated in Anchorage. The population impact of government spending will be concentrated in Juneau.

The different settlement patterns assumed for the two groups are shown in Table 16. The distribution of total migrants approximates the pattern of population growth during the Alyeska period. No records of place of residence for Alyeska construction employees are available, but the Fairbanks Community Survey found that 17 percent of adult Fairbanks residents (approximately 4,800 persons) were working for a pipeline

company. This is equal to 30 percent of total pipeline employment recorded by Alyeska during the period of the survey (excluding the Valdez terminal construction work force). We arbitrarily assume that this percentage of migrant pipeline employees will become Fairbanks residents. Twenty-five percent of non-Alaskan resident direct employees will not migrate to Alaska but will remain residents outside the state and commute to work as itinerants (10 percent of the total direct work force which is equal to 25 percent of non-Alaskans assuming 60 percent local hire). The remaining 45 percent of the non-Alaskan direct employees have been allocated among the communities in Table 16 in proportion to their 1976 populations.

TABLE 16
THE LOCATION OF RESIDENCE OF MIGRANTS AND ITINERANTS ASSOCIATED WITH GAS PIPELINE CONSTRUCTION ACTIVITY

(percent)

Area	Migrant and Itinerant Pipeline Employees	All Migrants Who Result from Direct and Indirect Employment Associated with the Pipeline
Anchorage	27	50
Fairbanks	30	15
Matanuska-Susitna	2	5
Kenai Peninsula	3	5
Juneau	3	5
Rest of the State	10	20
Outside Alaska	25	--
	100	100

V.B. LOCAL OPERATING EXPENDITURES

A simplified version of the analysis performed on the state operating budget was used to analyze operating expenditures for each of the boroughs identified as a potential area of population impact. We assume that all local operating expenditures, except debt service payments but including contributions to school funds, were population sensitive. Local tax revenue (primarily the local property tax and sales tax) was used as a proxy for locally financed expenditures.

Two measures of the per-migrant cost of financing operating expenditures were calculated. The first includes all population-sensitive services and is applicable to impact populations that include families of employees. The second measure excludes education spending and is the relevant cost measure for employed migrants. Alaska Department of Labor population estimates and the demographic characteristics output of the MAP model were used to calculate per capita expenditures. These calculations are presented in Appendix C. The final per-migrant cost figures are shown in Table 17.

Weighting each per-migrant cost figure by the proportion of migrants who will locate in each community produces a weighted average cost figure for different migrant types and impact populations. Table 17 shows the calculations. The annual local operating expenditure per migrant directly employed on the pipeline is estimated to be $227.68 per year (1980 dollars). The equivalent cost for migrant direct employees

TABLE 17
LOCAL GOVERNMENT PER MIGRANT OPERATING COST

A. All Migrants Who Result from Direct and Indirect Employment Associated with the Pipeline

Borough/ Municipality	1979 Per Capita Cost[a]	1980 Dollar Cost[b]	Weight[c]	Weighted Cost
Anchorage	407.51	453.78	.50	226.89
Fairbanks	394.82	439.65	.15	65.95
Matanuska-Susitna	278.47	310.09	.05	15.50
Kenai Peninsula	429.25	477.99	.05	23.90
Juneau	385.51	429.28	.05	21.46
	LOCATION WEIGHTED PER MIGRANT COST			$353.70

B. Migrant Pipeline Employees, Their Families, and Itinerant Pipeline Employees[d]

Borough/ Municipality	1979 Per Capita Cost[a]	1980 Dollar Cost[b]	Weight[c]	Weighted Cost
Anchorage	407.51	453.78	.27	122.52
Fairbanks	394.82	439.65	.30	131.90
Matanuska-Susitna	278.47	310.09	.02	6.20
Kenai Peninsula	429.25	477.99	.03	14.34
Juneau	385.51	429.28	.03	12.88
	LOCATION WEIGHTED PER MIGRANT COST			$287.84

C. Migrant and Itinerant Pipeline Employees[d]

Borough/ Municipality	1979 Per Capita Cost[a]	1980 Dollar Cost[b]	Weight[c]	Weighted Cost
Anchorage	359.99	400.87	.27	108.23
Fairbanks	283.66	315.87	.30	94.76
Matanuska-Susitna	82.78	92.19	.02	1.84
Kenai Peninsula	377.20	420.08	.03	12.60
Juneau	306.71	341.58	.03	10.25
	LOCATION WEIGHTED PER MIGRANT COST			$227.68

[a] Per capita costs are calculated in Appendix C.

[b] Converted to 1980 dollars using the Relative Price Index from the MAP model.

[c] Weights reflect the residential distribution of migrants in Table 16.

[d] Itinerant employees are assumed not to impact on local services.

and their families is $287.84. The annual per-migrant cost of all migrants is $353.70. The aggregate annual costs for the three population impact groups are presented in Table 18. Total local operating expenditures over the seven year period of pipeline construction activity vary between over $36 million for the most broadly defined impact population and approximately $2 million for costs generated by direct migrant and itinerant direct employees only.

V.C. LOCAL CAPITAL EXPENDITURES

Expenditures required for maintenance of constant per capita local government capital stocks in the five boroughs were estimated using the same method that was applied to state-owned capital. Most local governments publish an unaudited statement of fixed assets in their annual financial report. Where this was available, it was used as an estimate of the current value of the capital stock. Where a statement of fixed assets was not available, for example, the Borough and City of Juneau, the capital stock was estimated as the average of the per capita stocks in other boroughs.

A complete analysis of the capital stock of each local government to determine which portion could be identified with particular user groups was not possible. However, the education component was identified. Table 19 presents estimates of the 1980 dollar value of the total capital stock and the non-education capital stock for the five boroughs and their constituent cities. A breakdown of the capital stock by

TABLE 18
TOTAL LOCAL GOVERNMENT OPERATING EXPENDITURES
ASSOCIATED WITH PIPELINE CONSTRUCTION ACTIVITY

(thousands of 1980 dollars)

	All Migrants Who Result from Direct and Indirect Employment Associated with the Pipeline	Migrant Pipeline Employees, Their Families, and Itinerant Pipeline Employees	Migrant and Itinerant Pipeline Employees
1980	111.864	37.440	14.820
1981	231.561	71.424	28.272
1982	1,298.826	355.968	140.904
1983	6,241.374	1,101.888	436.164
1984	12,484.518	1,786.752	707.256
1985	9,191.256	1,049.472	415.416
1986	6,766.356	80.640	31.920
Total	36,325.755	4,483.584	1,774.752

SOURCE: See Text.

TABLE 19
LOCAL GOVERNMENT CAPITAL STOCK
(thousands of 1980 dollars)

Area	Total Including Education		Total Excluding Education	
	Total	Percentage Funded by GO Bonds & Local General Fund	Total	Percentage Funded by GO Bonds & Local General Fund
Anchorage	396,863.8	73	211,624.88	59
Fairbanks				
Borough	94,823.944	72	21,415.921	72
Cities	15,675.000[a]	84	15,675.000[a]	84
Total	110,498.944	74	37,090.921	77
Juneau	57,500,726[b]	74	21,971.836[b]	58
Matanuska-Susitna				
Borough	53,734.988	86	8,228.256	86
Palmer	8,867.570	14	8,867.570	14
Total	62,602.558	76	17,095.826	49
Kenai Peninsula				
Borough	80,473.028	88	10,064.992	88
Cities	40,384.175	35	40,384.175	35
Total	120,857.200	71	50,449.167	46

[a]Includes estimate of $11 million capital assets for City of Fairbanks, based on a limited assessment.

[b]Estimated as average per capita value of the other four areas.

function was only provided in a few financial reports (e.g., Anchorage). In those instances, the composition of assets suggested that it was almost totally used to provide services which would expand with population. Therefore, we assumed that 100 percent of the local capital stock was population sensitive (in contrast to 39 percent for the state government capital stock). The portion of the capital stock funded by GO bonds and from local government general funds was also derived from annual financial statements where possible. In other cases, it was estimated by local officials (e.g., City of Fairbanks) or taken as an average of known percentages of the other boroughs (e.g., Juneau). The estimated percentage of capital assets funded from these sources is given in Table 19.

The method of calculating the annual per-migrant cost of maintaining the per capita capital stock follows the previous analysis and is shown in detail in Table 20. The capital stock funded by GO bonds and from local general funds (column 3) is divided first by the population and then by twenty years to find the annualized per capita cost of maintaining the capital stock. The weighting system based on the projected residential distribution of migrants was again used to find the cost per average migrant. The combination of two sets of per capita costs (with and without education) and the two weighting schemes (all migrants and migrants directly employed) produced three average per migrant costs. The average annual local capital cost of all migrants was estimated to be $72.28; that of migrants and itinerant workers

TABLE 20
LOCAL GOVERNMENT PER CAPITA COST ANALYSIS: CAPITAL EXPENDITURES

A. All Migrants Who Result from Direct and Indirect Employment Associated with the Pipeline

Borough/ Municipality	Capital Stock Including Educa. (1000s of dollars)	Percentage Funded by GO Bonds & General Fund	Value of Stock Funded by GO Bonds & General Fund (1000s of dollars)	Population[1]	Annual per Capita Cost of Maintaining Stock[2] (1000s of dollars)	Weight[3]	Weighted Cost
Anchorage	396,863.8	73	289,692.32	177981	81.38	.50	40.69
Fairbanks	110,498.944	74	81,769.215	54000	75.71	.15	11.36
Juneau	57,500.726	74	42,550.537	18317	116.15	.05	5.81
Kenai Peninsula	120,857.2	71	85,808.612	26396	162.54	.05	8.13
Matanuska-Susitna	62,602.558	76	47,577.944	18910	125.80	.05	6.29
					WEIGHTED TOTAL PER MIGRANT COST		72.28

B. Migrant Pipeline Employees, Their Families, and Itinerant Pipeline Employees

Borough/ Municipality	Capital Stock Including Educa. (1000s of dollars)	Percentage Funded by GO Bonds & General Fund	Value of Stock Funded by GO Bonds & General Fund (1000s of dollars)	Population[1]	Annual per Capita Cost of Maintaining Stock[2] (1000s of dollars)	Weight[3]	Weighted Cost
Anchorage	396,863.8	73	289,692.32	177981	81.38	.27	21.97
Fairbanks	110,498.944	74	81,769.215	54000	75.71	.30	22.71
Juneau	57,500.726	74	42,550.537	18317	116.15	.03	3.48
Kenai Peninsula	120,857.2	71	85,808.612	26396	162.54	.03	4.88
Matanuska-Susitna	62,602.558	76	47,577.944	18910	125.80	.02	2.52
					WEIGHTED TOTAL PER MIGRANT COST		55.56

C. Migrant and Itinerant Pipeline Employees

Borough/ Municipality	Capital Stock Excluding Educa. (1000s of dollars)	Percentage Funded by GO Bonds & General Fund	Value of Stock Funded by GO Bonds & General Fund (1000s of dollars)	Adult Population[4]	Annual per Capita Cost of Maintaining Stock[2] (1000s of dollars)	Weight[3]	Weighted Cost
Anchorage	211,624.88	59	124,858.67	126438	49.38	.27	13.33
Fairbanks	37,090.921	77	28,560.009	38362	37.22	.30	11.17
Juneau	21,971.836	58	12,743.664	13012	48.93	.03	1.47
Kenai Peninsula	50,449.167	46	23,206.616	18752	61.88	.03	1.86
Matanuska-Susitna	17,059.826	49	8,359.315	13434	31.11	.02	0.62
					WEIGHTED TOTAL PER MIGRANT COST		28.45

[1] Alaska Department of Labor 1979 provisional figures.

[2] Assuming 20-year life, calculated as Capital Stock ÷ Population ÷ 20

[3] Weights reflect residential distribution of migrants in Table 16.

[4] Adult population estimated using demographic profile output of MAP model.

directly employed on pipeline construction activity and their families was $55.56; and migrant and itinerant workers directly employed was $28.45.

The per migrant costs are converted into total annual expenditures in Table 21. Over the seven-year period of pipeline construction activity, total migration would impose almost $7.5 million in costs on local government for capital stock. Migrant direct employees and their families and itinerant direct workers would impose costs slightly less than $1 million, and migrant direct employees and itinerant employees would impose costs of about $.2 million.

TABLE 21
TOTAL LOCAL GOVERNMENT CAPITAL EXPENDITURES ASSOCIATED WITH THE PIPELINE CONSTRUCTION ACTIVITY
(thousands of 1980 dollars)

	All Migrants Who Result from Direct and Indirect Employment Associated with the Pipeline	Migrant Pipeline Employees, Their Families, and Itinerant Pipeline Employees	Migrant and Itinerant Pipeline Employees
1980	22.752	7.280	1.820
1981	47.088	13.888	3.472
1982	264.168	69.216	17.304
1983	1,269.432	214.256	53.564
1984	2,539.224	347.424	86.856
1985	1,869.408	204.064	51.016
1986	1,376.208	15.680	3.920
Total	7,388.28	871.808	217.952

SOURCE: See Text.

NOTES

1. Northwest Alaskan Pipeline Company, Application for a Final Certificate of Public Convenience and Necessity, 1980.

2. Personal communication with Benney, Murphy, Symonds, and Stowell.

3. Personal communication with Rod Brown, Alaska Department of Labor.

4. Alaska State Legislature, Summary of Appropriations, Free Conference Committee Report, Fiscal Year 1981, Operating and Capital Budget, 1980.

5. Alaska State Governor's Office, Executive Budget, Book 1, Operating Budget, Fiscal Year 1981.

6. Personal communication with Glen Lundell, Alaska Department of Labor, 18 September 1980.

7. Personal communication with Bob Smathers, Alaska Department of Labor, 18 September 1980.

8. M. Baring-Gould, Valdez Social Impact Study, Department of Sociology, University of Alaska, Anchorage, 1975.

9. Bureau of Census, Survey of Income and Education, data tapes, 1976.

10. J. Kruse, Fairbanks Community Survey, Institute of Social and Eco-omic Research, Fairbanks, 1976.

11. For example, Leholm et al, Profile of North Dakota's Electric Power Plant Construction Workforce, N. Dakota State University, Fargo, 1976.

12. Human Resources Planning Institute, Alaska Pipeline Labor Impact Study. A report of the Findings of a Series of Four Quarterly Surveys of In-Migration to Alaska, 1976.

13. J. Kruse, D. Hitchins, and M. Baring-Gould, Developing Predictive Indicators of Community and Population Change. Alaska OCS Socio-economic Studies Program, Technical Report 26, 1979.

14. For example, Ronald Cummings and Arthur Mehr, "Investments for Urban Infrastructure in Boomtowns" in Natural Resources Journal, Vol. 17.2, pp. 223-40, 1977.

15. Personal communication with Marsh and MeLennan, Inc., Anchorage, 30 October 1980.

16. Personal communication with Bill Shaeffer, Alaska Marine Highway, 31 October 1980.

17. Alaska Department of Labor, Alaska Population Overview, December 1979. Appendix E and Appendix F.

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Shaeffer, Bill. Alaska Marine Highway. Personal Communication, 31 October 1980.

Smathers, Bob. Alaska Department of Labor. Personal Communication, 18 September 1980.

U.S. Bureau of Census. Survey of Income and Education. Data tapes. 1976.

U.S. Federal Power Commission. Presiding Administrative Law Judge's Initial Decision Issuing License for the Bath County Pumped Storage Project, with Conditions. 20 September 1976.

APPENDIX A

INFORMATION SHEETS

Five information sheets containing data developed in the early stages of the research were sent to SPCO and to state agencies involved in the budget process. The purpose of the information sheets was to allow state officials to begin preparing their budgets without waiting for this study to be completed, while at the same time ensuring some degree of consistency between the two exercises.

Inevitably, when information is circulated in advance of the final report, it is likely to be revised before the research is finished. INFORMATION SHEET 4: EMPLOYMENT AND POPULATION IMPACTS includes estimates of the effect which state government expenditure increases would have on population. The estimates are based on an estimate of the proportion of the state operating budget which is sensitive to population change. As analysis of the state operating budget was refined, the percentage of the budget defined as population sensitive changed (from 63 percent to 56.5 percent and finally to 77 percent). These changes were the result of a detailed examination of individual budget items and more precise allocation between expenditure categories. The final analysis is presented in Table B.1, Appendix B. Changes in the proportion of the population-sensitive budget altered the estimated population and employment impacts in Information Sheet 4 and, consequently, the size of the migrant cohorts in Information Sheet 5. The original and revised information sheets are included in this Appendix for completeness.

LIST OF INFORMATION SHEETS

GAS PIPELINE IMPACT ON STATE EXPENDITURES

September 15, 1980
INFORMATION SHEET 1: LOCATION OF DIRECT PIPELINE EMPLOYMENT BY QUARTERS

Sources of information:

1) Attachments to A. Kuhn's letter to Charles Behlke, August 6, 1980.

2) Personal communication with Mr. Travis Smith, Northwest Alaskan Pipeline Company, September 12, 1980.

The data in attachments to A. Kuhn's letter provide a locational breakdown of project management, Northwest and government staff. It does not, however, allocate craft labor or contractor staff between Fairbanks and construction camps. The following assumptions were developed to allocate contractor employees, based on information obtained from Travis Smith, NWA:

A) Craft Labor
   1) Temporary facilities--all located in camps.
   2) Pipeline--227 located in Fairbanks (4th Q 1982 - 3rd Q 1985, employed at pipeyard); 1/12 of remaining labor in Fairbanks (1/2 spread 4 workforce); all remaining labor in camps.
   3) Compressor stations--all labor in camps.
   4) Communications and supervisory systems--operations and maintenance, 1/2 craft labor in Fairbanks, 1/2 in camps.

B) Staff
   1) Temporary facilities--small offices maintained in Fairbanks, 10 percent of total staff. Remaining staff in camps.

2) Pipeline--one large office of 40 (for spread 4) plus five small offices amounting to 10 percent of remaining staff in Fairbanks. Remainder in camps.

3) Compressor stations--small offices for each contractor amounting to 10 percent of total staff in Fairbanks; 90 percent in camps.

Based on information in the attachments to A. Kuhn's letter and these assumptions, the following table gives the distribution of direct employment by quarters.

LOCATION OF EMPLOYMENT

Man/Quarters

	FAIRBANKS		CAMPS		TOTAL
	Staff	Craft Labor	Staff	Craft Labor	
1980 1st Q	46		80		126
2nd Q	72		155	11	238
3rd Q	86		217	24	327
4th Q	73		91	13	177
1981 1st Q	204		108	13	325
2nd Q	218		179	33	430
3rd Q	221	5	175	48	449
4th Q	220	33	113	78	444
1982 1st Q	472	33	300	176	981
2nd Q	584	20	521	1,135	2,260
3rd Q	633	187	596	1,104	2,520
4th Q	745	288	645	798	2,476
1983 1st Q	1,006	409	1,073	1,911	4,399
2nd Q	1,119	535	1,518	3,768	6,940
3rd Q	1,208	608	1,700	4,728	8,244
4th Q	1,195	467	1,488	2,777	5,927
1984 1st Q	1,301	692	1,702	5,197	8,892
2nd Q	1,329	970	2,165	8,707	13,171
3rd Q	1,324	859	2,174	7,915	12,273
4th Q	1,280	491	1,793	3,453	7,017
1985 1st Q	1,200	622	1,704	4,933	8,459
2nd Q	1,152	655	1,705	5,632	9,144
3rd Q	1,066	397	1,254	2,202	4,919
4th Q	820	21	603	325	1,769
1986 1st Q	222		65	110	397
2nd Q	170		130	470	770
3rd Q	100		67	386	553
4th Q	52		41	56	149

GAS PIPELINE IMPACT ON STATE EXPENDITURES

September 15, 1980
INFORMATION SHEET 2: WORK WEEK AND WAGES AND SALARIES FOR CONSTRUCTION EMPLOYEES

Sources of information:

1) Draft Project Affirmative Action Plan. Northwest Alaskan Pipeline Company. August 1980.

2) Personal communication, Mr. Travis Smith, NWA.

3) Personal communication, Executive Recruitment Agencies, Anchorage.

4) Three simulations of the Alaska Economy 1980-1986, David Reaume. July 1980. Internal document for NWA.

Work Week

The proposed work week is as follows:

Office staff in Fairbanks	- 60 hours/week during construction
Staff in camps	- 70 hours/week
Craft labor in camps	- 70 hours/week

Office staff will receive standard company vacation of 2-to-3 weeks, depending on length of service, to be taken during the winter.

Staff and craft labor in the camps will work a rotation system. The exact arrangements have not been determined, but it is expected to be 8-9 weeks work and 1-2 weeks field break. Transport will be provided to Fairbanks; all other travel expenses will be the responsibility of the employee.

Man/quarters figures in Information Sheet 1 take into account the extra manpower required to allow for field breaks.

Wages and Salaries

A. Staff

There is no information in NWA published documents (as of September 13, 1980) about staff salaries in Alaska. The information has been requested by the State Pipeline Coordinators Office; but in the meantime, the best guide we have is current salaries being offered in the state. The following income ranges are based on typical salaries offered through executive recruitment agencies in Anchorage:

Managers	$60,000 to 75,000 annually
Engineers	$30,000 to 45,000 annually
Technicians	$18,000 to 28,000 annually
*Secretarial and Bookkeeping	$24,000 to 28,000 annually
*Clerical	$16,000 to 22,000 annually

(*Basic salary of approximately $16,00-18,500 p.a. (secretarial) and $10,500-14,500 (clerical). Assuming full year employment with 20 hours overtime per week for 8 months of the year and overtime rate of time and one-half.)

The average income for all staff employees may be obtained by taking the mid-point of the ranges and using the ratios of 25 percent management, 45 percent technical, and 30 percent clerical. This is the breakdown of staff to be employed by Execution Contractors, which is the only indication of the component categories of staff employment we have at present.

	Weighting	Average Salary	
Managers	.25	$67,500 annually	$16,875
Technical	.45	$31,500 annually	$14,175
Clerical	.3	$22,000 annually	$ 6,600

Average salary = $37,650 annually

This average salary is somewhat higher than the average used by David Reaume of $30,000 p.a. It should be used only to give a general indication of income. An alternative interpretation of the income figures is that the average quarterly income during the construction period is $9,712.5; but during the winter, it falls to $8,887.5 because the non-exempt clerical staff does not earn overtime pay.

B. Craft Labor

The pay schedules for craft labor are as follows:

Building trade rates - for temporary facilities and compressor stations

40 hours		Straight time
Over 40 hours		Time-and-one-half
Sunday		Double time
	=	90 hours equivalent pay

Pipeline Contractors Association rates - for pipeline and civil work

40 hours		Straight time
Over 40 hours		Time-and-one-half
	=	85 hours equivalent pay
All crafts		Double time on holidays

Using these schedules to convert NWA estimates of the total craft labor bill, the average hourly base rate for craft workers is approximately $20. The basic hourly rates used by David Reaume range from $15.14 to $22.72, which is consistent with an overall average of $20 per hour.

GAS PIPELINE IMPACT ON STATE EXPENDITURES

September 15, 1980
INFORMATION SHEET 3: COMPARISON OF CHARACTERISTICS OF NEWCOMERS WITH LONGER-TERM RESIDENTS DURING T.A.P.S. CONSTRUCTION

Three sources of information have been used to obtain an indication of how migrants during a construction boom differ from the resident population. The characteristics of migrants determine their demand for state services and, hence, their effect on expenditures. The sources of information are:

1) Spring 1976 Survey of Income and Education. This was a nation-wide survey undertaken in May, June, July 1976. In Alaska, over 7,000 individuals were covered by the interviews. In this analysis, however, we have confined attention to heads of households and individuals not in families, which gives a sample size of 2,370. The information is taken from the unpublished data tape.

2) Fairbanks Community Survey, Spring 1976, by Jack Kruse of the Institute of Social and Economic Research. Four hundred fifteen households were surveyed in April, May, June 1976. The information is taken from published reports of the survey results, principally Alaska OCS Socioeconomic Studies Program, Technical Report 26, Developing Predictive Indicators of Community and Population Change, April 1979.

3) Valdez Social Impact Study by M. Baring-Gould, Department of Sociology, University of Alaska, Anchorage. Household interviews were conducted in April 1974 and September 1975. The second survey included follow-up interviews with 101 of the original respondents and initial interviews with 123 households who had arrived in Valdez since December 1973, giving a total possible sample for these purposes of 224. The information presented here is published in the Predictive Indicator Study.

The results of the three studies are not directly comparable because of the differing lengths of residence used to distinguish newcomers from long-term residents and because the definitions and survey techniques varied in each case. In particular, the Fairbanks and Valdez surveys present household data, whereas the SIE sample includes heads of households and unrelated individuals. Nevertheless, the relative values of variables are generally consistent in all three sets of results; for example, the mean age of recent migrants was found to be less than that of the resident population in each survey although the actual mean varied. The characteristics of migrants to Alaska in the mid-1970s could be summarized as follows: they tended to be younger, less likely to be married, and have fewer children than the resident population. The SIE and Valdez results suggest that newcomers' income was generally lower than longer-term residents, although this is not supported by the Fairbanks data. In boom areas, a higher proportion of migrants worked on the pipeline; but in the state as a whole, there is no evidence of concentration of newcomers in the construction industry. The SIE results suggest that there is greater unemployment among recent migrants to the state but that they receive less income in the form of certain welfare payments than the resident population.

TABLE 1. LENGTH OF RESIDENCE

	SIE - Statewide			Fairbanks		Valdez	
	< 1 year	1-2 years	> 2 years	< 3 years	> 3 years	< 18 months	> 18 months
DEMOGRAPHIC CHARACTERISTICS							
Mean Age (years)	29	33	41	36	41	37	45
Percent Married	40.1%	53.8%	69.4%	73%	75.5%	77%	77%
Mean Number of Children per Survey Unit	.44	.60	.99	.89	1.07	.81	1.07
Mean Number of Children per Family	1.11	1.12	1.42				
EMPLOYMENT CHARACTERISTICS							
Unemployment Rate	10.5%	6.8%	5.5%				
Average Annual Family Income $	$11,290 (mean)	$20,425	$23,801	$34,500	$32,500	$26,940 (median)	$30,600
Percent Working on Pipeline				30%	14%	33%	12%
Percent Working in Construction	19%	22%	18%				
Mean Family Income from Transfer Pmts. Partly State-funded AFDC SSI	$30	$11	$186				

Institute of Social and Economic Research
November 5, 1980

GAS PIPELINE IMPACT ON STATE EXPENDITURES

INFORMATION SHEET 4: EMPLOYMENT AND POPULATION IMPACTS (SECOND REVISION)

Average annual population and employment impacts of construction of the gas pipeline and compressor stations are as follows (all numbers are in thousands):

Year	Direct Pipeline Employment[a]	Impacts Assuming No State Government Spending Response[b]		Impacts Assuming State Government Spending Response[c]	
		Employment	Population	Employment	Population
1980	.217	.319	.316	.319	.316
1981	.413	.634	.654	.634	.654
1982	2.06	3.328	3.284	3.966	3.669
1983	6.378	11.690	15.510	14.137	17.637
1984	10.339	22.819	30.936	27.439	35.267
1985	6.074	16.128	21.969	20.313	25.964
1986	.468	10.362	15.145	14.111	19.119

[a] NW and subcontractors both craft and support.

[b] MAP model run P.PNG.2 which assumes no change in government spending as a result of the pipeline construction.

[c] If state spends money, more people are employed. This case assumes that the state operating budget expands to provide the same level of services to new residents as former residents (about 77 percent of the operating budget is population sensitive).

Institute of Social and Economic Research
October 20, 1980

GAS PIPELINE IMPACT ON STATE EXPENDITURES

INFORMATION SHEET 4: EMPLOYMENT AND POPULATION IMPACTS
(FIRST REVISION)

Average annual population and employment impacts of construction of the gas pipeline and compressor stations are as follows (all numbers are in thousands):

Year	Direct Pipeline Employment[a]	Impacts Assuming No State Government Spending Response[b]		Impacts Assuming State Government Spending Response[c]	
		Employment	Population	Employment	Population
1980	.217	.319	.316	.319	.316
1981	.413	.634	.654	.634	.654
1982	2.06	3.328	3.284	3.792	3.566
1983	6.378	11.690	15.510	13.487	17.071
1984	10.339	22.819	30.936	26.211	34.114
1985	6.074	16.128	21.969	19.202	24.902
1986	.468	10.362	15.145	13.117	18.061

[a] NW and subcontractors both craft and support.

[b] MAP model run P.PNG.2 which assumes no change in government spending as a result of the pipeline construction.

[c] If state spends money, more people are employed. This case assumes that the state operating budget expands to provide the same level of services to new residents as former residents (about 56.5 percent of the operating budget is population sensitive).

Institute of Social and Economic Research
October 15, 1980

GAS PIPELINE IMPACT ON STATE EXPENDITURES

INFORMATION SHEET 4: EMPLOYMENT AND POPULATION IMPACTS

Average annual population and employment impacts of construction of the gas pipeline and compressor stations are as follows (all numbers are in thousands):

Year	Direct Pipeline Employment[a]	Impacts Assuming No State Government Spending Response[b]		Impacts Assuming State Government Spending Response[c]	
		Employment	Population	Employment	Population
1980	.217	.319	.316	.319	.316
1981	.413	.634	.654	.634	.654
1982	2.06	3.328	3.284	3.854	3.602
1983	6.378	11.690	15.510	13.712	17.264
1984	10.339	22.819	30.936	26.630	34.508
1985	6.074	16.128	21.969	19.579	25.264
1986	.468	10.362	15.145	13.458	18.423

[a] NW and subcontractors both craft and support.

[b] MAP model run P.PNG.2 which assumes no change in government spending as a result of the pipeline construction.

[c] If state spends money, more people are employed. This case assumes that the state operating budget expands to provide the same level of services to new residents as former residents (about 63 percent of the operating budget is population sensitive).

Institute of Social and Economic Research
November 5, 1980

GAS PIPELINE IMPACT ON STATE EXPENDITURES

INFORMATION SHEET 5: DEMOGRAPHIC COMPOSITION OF MIGRANTS (REVISED)

The table below shows the age/sex composition of inmigrants to Alaska in 1984 as predicted by the MAP econometric model. The peak year of inmigration resulting from the construction of the gas pipeline is 1984. The figures are the difference between migration in the base case (no pipeline construction) and in the case which assumes 1000 excess construction unemployment in Alaska at the start of the pipeline construction period, adjusted to account for migration caused by increased state government spending.

In the model, migration is determined by job opportunities in the state and by the difference in the standard of living in Alaska and the rest of the U.S. The age/sex composition is based on the recent historical pattern of migration into western states and may therefore not be representative of the characteristics of migrants during a construction boom. The figures in the table should be taken as a general guide only.

Total Inmigrant Population

Age	Male	Female	Total
0-1	531	513	1044
2-4	1420	1417	2838
5-9	1288	1354	2643
10-14	1309	1423	2733
15-19	2909	1720	4628
20-24	6406	4404	10809
25-29	3024	3197	6221
30-34	1332	1192	2526
35-39	765	857	1622
40-44	89	102	191
45-49	4	6	10
50+	0	0	0
Total	19080	16187	35267

Institute of Social and Economic Research
October 15, 1980

GAS PIPELINE IMPACT ON STATE EXPENDITURES

INFORMATION SHEET 5: DEMOGRAPHIC COMPOSITION OF MIGRANTS

The table below shows the age/sex composition of inmigrants to Alaska in 1984 as predicted by the MAP econometric model. The peak year of inmigration resulting from the construction of the gas pipeline is 1984. The figures are the difference between migration in the base case (no pipeline construction) and in the case which assumes 1000 excess construction unemployment in Alaska at the start of the pipeline construction period, adjusted to account for migration caused by increased state government spending.

In the model, migration is determined by job opportunities in the state and by the difference in the standard of living in Alaska and the rest of the U.S. The age/sex composition is based on the recent historical pattern of migration into western states and may therefore not be representative of the characteristics of migrants during a construction boom. The figures in the table should be taken as a general guide only.

	Total Inmigrant Population			Heads of Households		
Age	Male	Female	Total	Male	Female	Total
0-1	520	502	1022	0	0	0
2-4	1390	1387	2777	0	0	0
5-9	1261	1325	2586	0	0	0
10-14	1281	1393	2674	1	2	3
15-19	2846	1683	4529	117	6	123
20-24	6268	4309	10577	3758	855	4613
25-29	2959	3128	6087	2663	631	3294
30-34	1304	1167	2471	1234	236	1470
35-39	749	839	1588	714	154	868
40-44	87	100	187	84	19	103
45-49	4	6	10	4	1	5
50+	0	0	0	0	0	0
Total	18669	15839	34508	8575	1904	10479

APPENDIX B

STATE OPERATING AND CAPITAL BUDGET ANALYSIS

TABLE B.1.

1981 STATE OPERATING BUDGET ANALYSIS

Table B.1. presents an analysis of 1981 operating budget expenditures by funding source and program type. The budget is arranged by budget request unit (BRU). BRUs are listed in descending order of total budgeted expenditure, as detailed in the Summary of Appropriations, Free Conference Committee Report. All expenditures are in thousands of 1980 dollars.

Expenditures are allocated to one of four funding sources: the general fund, federal funding, user fee funding, and other funds. The Summary of Appropriations does not give full details of funding sources; it lists separately only general fund expenditures. The Executive Budget provides more information and, using the two documents, funding sources for most BRUs were determined. Occasionally, however, the Summary of Appropriations altered the budget for an item for which the Executive Budget showed a number of funding sources, and it was not possible to assign the change in funding to each source. In such cases, the funding increase or decrease was allocated proportionately between funding sources on the basis of the size of their contribution in the Executive Budget. In Table B.1. figures estimated in this manner are marked with an asterisk to indicate that they are approximations. The most important funding source is the general fund which provides $1.15 billion of the total budget of $1.5 billion (76 percent). Federal funds account for a further $200 million (13.5 percent); user fees, $45 million (3 percent); and other funds, $113 million (7.5 percent).

Within each funding source, expenditures are further classified to one of nine program types on the basis of their responsiveness to population change. The table includes this classification for general fund expenditures only, but a similar exercise was completed for all four funding sources. The principal distinction is between expenditures which may be expected to vary as population changes (population size sensitive) and those which are independent of population size. The nine categories are:

Population Size Sensitive

1. Entitlements - expenditures mandated by state or federal law and the administrative services which support them.

2. Direct User Group Correlation - expenditures on services for all or part of the population which may be expected to vary directly with changes in the size of the client group.

3. Quasi-public Goods - expenditures which show some change as population changes but generally less than proportional variation.

4. Government Support Activities - general administrative functions not tied to a single service. May be expected to vary in proportion to government services.

Nonpopulation Size Sensitive

5. Pure Public Goods - services which may be provided to additional consumers at no extra cost.

6. One Time Appropriations - items in the 1981 budget which will not be funded in future years.

7. Debt Service - interest and repayment charges on past debts.

8. Outside Pipeline Impact Area - services for which demand will not increase as a result of pipeline-related migration.

9. Basic Industry Related - expenditures made in support of export industries which are independent of the state's population.

A classification system such as is used in the analysis rarely fits the characteristics of all items perfectly. The allocation of a particular expenditure may appear somewhat arbitrary if no single category describes it exactly. However, the budget is dominated by a few major items (the 15 largest BRUs account for over half of the total budget), and categorization of the large items is fairly straightforward. Adjustments in the classification of the smaller BRUs, where disagreements may arise, will have relatively little effect on the overall pattern of expenditure.

The Summary of Appropriations includes a single item of $60.76 million for salary and benefit increases for state employees. This has been omitted from Table B.1. In a separate exercise, it was allocated between population size sensitive budget items and population independent items on the basis of staff months required for each BRU according to the Executive Budget. Seventy-nine percent of the expenditure on salary increases was found to be population sensitive which is the same proportion as overall expenditures (see Table 4). Therefore, omission of the $60.76 million does not alter the distribution of budget items between population sensitive and insensitive categories.

The first three program types--entitlements, direct user group correlation, and quasi-public goods--are all expected to vary as population varies, but the rate at which they change will differ between programs. Some entitlements program budgets vary in direct proportion to the size of the client group they serve. The elasticity of expenditure

with respect to the client population size is one. At the other extreme, certain budget items classified as quasi-public goods may change only sightly in response to population change. For example, many legislative and regulatory functions will grow as population increases but at a much less than proportional rate. The elasticites of expenditure may range from almost zero to one and may be even greater than one in cases where congestion or overuse of facilities imposes higher than average marginal costs. Without a detailed analysis of the cost structure of each item in the budget, it is impossible to estimate an average expenditure elasticity. For the purposes of this study it is assumed that the elasticity for all budget items in the first three categories is one. This assumption allows the analysis to be taken a step further in Table B.2.

TABLE B.1: 1981 OPERATING BUDGET ANALYSIS

General Fund Funded

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
1. Education Foundation Program Components	215092.9									125.0	150.0	1052.7	216420.6
2. Educ. Financial Support Program		35697.2*					25210.0	7242.4		16798.8*		18022.2*	102970.6
3. Health and Social Services Medicaid; General Relief-Medical	21898.1									26868.3*		9100.0*	57866.4
4. Transportion and Public Facilities Admin. & Support; Maint. & Operation		54623.4									1114.5*	516.7*	56254.6
5. Trans. & Pub. Fac. Marine Trans.									48677.7		428.5*	144.3*	49250.5
6. U of A Organized Research						9460.6				26206.0	5764.8		41431.4
7. Health & Soc. Serv. Assistance Payments	19681.0									14048.3			33729.3

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
					General Fund Funded								
8. U of A													
U of A Fairbanks		25543.6								1618*	5960.1*		33121.7
9. State Bond Committee													
Highways, Airports, Waters & Harbors Debt Service							30274.2				2627.7		32901.9
10. U of A													
Community College Admin.- All Colleges		24274.4								1610.5*	6754.5*		32639.4
11. Community & Regional Affairs													
Local Govt. Assistance Grants		27465.8								1200.0		314.6	28980.4
12. Labor													
Employment Security		204.6								19770.5*	677.4*	3804.8*	24457.3
13. Alaska Court System													
Alaska Court System		23018.9										143.0	23161.9
14. Legislature													
Legislative Council, Leg. Budget & Audit Committees													
Ombudsman			20739.4									221.0	20960.4

General Fund Funded

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
15. Health & Soc. Serv. Program Serv.		19087.5								217.6			19305.1
16. Health & Soc. Serv. Adult Confinement		19231.1											19231.1
17. Revenue Shared Taxes		18926.8											18926.8
18. Administration Teacher's Retirement		18111.8											18111.8
19. Comm. & Reg. Affairs C.E.T.A.										17804.1			17804.1
20. Public Safety Detachments & Criminal Investigation Bureau		16247.8											16247.8
21. State Bond Commit. Gen. Education Debt Service							15469.6					500.0	15969.6
22. U of A U of A, Anchorage		11557.6								1376.0	2783.5		15717.1

Department Budget Request Unit (BRU)	General Fund Funded: Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
23. Admin. Office of Commissioner; Admin. Serv., Risk Mgmt.				1396.4							1485.6	12292.3	15174.3
24. Admin. AK. Longevity Bonus	15014.7												15014.7
25. Commission on Post Sec. Ed. Commission on Post Sec. Ed. Fin. Aid; WICHE		11806.2								1075.6		2082.0*	14963.8
26. Trans. & Pub. Fac. Pub. Fac. Maint. & Operat.				11883.9					1495.7			1231.8	14611.4
27. Trans. & Pub. Fac. State Equip. Fleet				15.0								14274.8	14289.8
28. Fish & Game Commercial Fish									10723.8	1564.7	100.0	491.8	12880.3
29. Trans. & Pub. Fac. Anch. & Frbks. Airports												12818.3	12818.3

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	General Fund Funded: Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
30. State Bond Commit. U of A Debt Serv.							12625.5						12625.5
31. Trans. & Pub. Fac. Comsn. Office Internal Review, Admin. Serv., Fin. Mgmt.				9263.5						300.0*	2.0*	2499.1*	12064.6
32. Admin. Pioneer Homes		11659.0									100.0		11759.0
33. U of A Regents, Admin.		9611.4									1321.8*	536.4*	11469.6
34. Health & Soc. Serv. Alcohol & Drug Abuse		10257.2								949.6			11206.8
35. Revenue Audit, Petroleum Rev.; Enforcemt., Treasury Mgmt., Admin. & Support				9962.0								570.6	10532.6
36. Public Safety Fish & Wildlife Protect., Dir. Office; Aircraft Sec., Marine Enforcemt.		3449.3							6239.6				9688.9

Department Budget Request Unit (BRU)	General Fund Funded												Total Budget Request Unit Budget
	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	
37. Fish & Game Fisheries Rehabilitation Enhancement & Dev.									9611.2				9611.2
38. U of A Student Loans, Scholarships; Aux. Serv.		77.8								1881.1	7545.4		9504.3
39. Admin. Data Processing				631.4								8716.4	9347.8
40. Natural Resources Mgmt. & Admin.									8186.7	85.0		366.5	8638.2
41. Health & Soc. Serv. AK. Psychiatric Institute		8442.8										131.3	8574.1
42. State Bond Commit. Water & Sewer Debt Serv.							8204.9						8204.9
43. Revenue Energy Assist. Program	183.8									7183.8			7367.6
44. Educ. Vocational Rehab.		2493.4								4768.8		100.3	7362.5

Department Budget Request Unit (BRU)	Entitlements	General Fund Funded: Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
45. Law Legal Serv.				5612.9								1725.4	7338.3
46. Health & Soc. Serv. Youth Serv.		7318.7											7318.7
47. Fish & Game Game			270.9							4109.4*		2654.7*	7035.0
48. Trans. & Pub. Fac. Fac. Planning, Research, Design, Constr.				7014.2									7014.2
49. Health & Soc. Serv. Office on Aging		1078.0								5617.1			6695.1
50. Health & Soc. Serv. Soc. Serv.		6388.6											6388.6
51. Natural Res. Land Mgmt., Forest, Land, & Water Admin.				6384.5									6384.5
52. U of A Rural Educ.; Coop. Ext.		3696.2								2096.4*	547.5*		6340.1
53. State Bond Commit. Fish & Game Fac. Debt Serv.							6312.6						6312.6

Department Budget Request Unit (BRU)	Entitlements	General Fund Funded: Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
54. Public Safety													
Driver Vehicle Serv.		5793.5									426.7		6220.2
55. U of A													
U of A-Juneau		4705.6								608.7*	541.4*		5855.7
56. Health & Soc. Serv.													
Harborview Dev. Ctr.		4066.8								1555.5	88.3		5710.6
57. Law													
Prosecution		5492.1								168.1			5660.2
58. Health & Soc. Serv.													
Pub. Health Nursing		4390.3								379.9*	20.1*	841.4*	5631.7
59. Trans. & Pub. Fac.													
State Agency Communications; Pub. Telecommunications				1763.2	3165.3							353.5	5282.0
60. Military Affairs													
AK. Nat'l. Guard		3019.9								1920.1	23.5		4963.5

General Fund Funded

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
61. Office of the Governor Executive Office, Mansion, Regulatory Of., Lt. Gov. Of.				4427.3*	152.1*	100.0*						176.5*	4855.9
62. Of. of Gov. Coastal Zone Mgmt.				235.0						4597.2			4832.2
63. Health & Soc. Serv. Pub. Assist. Eligibility Determinate	2858.7									1859.1			4717.8
64. Health & Soc. Serv. Family Health		2673.2								1978.6*		60.0*	4711.8
65. Environmental Conservation Environ. Quality Operat.		3331.5								966.1*		256.6*	4554.2
66. Health & Soc. Serv. Child Assist. Prog.		4488.9											4488.9
67. Educ. Pub. Broadcasting Comsn.			4484.5										4484.5
68. Health & Soc. Serv. Old Age Assist.	4479.5												4479.5

General Fund Funded

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
69. Natural Res. Youth Employmt., Hist. Res. Mgmt., Park Operat.		3848.4								597.8			4446.2
70. Comm. & Reg. Affairs Comm. Planing Serv.				521.7						1469.7*		2415.6*	4407.0
71. Fish & Game Sport Fish			297.6							1959.8*		2130.9*	4388.3
72. Health & Soc. Serv. Comm. Mental Health Serv.		4281.3											4281.3
73. Natural Res. Forest Mgmt.									3676.7	532.4			4209.1
74. Health & Soc. Serv. Comm. Dev. Disabilities Serv.; Council for Handcd. & Gifted		3946.5								256.3			4202.8
75. Admin. Gen. Serv.; Surplus Prop.				2583.4							67.3	1421.3	4072.0

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
				General Fund Funded									
76. State Bond Commit. Marine Trans. Debt Serv.							4021.1						4021.1
77. Fish & Game Habitat Protect.				1256.7						381.7*	1495.4*	876.9*	4010.7
78. Commerce & Econ. Dev. AK. Pub. Utilities Comsn. Trans. Comsn., AK. Pipeline Comsn.			3709.0										3709.0
79. Fish & Game Fish & Game, Admin. Support				3267.0						350.0		75.2	3692.2
80. State Bond Commit. Dev. Category Debt Serv.							3611.6						3611.6
81. Public Safety Comsnr.'s Of., Admin. & Support; Training Academy		3532.2*								10.5*		49.3*	3592.0
82. Pub. Safety Judicial Serv.-Assist.; Contract Jails, Bldg. Sect.		3567.8											3567.8

General Fund Funded

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
83. Commerce & Econ. Dev. Econ. Enterprise									3340.1	132.8*		82.9*	3555.8
84. Commerce & Econ. Dev. Energy & Power Dev.		308.7								3241.6			3550.3
85. Health & Soc. Serv. Admin. & Support		3342.2								171.0*		36.7*	3549.9
86. Labor Admin. Serv.		627.1								636.3*		2214.7*	3478.1
87. Educ. Skill Ctr.		2145.5									398.1*	834.1*	3377.7
88. Commerce & Econ. Dev. Tourism									3341.8				3341.8
89. Trans. & Pub. Fac. Highway/Aviation Design & Constr.		1849.7										1459.6	3309.3
90. Comm. & Reg. Affairs Sr. Citizen Tax Relief	3141.6												3141.6
91. U of A U of A Debt Serv.							1021.0				2099.3		3120.3

Department Budget Request Unit (BRU)	General Fund Funded												Total Budget Request Unit Budget
	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	
92. Educ. Prog. Evaluation		1294.0								1721.2*		86.0*	3101.2
93. Admin. Personnel				3007.4									3007.4
94. Pub. Safety Village Pub. Safety Offcr. Prog.								2994.7					2994.7
95. Educ. State Library		2466.0								376.2*	67.1*	63.4*	2972.7
96. Law Criminal Justice Plan. Agency			448.3							2494.2			2942.5
97. Admin. Retirem., Benefits, Labor Rel. EEO				704.5							442.4*	1791.9*	2938.8
98. State Bond Commit. Health Fac. Debt Serv.							2850.0						2850.0
99. Health & Soc. Serv. Parole Bd., Probation, & Comm. Serv.		2825.3											2825.3

Department Budget Request Unit (BRU)	General Fund Funded: Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
100. State Bond Commit. Assist. for Aged-Debt Serv.							2767.1						2767.1
101. Admin. Accounting				2658.9									2658.9
102. Admin. Pub. Defender	2653.8												2653.8
103. State Bond Commit. Offender Confinemt. Debt Serv.							2618.9						2618.9
104. Educ. Adult Educ. & Vocat. Train.		1977.1								455.3*	24.9*	125.6*	2582.9
105. Labor Occupational Safety		1139.1								1401.4			2540.5
106. Health & Soc. Serv. Pub. Health Admin.		2451.1											2451.1
107. Revenue Child Support Enforcmt. Agen.		905.6								1478.3*	49.0*		2432.9

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	General Fund Funded: Federal Funded	General Fund Funded: User Fee Funded	General Fund Funded: Other Funded	Total Budget Request Unit Budget
108. Environ. Conserva. Environ. Qual. Mgmt.		667.3								1603.5*	104.3*		2375.1
109. Labor Workers Comp., Wage & Hour Admin.		2263.8										57.9	2321.7
110. State Bond Commit. Pub. Protect. Debt Serv.							2295.6						2295.6
111. Health & Soc. Serv. Of. of Inform. Systs.		1689.6								558.0*		38.6*	2286.2
112. Labor Second Injury Fund; Fisherman's Fund												2240.0	2240.0
113. Educ. Council on the Arts		1430.7								790.8			2221.5
114. Comm. & Reg. Affairs Local Gov't. Assist.		1210.1								991.2			2201.3
115. Pub. Safety Central Communications, Comm. Relations		2117.7											2117.7

Department Budget Request Unit (BRU)	General Fund Funded												Total Budget Request Unit Budget
	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	
116. Of. of Gov. Budget Mgmt., Internal Audit				2112.4									2112.4
117. Educ. Admin. & Prog. Support	1654.4									250.2		176.9	2081.5
118. Natural Res. Oil & Gas Mgmt.									2073.5				2073.5
119. Natural Res. Agricul. Inspection									1706.1	308.7			2014.8
120. Of. of Gov. Elections			2014.4										2014.4
121. Educ. Execut. Admin.	1563.1									374.0	47.0	5.0	1989.1
122. Of. of Gov. Nat'l. Lands Leg.						1919.0							1919.0
123. Educ. Educational TV					1210.3					532.5		143.2	1886.0

Department Budget Request Unit (BRU)	General Fund Funded												Total Budget Request Unit Budget
	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	
124. Oil & Gas Conserva. Comsn.													
Oil & Gas Conserva.									1843.5				1843.5
125. Of. of Gov. Policy Dev. & Planning; Growth Policy Council; Pub. Forum									1673.4			100.0*	1773.4
126. Fish & Game Vessels (Fish & Game)									1701.1				1701.1
127. Labor Work Incentive Prog. (WIN)	414.5									1266.0			1680.5
128. Health & Soc. Serv. Pub. Assist. Admin/Collections	1018.0									658.7			1676.7
129. Fish & Game Commercial Fisheries Entry Comsn.									1586.1				1586.1

Department Budget Request Unit (BRU)	Entitlements	General Fund Funded: Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
130. Health & Soc. Serv. Div. of Corrections, Dir. Of.		1583.2											1583.2
131. Health & Soc. Serv. Emergency Med. Serv.		869.9								696.9			1566.8
132. State Bond Commit. Parks Debt Serv.							1560.8						1560.8
133. Natural Res. Water Mgmt.		1353.1								165.9			1519.0
134. Pub. Safety Traffic Safety Improvement			202.2							1315.8			1518.0
135. Admin. Leasing & Fac. Employee Housing				737.2						774.3			1511.5
136. Natural Res. Mineral & Energy Dev., Mineral Res. Admin.		458.0							961.8	61.4			1481.2
137. Revenue AK. Renewable Res. Corp.									1476.1				1476.1

General Fund Funded

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
138. Health & Soc. Serv. Laboratories		1372.3								77.4			1449.7
139. Health & Soc. Serv. Communicable Disease Control		1264.4								175.9			1440.3
140. Fish & Game Subsistence Sect.								1411.6					1411.6
141. Commerce & Econ. Dev. Occupational Licensing		1288.6									75.0		1363.6
142. Health & Soc. Serv. State Health Planning & Dev. Agency		653.8								570.5*		107.9*	1332.2
143. Of. of Gov. Human Rights, Status of Women Commissions		1204.3								106.0			1310.3
144. Of. of Gov. International Affairs									1279.1	25.0			1304.1
145. Natural Res. Agricul. Mgmt.									1061.4	61.8*		143.2*	1266.4

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	General Fund Funded: Federal Funded	General Fund Funded: User Fee Funded	General Fund Funded: Other Funded	Total Budget Request Unit Budget
146. Health & Soc. Serv. Soc. Serv. Admin.		981.8								280.1			1261.9
147. Pub. Safety Narcotics Unit: Lab Serv.		1234.2*								10.0			1244.2
148. Comm. & Reg. Affairs Admin. & Support		1222.3											1222.3
149. Commerce & Econ. Dev. Business Loans		1050.5											1050.5
150. Commerce & Econ. Dev. Banking, Securities, Small Loans, Corp.		944.0									77.4		1021.4
151. Pub. Safety Vehicle Wts. Enforcement		582.8									437.9		1020.7
152. Pub. Safety Fire Safety		882.1								15.0	70.0		967.1
153. Health & Soc. Serv. Mental Health Admin. & Support		621.6								328.7			950.3

Department Budget Request Unit (BRU)	General Fund Funded												Total Budget Request Unit Budget
	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	
154. Military Affairs													
Disaster Planning & Control		489.6								455.1			944.7
155. Commerce & Econ. Dev.													
Veteran's Loan Fund	903.6												903.6
156. Labor													
Mechanical Inspection		687.8									203.2		891.0
157. Of. of Gov.													
Council of Econ. Adv., Econ. Analysis				825.0									825.0
158. Health & Soc. Serv.													
WIN Prog. AFDC	80.2									721.7			801.9
159. Commerce & Econ. Dev.													
Insurance			783.1										783.1
160. Natural Res.													
Gas Pipeline Surveillance											769.2		769.2
161. Commerce & Econ. Dev.													
Admin. & Support				745.5									745.5

Department Budget Request Unit (BRU)	Entitlements	General Fund Funded: Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
162. State Bond Commit. Library Debt Serv.							741.5						741.5
163. Commerce & Econ. Dev. Weights & Measures		731.2									10.1		741.3
164. Educ. State Museum			739.4										739.4
165. Environ. Conserva. Admin.		655.1								49.4			704.5
166. Natural Res. Res. Inventory Assessment									629.4	47.1			676.5
167. Trans. & Pub. Fac. Right of Way		635.5											635.5
168. Educ. State Repertory Theater			600.0										600.0
169. Law Of. of Consumer Protect.		580.3											580.3

General Fund Funded

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
170. Health & Soc. Serv. Quality Control	274.5									274.5			549.0
171. Labor Of. of Commissioner		534.4											534.4
172. Educ. AK. Historical Comsn.			500.0										500.0
173. Military Affairs Search & Rescue		462.2											462.2
174. Revenue Alcohol Beverage Control Board		438.9											438.9
175. AK. Power Authority AK. Power Authority			430.6										430.6
176. Fish & Game Boards of Fish & Game									425.0				425.0
177. Of. of Gov. AK. Plan		400.0											400.0

General Fund Funded

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
178. Fish & Game King Crab Marketing & Quality Control Board									395.6				395.6
179. Trans. & Pub. Fac. Water Harbor Fac.		394.4											394.4
180. Health & Soc. Serv. Environ. Health		383.7											383.7
181. Admin. AK. Pub. Offices Comsn.				367.6									367.6
182. Pub. Safety Violent Crimes Compensation Board	334.4												334.4
183. Of. of Gov. Reapportionmt. Board						314.2							314.2
184. State Bond Commit. Fire Protect. Debt Serv.							314.0						314.0
185. Revenue AK. Municipal Bond Bank Auth.				290.9									290.9

Department Budget Request Unit (BRU)	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
		General Fund Funded											
186. Educ. Youth Empl. Serv.		270.5											270.5
187. Health & Soc. Serv. Contract Forensic Serv.		267.2											267.2
188. Comm. & Reg. Affairs Municipal Lands Trustee					254.6								254.6
189. Pub. Safety AK. Police Standards Council		253.8											253.8
190. Admin. Council on Science Techn.				249.4									249.4
191. Environ. Conserva. Gas Pipeline Surveillance											173.8		173.8
192. Health & Soc. Serv. Contract Serv. Mauneluk		171.4											171.4

Department Budget Request Unit (BRU)	General Fund Funded: Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	One Time Appropriations	Debt Service	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Budget Request Unit Budget
193. Fish & Game													
Nongame Fish & Wildlife					150.0								150.0
194. Commerce & Econ. Dev.													
Veteran's Serv. Council		129.0											129.0
195. Comm. & Reg. Affairs													
Comm. Serv. Admin.				100.0									100.0
196. Educ.													
Professional Teaching Practices											95.4		95.4
197. Fish & Game													
Legislative Projects			95.0										95.0
198. Comm. & Reg. Affairs													
Sr. Citizen Housing Dev.		86.2											86.2
199. Educ.													
Cross-Cultural Educ.			55.1										55.1
	291246.8	483255.8	35369.5	78016.9	4932.3	11793.8	119898.4	11648.7	112105.4	202520.5	45170.1	112675.8	1508634.0

*Estimates based on funding sources in Governor's 1981 budget.

TABLE B.2

1981 STATE OPERATING BUDGET, PER CAPITA COST ANALYSIS

This table displays the method by which the average state operating expenditure on one migrant was calculated. The analysis is concerned only with the portion of each BRU budget which is funded from the general fund and which is population size sensitive. Expenditures from other funding sources, even if they will increase in response to pipeline-related migration, will not impose a cost on the state. Nonpopulation sensitive expenditures will not change as a result of in-migration. Therefore, the analysis is confined to expenditures in the first four columns of Table B.1 These are totalled in column one of this table.

The cost of providing each service to a single client is determined by dividing the total general fund budget (column 1) by the client population (column 2). The Alaska Department of Labor estimate of the 1979 population was used as the basis of the client population estimates. Where the BRU serves the total population or the total civilian population, Department of Labor figures were available. However, in cases where the client group is a subpopulation, for example, school-age children, a demographic breakdown of the population was required. The MAP model age-sex distribution of the 1980 population was used to obtain estimates of the size of relevant age groups within the total population. Column 3 shows the cost per client of each population sensitive budget item.

The demographic characteristics of the migrant population differ from those of the resident Alaskan population. Column 4 shows a weighting scheme which weights the per client cost of each budget item by the proportion of the migrant population which will fall into the client group for the service. The weights were calculated on the basis of the age-sex distribution of migrants shown in Information Sheet 5, Appendix A. Using the weighting scheme, the cost per average migrant is calculated (column 5).

The 1979 client populations and migrant weights are as follows:

	1979 Population	Migrant Weight
Total population	406,352	1.0
Civilian population	383,029	1.0
Adult population (15+)	288,673	0.738
Child population (0-14)	117,679	0.263
School-age children (5-14)	73,468	0.152
Youth population (15-19)	24,186	0.131
Elderly population (65+)	15,848	0.0

Budget items which were classified as government support activities in Table B.1 will increase in proportion to the overall operating budget. About seventy-one percent of the budget was found to be population size sensitive (columns 1 - 3, of Table B.1, excluding government support activities themselves). Therefore, changes in general administration in response to migration will be at a rate of 0.7075 of the total budget. The per client cost of government support activities is weighted accordingly to find the cost per migrant.

Column 5 of this table shows the cost of providing each population sensitive budget item to a single migrant. The sum of these costs, the average annual operating expenditure per migrant, is $1956.17 in 1980 dollars. This average cost is applicable only to migrant groups which include the complete cross section of ages in the MAP demographic distribution (Information Sheet 5, Appendix A). If the migrant group excludes certain age groups or categories of migrants, the cost of services to those client groups would not be counted. For example, the average operating cost of services for migrants who are directly employed on the pipeline would not include education expenditures or expenditures related to unemployed persons. Excluding these costs, the average cost per employed migrant is $1,234.61 per year.

TABLE B.2: 1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
1. Education Foundation Program Components	215092.9	73468	2927.709	0.152	445.012
2. Educ. Financial Support Prog.	35697.2	73468	485.888	0.152	73.855
3. Health & Social Services Medicaid; General Relief-Medical	21898.1	383029	57.171	1.0	57.171
4. Transportation & Public Facilities Admin. & Support; Maint. & Operation	54623.4	406352	134.424	1.0	134.424
5. Trans. & Pub. Fac. Marine Trans.	--	--	--	--	--
6. U of A Organized Research	--	--	--	--	--
7. Health & Soc. Serv. Assistance Payments	19681.0	406352	48.433	1.0	48.433
8. U of A U of A, Fairbanks	25543.6	288673	88.486	0.738	65.303
9. State Bond Committee Highways, Airports, Water & Harbors Debt Service	--	--	--	--	--

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
10. U of A Community College Admin.- All Colleges	24274.4	288673	84.090	0.738	62.058
11. Community & Regional Affairs Local Govt. Assist. Grants	27465.8	406352	67.591	1.0	67.591
12. Labor Employment Security	204.6	288673	0.709	0.738	0.523
13. Alaska Court System Alaska Court System	23018.9	406352	56.648	1.0	56.648
14. Legislature Legislative Council, Leg. Budget & Audit Committees Ombudsman	20739.4	406352	51.038	1.0	51.038
15. Health & Soc. Serv. Prog. Serv.	19087.5	406352	46.973	1.0	46.973
16. Health & Soc. Serv. Adult Confinement	19231.1	288673	66.619	0.738	49.165
17. Revenue Shared Taxes	18926.8	406352	46.577	1.0	46.577
18. Administration Teacher's Retirement	18111.8	73468	246.526	0.152	37.472

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
19. Comm. & Reg. Affairs C.E.T.A.	--	--	--	--	--
20. Public Safety Detachments & Criminal Investigation Bureau	16247.8	406352	39.985	1.0	39.985
21. State Bond Commit. Gen. Educ. Debt Serv.	--	--	--	--	--
22. U of A U of A, Anchorage	11557.6	288673	40.037	0.738	29.547
23. Admin. Office of Commissioner; Admin. Serv., Risk Mgmt.	1396.4	406352	3.436	0.7075	2.431
24. Admin. AK. Longevity Bonus	15014.7	15848	947.419	0.0	0.0
25. Commission on Post Secondary Educ. Comsn. on Post Sec. Educ. Fin. Aid; WICHE	11806.2	288673	40.898	0.738	30.183
26. Trans. & Pub. Fac. Pub. Fac. Maint. & Operat.	11883.9	406352	29.243	0.7075	20.689
27. Trans. & Pub. Fac. State Equipmt. Fleet	15.0	406352	0.037	0.7075	0.026

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
28. Fish & Game Commercial Fish	--	--	--	--	--
29. Trans. & Pub. Fac. Anch. & Frbks. Airports	--	--	--	--	--
30. State Bond Commit. U of A Debt Serv.	--	--	--	--	--
31. Trans. & Pub. Fac. Comsn. Office Internal Review, Admin. Serv. Fin. Mgmt.	9263.5	406352	22.797	0.7075	16.129
32. Admin. Pioneer Homes	11659.0	15848	735.676	0.0	0.0
33. U of A Regents, Admin.	9611.4	288673	33.295	0.738	24.572
34. Health & Soc. Serv. Alcohol & Drug Abuse	10257.2	406352	25.242	1.0	25.242
35. Revenue Audit, Petroleum Rev.; Enforcement, Treasury Mgmt., Admin. & Support	9962.0	406352	24.516	0.7075	13.165

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
36. Public Safety Fish & Wildlife Protect., Dir. Office; Aircraft Sec., Marine Enforcemt.	3449.3	288673	11.949	0.738	8.818
37. Fish & Game Fisheries Rehabilitation Enhancement & Dev.	--	--	--	--	--
38. U of A Student Loans, Scholarships; Aux. Serv.	77.8	288673	0.270	0.738	0.120
39. Admin. Data Processing	631.4	406352	1.554	0.7075	1.099
40. Natural Resources Mgmt. & Admin.	8186.7	406352	20.147	0.7075	14.254
41. Health & Soc. Serv. AK. Psychiatric Institute	8442.8	406352	20.777	1.0	20.777
42. State Bond Commit. Water & Sewer Dept. Serv.	--	--	--	--	--
43. Revenue Energy Assist. Prog.	183.8	406352	0.452	1.0	0.452
44. Educ. Vocational Rehab.	2493.4	406352	6.136	1.0	6.136

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
45. Law Legal Serv.	5612.9	406352	13.813	0.7075	9.773
46. Health & Soc. Serv. Youth Serv.	7318.7	73468	99.618	0.152	15.142
47. Fish & Game Game	270.9	406352	0.667	1.0	0.667
48. Trans. & Pub. Fac. Fac. Planning, Research, Design, Constr.	7014.2	406352	17.261	0.7075	12.212
49. Health & Soc. Serv. Office on Aging	1078.0	15848	68.021	0.0	0.0
50. Health & Soc. Serv. Soc. Serv.	6388.6	406352	15.722	1.0	15.722
51. Natural Res. Land Mgmt., Forest, Land, & Water Admin.	6384.5	406352	15.712	0.7075	11.116
52. U of A Rural Educ.; Coop. Ext.	3696.2	288673	12.804	0.738	9.449
53. State Bond Commit. Fish & Game Fac. Debt Serv.	--	--	--	--	--
54. Public Safety Driver Vehicle Serv.	5793.5	288673	20.069	0.738	14.811

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
55. U of A U of A, Juneau	4705.6	288673	16.301	0.738	12.030
56. Health & Soc. Serv. Harborview Dev. Ctr.	4066.8	406352	10.008	1.0	10.008
57. Law Prosecution	5492.1	406352	13.516	1.0	13.516
58. Health & Soc. Serv. Pub. Health Nursing	4390.3	406352	10.804	1.0	10.804
59. Trans. & Pub. Fac. State Agency Communications; Pub. Telecommunications	--	--	--	--	--
60. Military Affairs AK. Nat'l. Guard	3019.9	406352	7.432	1.0	7.432
61. Office of the Governor Executive Office, Mansion, Regulatory Of., Lt. Gov. Of.	4427.3	406352	10.895	0.7075	7.708
62. Of. of Gov. Coastal Zone Mgmt.	235.0	406352	0.578	0.7075	0.409
63. Health & Soc. Serv. Pub. Assist. Eligibility Determinate	2858.7	406352	7.035	1.0	7.035

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
64. Health & Soc. Serv. Family Health	2673.2	406352	6.579	1.0	6.579
65. Environmental Conservation Environ. Quality Operat.	3331.5	406352	8.199	1.0	8.199
66. Health & Soc. Serv. Child Assist. Prog.	4488.9	117679	38.145	0.263	10.032
67. Educ. Pub. Broadcasting Comsn.	4484.5	406352	11.036	1.0	11.036
68. Health & Soc. Serv. Old Age Assist.	4479.5	15848	282.654	0.0	0.0
69. Natural Res. Youth Employmt., Hist. Res. Mgmt., Park Operat.	3848.4	406352	9.471	1.0	9.471
70. Comm. & Reg. Affairs Comm. Planning Serv.	521.7	406352	1.284	0.7075	0.908
71. Fish & Game Sport Fish	297.6	406352	0.732	1.0	0.732
72. Health & Soc. Serv. Comm. Mental Health Serv.	4281.3	406352	10.536	1.0	10.536
73. Natural Res. Forest Mgmt.	--	--	--	--	--

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
74. Health & Soc. Serv. Comm. Dev. Disabilities Serv.; Council for Handcd. & Gifted	3946.5	406352	9.712	1.0	9.712
75. Admin. Gen. Serv.; Surplus Prop.	2583.4	406352	6.358	0.7075	4.498
76. State Bond Commit. Marine Trans. Debt Serv.	--	--	--	--	--
77. Fish & Game Habitat Protect.	1256.7	406352	3.093	0.7075	2.188
78. Commerce & Econ. Dev. AK. Pub. Utilities Comsn. "Trans. Comsn., AK. Pipeline Comsn.	3709.0	406352	9.128	1.0	9.128
79. Fish & Game Fish & Game Admin. Support	3267.0	406352	8.040	0.7075	5.688
80. State Bond Commit. Dev. Category Debt Serv.	--	--	--	--	--
81. Public Safety Comsnr.'s Of., Admin. & Support; Training Academy	3532.2	406352	8.692	1.0	8.692

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
82. Pub. Safety Judicial Serv.-Assist.; Contract Jails, Bldg. Sect.	3567.8	288673	12.360	0.738	9.122
83. Commerce & Econ. Dev. Econ. Enterprise	--	--	--	--	--
84. Commerce & Econ. Dev. Energy & Power Dev.	308.7	406352	0.760	1.0	0.760
85. Health & Soc. Serv. Admin. & Support	3342.2	406352	8.245	1.0	8.245
86. Labor Admin. Serv.	627.1	272852	2.298	0.738	1.696
87. Educ. Skill Ctr.	2145.5	272852	7.863	0.738	5.803
88. Commerce & Econ. Dev. Tourism	--	--	--	--	--
89. Trans. & Pub. Fac. Highway/Aviation Design & Constr.	1849.7	406352	4.552	1.0	4.552
90. Comm. & Reg. Affairs Sr. Citizen Tax Relief	3141.6	15848	198.233	0.0	0.0
91. U of A U of A Debt Serv.	--	--	--	--	--

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
92. Educ. Prog. Evaluation	1294.0	73468	17.613	0.152	2.677
93. Admin. Personnel	3007.4	406352	7.401	0.7075	5.326
94. Pub. Safety Village Pub. Safety Offcr. Prog.	--	--	--	--	--
95. Educ. State Library	2466.0	406352	6.069	1.0	6.069
96. Law Criminal Justice Plan. Prog.	448.3	406352	1.103	1.0	1.103
97. Admin. Retiremt., Benefits, Labor Rel. EEO	704.5	406352	1.734	0.7075	1.227
98. State Bond Commit. Health Fac. Debt Serv.	--	--	--	--	--
99. Health & Soc. Serv. Parole Bd., Probation & Comm. Serv.	2825.3	288673	9.787	0.738	7.223

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
100. State Bond Commit. Assist. for Aged-Debt Serv.	--	--	--	--	--
101. Admin. Accounting	2658.9	406352	6.543	0.7075	4.629
102. Admin. Pub. Defender	2653.8	288673	9.193	0.738	6.784
103. State Bond Commit. Offender Confinemt. Debt Serv.	--	--	--	--	--
104. Educ. Adult Educ. & Vocat. Train.	1977.1	288673	6.849	0.738	5.055
105. Labor Occupational Safety	1139.1	288673	3.946	0.738	2.912
106. Health & Soc. Serv. Pub. Health Admin.	2451.1	406352	6.032	1.0	6.032
107. Revenue Child Support Enforcmt. Agen.	905.6	117679	7.696	0.263	2.024
108. Environ. Conserva. Environ. Qual. Mgmt.	667.3	406352	1.642	1.0	1.642
109. Labor Workers Comp., Wage & Hour Admin.	2263.8	272825	8.298	0.738	6.124

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
110. State Bond Commit. Pub. Protect. Debt Serv.	--	--	--	--	--
111. Health & Soc. Serv. Of. of Inform. Systs.	1689.6	406352	4.158	1.0	4.158
112. Labor Second Injury Fund; Fisherman's Fund	--	--	--	--	--
113. Educ. Council on the Arts	1430.7	406352	3.521	1.0	3.521
114. Comm. & Reg. Affairs Local Gov't. Assist.	1210.1	406352	2.978	1.0	2.978
115. Pub. Safety Central Communications, Comm. Relations	2117.7	406352	5.211	1.0	5.211
116. Of. of Gov. Budget Mgmt., Internal Audit	2112.4	406352	5.198	0.7075	3.678
117. Educ. Admin. & Prog. Support	1654.4	73468	22.519	0.152	3.423
118. Natural Res. Oil & Gas Mgmt.	--	--	--	--	--

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
119. Natural Res. Agricul. Inspection	--	--	--	--	--
120. Of. of Gov. Elections	2014.4	406352	4.957	1.0	4.957
121. Educ. Execut. Admin.	1563.1	73468	21.276	0.152	3.234
122. Of. of Gov. Nat'l. Lands Leg.	--	--	--	--	--
123. Educ. Educational TV	--	--	--	--	--
124. Oil & Gas Conserva. Comsn. Oil & Gas Conserva.	--	--	--	--	--
125. Of. of Gov. Policy Dev. & Planning; Growth Policy Council; Pub. Forum	--	--	--	--	--
126. Fish & Game Vessels (Fish & Game)	--	--	--	--	--

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
127. Labor Work Incentive Prog. (WIN)	414.5	272825	1.519	0.738	1.121
128. Health & Soc. Serv. Pub. Assist. Admin./ Collections	1018.0	406352	2.505	1.0	2.505
129. Fish & Game Commercial Fisheries Entry Comsn.	--	--	--	--	--
130. Health & Soc. Serv. Div. of Corrections, Dir. Of.	1583.2	288673	5.484	0.738	4.047
131. Health & Soc. Serv. Emergency Med. Serv.	869.9	406352	2.141	1.0	2.141
132. State Bond Commit. Parks Debt Serv.	--	--	--	--	--
133. Natural Res. Water Mgmt.	1353.1	406352	3.330	1.0	3.330
134. Pub. Safety Traffic Safety Improvement	202.2	406352	0.498	1.0	0.498
135. Admin. Leasing & Fac. Employee Housing	737.2	406352	1.814	0.7075	1.283

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
136. Natural Res. Mineral & Energy Dev., Mineral Res. Admin.	458.0	406352	1.127	1.0	1.127
137. Revenue AK. Renewable Res. Corp.	--	--	--	--	--
138. Health & Soc. Serv. Laboratories	1372.3	406352	3.377	1.0	3.377
139. Health & Soc. Serv. Communicable Disease Control	1264.4	406352	3.112	1.0	3.112
140. Fish & Game Subsistence Sect.	--	--	--	--	--
141. Commerce & Econ. Dev. Occupational Licensing	1288.6	288673	4.464	0.738	3.294
142. Health & Soc. Serv. State Health Planning & Dev. Agency	653.8	406352	1.609	1.0	1.609
143. Of. of Gov. Human Rights, Status of Women Commissions	1204.3	288673	4.172	0.738	3.079
144. Of. of Gov. International Affairs	--	--	--	--	--

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
145. Natural Res. Agricul. Mgmt.	--	--	--	--	--
146. Health & Soc. Serv. Soc. Serv. Admin.	981.8	406352	2.416	1.0	2.416
147. Pub. Safety Narcotics Unit; Lab. Serv.	1234.2	288673	4.275	0.738	3.155
148. Comm. & Reg. Affairs Admin. & Support	1222.3	406352	3.008	1.0	3.008
149. Commerce & Econ. Dev. Business Loans	1050.5	406352	2.585	1.0	2.585
150. Commerce & Econ. Dev. Banking, Securities, Small Loans, Corp.	944.0	406352	2.323	1.0	2.323
151. Pub. Safety Vehicle Wts. Enforcement	582.8	406352	1.434	1.0	1.434
152. Pub. Safety Fire Safety	882.1	406352	2.171	1.0	2.171
153. Health & Soc. Serv. Mental Health Admin. & Support	621.6	406352	1.530	1.0	1.530

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
154. Military Affairs Disaster Planning & Control	489.6	406352	1.205	1.0	1.205
155. Commerce & Econ. Dev. Veteran's Loan Fund	903.6	288673	3.130	0.738	2.310
156. Labor Mechanical Inspection	687.8	406352	1.693	1.0	1.693
157. Of. of Gov. Council of Econ. Adv., Econ. Analysis	825.0	406352	2.030	0.7075	1.436
158. Health & Soc. Serv. WIN Prog. AFDC	80.2	288673	0.278	0.738	0.205
159. Commerce & Econ. Dev. Insurance	783.1	406352	1.927	1.0	1.927
160. Natural Res. Gas Pipeline Surveillance	--	--	--	--	--
161. Commerce & Econ. Dev. Admin. & Support	745.5	406352	1.835	0.7075	1.298
162. State Bond Commit. Library Debt Serv.	--	--	--	--	--

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
163. Commerce & Econ. Dev. Weights & Measures	731.2	406352	1.799	1.0	1.799
164. Educ. State Museum	739.4	406352	1.820	1.0	1.820
165. Environ. Conserva. Admin.	655.1	406352	1.612	1.0	1.612
166. Natural Res. Res. Inventory Assessment	--	--	--	--	--
167. Trans. & Pub. Fac. Right-of-way	635.5	406352	1.564	1.0	1.564
168. Educ. State Repertory Theater	600.0	406352	1.477	1.0	1.477
169. Law Of. of Consumer Protect.	580.3	406352	1.428	1.0	1.428
170. Health & Soc. Serv. Quality Control	274.5	406352	0.676	1.0	0.676
171. Labor Of. of Commissioner	534.4	288673	1.851	0.738	1.366
172. Educ. AK. Historical Comsn.	500.0	406352	1.230	1.0	1.230

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
173. Military Affairs Search & Rescue	462.2	406352	1.137	1.0	1.137
174. Revenue Alcohol Beverage Control Bd.	438.9	288673	1.520	0.738	1.122
175. AK. Power Authority AK. Power Authority	430.6	406352	1.060	1.0	1.060
176. Fish & Game Boards of Fish & Game	--	--	--	--	--
177. Of. of Gov. AK. Plan	400.0	288673	1.386	0.738	1.023
178. Fish & Game King Crab Marketing & Quality Control Board	--	--	--	--	--
179. Trans. & Pub. Fac. Water Harbor Fac.	394.4	406352	0.970	1.0	0.970
180. Health & Soc. Serv. Environ. Health	383.7	406352	0.944	1.0	0.944
181. Admin. AK. Pub. Offices Comsn.	367.6	406352	0.905	0.7075	0.640
182. Pub. Safety Violent Crimes Compensation Board	334.4	288673	1.158	0.738	0.855

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
183. Of. of Gov. Reapportionmt. Board	--	--	--	--	--
184. State Bond Commit. Fire Protect. Debt Serv.	--	--	--	--	--
185. Revenue AK. Municipal Bond Bank Auth.	290.9	406352	0.716	0.7075	0.507
186. Educ. Youth Empl. Serv.	270.5	24186	11.184	0.131	1.465
187. Health & Soc. Serv. Contract Forensic Serv.	267.2	406352	0.658	1.0	0.658
188. Comm. & Reg. Affairs Municipal Lands Trustee	--	--	--	--	--
189. Pub. Safety AK. Police Standards Council	253.8	406352	0.625	1.0	0.625
190. Admin. Council on Science Techn.	249.4	406352	0.614	0.7075	0.434
191. Environ. Conserva. Gas Pipeline Surveillance	--	--	--	--	--

1981 OPERATING BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
192. Health & Soc. Serv. Contract Serv. Mauneluk	171.4	406352	0.422	1.0	0.422
193. Fish & Game Nongame Fish & Game	--	--	--	--	--
194. Commerce & Econ. Dev. Veteran's Serv. Council	129.0	288673	0.447	0.738	0.330
195. Comm. & Reg. Affairs Comm. Serv. Admin.	100.0	406352	0.246	0.7075	0.174
196. Educ. Professional Teaching Practices	--	--	--	--	--
197. Fish & Game Legislative Projects	95.0	406352	0.234	1.0	0.234
198. Comm. & Reg. Affairs Sr. Citizen Housing Dev.	86.2	15848	5.439	0.0	0.0
199. Educ. Cross-Cultural Educ.	55.1	73468	0.750	0.152	0.114
			TOTAL COST PER MIGRANT	=	1956.171

TABLE B.3

1981 STATE CAPITAL BUDGET ANALYSIS

The 1981 state capital budget was subjected to the same analysis as the operating budget. The purpose of the analysis was to determine the proportion of the capital budget which is funded by general obligation bonds or from the general fund and which is popoulation sensitive. This proportion is used as a proxy for the element of the capital stock which was funded from those two sources and which is population size sensitive. The budgeted expenditures are taken from the Summary of Approporiations and the Executive Budget for Financial Year 1981.

The categories to which the expenditures are allocated are identical to those used in Table B.1. The two categories of "debt service" and "one time appropriations" have been omitted because they are not applicable to capital expenditures. Explanations of the categories are given in the introduction to Table B.1. By far, the largest item in the capital budget is an appropriation of almost $300 million to the Native Claims Fund. This has been included in Table B.3 but, because it is not representative of the state capital stock, it is disregarded in further analysis. The highway portion of the capital budget is also deducted from the analysis because highways are subject to separate negotiation with NWA and we were asked not to consider them.

The general fund and general obligation bonds are the most significant source of funding, accounting for 57 percent of the nonhighway budget (excluding the Native Claims Fund Contribution). The federal government provides 30 percent of the funds, and the remaining 13 percent is from other sources.

TABLE B.3: 1981 CAPITAL BUDGET ANALYSIS

General Fund and General Obligation Bond Funded

Department Program	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Program Budget
1. Revenue Native Lands Claim Fund					292585.1						292585.1
2. Transportation & Public Facilities Central Marine Trans.							4610.0	55800.0			60410.0
3. Trans. & Pub. Fac. Fac. Planning & Research				25745.0				1200.0			26945.0
4. Health & Social Services Offender Confinement, Reformation & Supervision		21460.2									21460.2
5. University of Alaska		21115.0									21115.0
6. Revenue AK. Renewable Resources Development Corporation										20000.0	20000.0
7. Trans. & Pub. Fac. Southeast Marine Trans.							11418.2	7546.8			18965.0
8. Education Rural Educ.						17713.9					17713.9
9. Trans. & Pub. Fac. Central Region Aviation		2342.3						12755.3			15097.6

General Fund and General Obligation Bond Funded

Department Program	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Program Budget
10. Trans. & Pub. Fac. Southeast Ports & Harbors		14000.0									14000.0
11. Natural Resources Natural Res. Mgmt. & Admin.				13021.5							13021.5
12. Trans. & Pub. Fac. Trans. Planning			4803.5					7844.1			12647.6
13. Trans. & Pub. Fac. State Equipment Fleet										10253.8	10253.8
14. Trans. & Pub. Fac. Pub. Trans.		8800.0						1200.0			10000.0
15. Trans. & Pub. Fac. Southeast Aviation		3753.5						5326.2			9079.7
16. Natural Res. Agricultural Mgmt.		232.6								6160.0	6392.6
17. Trans. & Pub. Fac. Nome Barge Facility						6000.0					6000.0
18. Trans. & Pub. Fac. Western Aviation		2176.3						3350.9			5527.2

1981 CAPITAL BUDGET ANALYSIS

General Fund and General Obligation Bond Funded

Department Program	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Program Budget
19. Educ. Skill Center		5494.5									5494.5
20. Trans. & Pub. Fac. Interior Aviation		510.9						4598.4			5109.3
21. Fish & Game Fish & Game Resources		1734.0					1117.4			2000.0	4851.4
22. Public Safety Fish & Game Res.		100.0					4619.0				4719.0
23. Natural Res. Parks & Recreation		500.0						3900.0			4400.0
24. Trans. & Pub. Fac. State Fac.				4247.1							4247.1
25. Trans. & Pub. Fac. Southcentral Ports & Harbors		4150.0									4150.0
26. Commerce & Economic Development Econ. Enterprise & Energy/ Power Dev.		1008.5			600.0			2264.0			3872.5
27. Office of the Governor Executive Operations				3350.0							3350.0

General Fund and General Obligation Bond Funded

Department Program	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Program Budget
28. International Airports								625.0		2563.0	3188.0
29. Alaska Power Authority Susitna Feasibility Analysis										3095.8	3095.8
30. Commerce & Econ. Dev. Bottomfish Dev.							3041.2				3041.2
31. Revenue Municipal Bond Bank Reserve			3000.0								3000.0
32. Public Safety Crime Identification & Apprehension		1275.4				1279.3					2554.7
33. Military Affairs Life & Property Protection		999.5						1162.5			2162.0
34. Office of the Governor Agricultural Action Council										2000.0	2000.0
35. Public Safety Life & Property Protection		1993.9									1993.9
36. Commerce & Econ. Dev. Consumer Protection		1674.5									1674.5

General Fund and General Obligation Bond Funded

Department Program	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Program Budget
37. Trans. & Pub. Fac. Central Ports & Harbors		1400.0									1400.0
38. Administration Employee Housing				1250.0							1250.0
39. Health & Soc. Serv. Assistance Payments	613.5							613.5			1227.0
40. Administration Administrative Services to State Agencies				1219.4							1219.4
41. Education State Museum & Library		757.0	142.8								899.8
42. Labor Employment Stabilization								878.0			878.0
43. Natural Res. Forest, Land & Water Mgmt.										870.3	870.3
44. Natural Res. Minerals & Energy Mgmt.							821.0				821.0
45. Office of the Governor Tidal Power Project/Railbelt Power Market & Supply Study					739.2						739.2

General Fund and General Obligation Bond Funded

Department Program	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Program Budget
46. Health & Soc. Serv.											
Mental Health & Developmental Disabilities		491.6									491.6
47. Administration											
Assistance for the Aged		424.5									424.5
48. Legislature											
Legislative Budget & Audit				243.0							243.0
49. Labor											
Worker Protection		211.2									211.2
50. Law											
Due Process		100.0									100.0
51. Trans. & Pub. Fac.											
Southcentral Marine Trans.							50.0				50.0
52. Law											
Legal Services				30.0							30.0
TOTAL	613.5	96705.4	7946.3	49106.0	293924.3	24993.2	25676.8	109064.7	---	46942.9	654973.1
Total Less Item 1 Native Lands Claim Fund	613.5	96705.4	7946.3	49106.0	1339.2	24993.2	25676.8	109064.7	---	46942.9	362388.0

1981 CAPITAL BUDGET ANALYSIS: HIGHWAYS

1981 CAPITAL BUDGET ANALYSIS

General Fund and General Obligation Bond Funded

Department Program	Entitlements	Direct User Group Correlation	Quasi Public Goods	Government Support Activities	Pure Public Goods	Outside Pipeline Impact Area	Basic Industry Related	Federal Funded	User Fee Funded	Other Funded	Total Program Budget
Transportation & Public Facilities											
1. Central Highways		24698.0						70216.1	162.4		95076.5
2. Interior Highways		15833.9						64081.3	476.0		80391.2
3. Southeast Highways						3243.4		21432.2			24675.6
4. Western Highways						4585.9		11313.5			15899.4
5. Southcentral Highways		6433.9						65584.1			72018.0
6. Statewide Highways		13810.0						13900.0	8000.0		35710.0
TOTAL		60775.8				7829.3		246527.2	8638.4		323770.7
Total Non-highway	613.5	96705.4	7946.3	49106.0	293924.3	24993.2	25676.8	109064.7	---	46942.9	654973.1
Grand Total	613.5	157481.2	7946.3	49106.0	293924.3	32822.5	25676.8	355591.9	8638.4	46942.9	978743.8

TABLE B.4

1981 STATE CAPITAL BUDGET PER CAPITA COST ANALYSIS

Table B.4 completes the analysis of the 1981 state capital budget. Using the same format as Table B.2, the per migrant capital expenditures were calculated. The client population sizes and weights are the same as those used in the operating budget analysis. The reader is referred to the introduction to Table B.2 for details.

The purpose of the analysis is not to find directly the capital expenditure per migrant but to determine the proportion of the total capital budget which would have to be spent to extend services to migrants. This proportion will then be applied to the per capita value of the state capital stock to find the cost of increasing the stock in response to migration. In 1981 the per capita capital budget (excluding highways and the $300 million Native Claims Fund payment) was $891.8. The expenditure per average migrant, calculated by the method shown in Table B.4, (i.e., the sum of individual expenditures in column 5) is $348.5. This is 39 percent of overall per capita spending. The cost per working migrant which excludes education and unemployment-related items is $333.0 or 37 percent of total per capita expenditures.

TABLE B.4
1981 STATE CAPITAL BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
1. Trans. & Pub. Fac. Fac. Planning & Research	25745.0	406352	63.4	0.7075	44.9
2. Health & Social Services Offender Confinement, Reformation & Supervision	21460.2	288673	74.3	0.738	54.8
3. University of Alaska	21115.0	288673	73.1	0.738	53.9
4. Trans. & Pub. Fac. Central Region Aviation	2342.3	406352	5.8	1.0	5.8
5. Trans. & Pub. Fac Southeast Ports & Harbors	14000.0	406352	34.5	1.0	34.5
6. Natural Resources Natural Res. Mgmt. & Admin.	13021.5	406352	32.0	0.7075	22.6
7. Trans. & Pub. Fac. Trans. Planning	4803.5	406352	11.8	1.0	11.8
8. Trans. & Pub. Fac. Pub. Trans.	8800.0	406352	21.7	1.0	21.7
9. Trans. & Pub. Fac. Southeast Aviation	3753.5	406352	9.2	1.0	9.2

1981 STATE CAPITAL BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
10. Natural Res. Agricultural Mgmt.	232.6	406352	0.6	1.0	0.6
11. Trans. & Pub. Fac. Western Aviation	2176.3	406352	5.4	1.0	5.4
12. Educ. Skill Center	5494.5	288673	19.0	0.738	14.0
13. Trans. & Pub. Fac. Interior Aviation	510.9	406352	1.3	1.0	1.3
14. Fish & Game Fish & Game Resources	1734.0	406352	4.3	1.0	4.3
15. Public Safety Fish & Game Res.	100.0	406352	0.2	1.0	0.2
16. Natural Res. Parks & Recreation	500.0	406352	1.2	1.0	1.2
17. Trans. & Pub. Fac. State Fac.	4247.1	406352	10.5	0.7075	7.4
18. Trans. & Pub. Fac. Southcentral Ports & Harbors	4150.0	406352	10.2	1.0	1.02
19. Commerce & Economic Development Econ. Enterprise & Energy/ Power Dev.	1008.5	406352	2.5	1.0	2.5

1981 STATE CAPITAL BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
20. Office of the Governor Executive Operations	3350.0	406352	8.2	0.7075	5.8
21. Revenue Municipal Bond Bank Reserve	3000.0	406352	7.4	1.0	7.4
22. Public Safety Crime Identification & Apprehension	1275.4	406352	3.1	1.0	3.1
23. Military Affairs Life & Property Protection	999.5	406352	2.5	1.0	2.5
24. Public Safety Life & Property Protection	1993.9	406352	4.9	1.0	4.9
25. Commerce & Econ. Dev. Consumer Protection	1674.5	406352	4.1	1.0	4.1
26. Trans. & Pub. Fac. Central Ports & Harbors	1400.0	406352	3.4	1.0	3.4
27. Administration Employee Housing	1250.0	406352	3.1	0.7075	2.2
28. Health & Soc. Serv. Assistance Payments	613.5	406352	1.5	1.0	1.5

1981 STATE CAPITAL BUDGET, PER CAPITA COST ANALYSIS

Department Budget Request Unit (BRU)	Population Sensitive Budget (1000 $)	Client Population 1979	Per Client Cost ($)	Migrant Client Population Weighting	Cost Per Migrant ($)
29. Administration Administrative Services to State Agencies	1219.4	406352	3.0	0.7075	2.1
30. Education State Museum & Library	899.8	406352	2.2	1.0	2.2
31. Health & Soc. Serv. Mental Health & Developmental Disabilities	491.6	406352	1.2	1.0	1.2
32. Administration Assistance for the Aged	424.5	15848	26.8	0.0	0.0
33. Legislature Legislative Budget & Audit	243.0	406352	0.6	0.7075	0.4
34. Labor Worker Protection	211.2	288673	0.7	0.738	0.5
35. Law Due Process	100.0	406352	0.2	1.0	0.2
36. Law Legal Services	30.0	406352	0.1	0.7075	0.7

TOTAL COST PER MIGRANT = 348.5

TABLE B.5
1981 STATE OPERATING BUDGET EXPENDITURES BY AGENCY
(1000s of Dollars)

	General Fund									
	Population Sensitive									
Agency	Entitlements	Direct User Group Correlation	Quasi-Public Goods	Government Support Activities	Subtotal	Nonpopulation Sensitive (Col. 5-9)	Total General Fund	Total Operating Budget	Population Sensitive Percentage of General Fund	Population Sensitive Component of General Fund as Percentage of Total Budget
1. Dept. of Education	218310.4	59580.6	6379.0	---	284270.0	33662.7	317932.7	368675.0	89	77
2. Dept. of Health & Social Serv.	50290.0	114128.4	---	---	164418.4	---	164418.4	233086.4	100	71
3. Dept. of Trans. & Pub. Fac.	---	57503.0	---	29939.8	87442.8	53338.7	140781.5	175924.6	62	50
4. State Bond Committee	---	---	---	---	---	93667.4	93667.4	96795.1	00	00
5. University of Alaska	---	79466.6	---	---	79466.6	10481.6	89948.2	159199.6	88	50
6. Dept. of Administration	17668.5	29770.8	---	12336.2	59775.5	---	59775.5	86867.0	100	69
7. Dept. of Public Safety	334.4	37661.2	202.2	---	38197.8	9234.3	47432.1	49767.3	81	77
8. Dept. of Comm. & Regional Affairs	3141.6	29984.4	---	621.7	33747.7	254.6	34002.3	58197.5	99	58

Agency	General Fund: Population Sensitive: Entitlements	Direct User Group Correlation	Quasi-Public Goods	Government Support Activities	Subtotal	Nonpopulation Sensitive (Col. 5-9)	Total General Fund	Total Operating Budget	Population Sensitive Percentage of General Fund	Population Sensitive Component of General Fund as Percentage of Total Budget
9. Dept. of Revenue	183.8	20271.3	---	10252.9	30708.0	1476.1	32184.1	41465.8	95	74
10. Dept. of Natural Resources	---	5659.5	---	6384.5	12044.0	20139.1	32183.1	35322.1	37	34
11. Dept of Fish & Game	---	---	663.5	4523.7	5187.2	26004.4	31191.6	47382.1	17	11
12. Judicial Branch	--	23018.9	---	---	23018.9	---	23018.9	23161.9	100	99
13. Legislative Branch	--	---	20739.4	---	20739.4	---	20739.4	20960.4	100	99
14. Dept. of Commerce & Econ. Dev.	903.6	4452.0	4922.7	745.5	11023.8	6681.9	17705.7	21325.5	62	52
15. Governor's Office	---	1604.3	2014.4	7599.7	11218.4	5437.8	16656.2	21660.9	67	52
16. Dept. of Law	---	6072.4	448.3	5612.9	12133.6	---	12133.6	16521.3	100	73
17. Dept. of Labor	414.5	5456.8	---	---	5871.3	---	5871.3	38143.5	100	15

Agency	General Fund: Population Sensitive: Entitlements	Direct User Group Correlation	Quasi-Public Goods	Government Support Activities	Subtotal	Nonpopulation Sensitive (Col. 5-9)	Total General Fund	Total Operating Budget	Population Sensitive Percentage of General Fund	Population Sensitive Component of General Fund as Percentage of Total Budget
18. Dept. of Environmental Conservation	---	4653.9	---	---	4653.9	---	4653.9	7807.6	100	60
19. Dept. of Military Affairs	---	3971.7	---	---	3971.7	---	3971.7	6370.4	100	62
TOTAL	291246.8	483255.8	35369.5	78016.9	887889.0	260378.6	1148267.6	1508634.0	77	59

TABLE B.6
1981 STATE OPERATING BUDGET EXPENDITURES BY FUNCTIONAL CATEGORY
(1000s of Dollars)

	General Fund									
	Population Sensitive									
Agency	Entitlements	Direct User Group Correlation	Quasi-Public Goods	Government Support Activities	Subtotal	Nonpopulation Sensitive (Col. 5-9)	Total General Fund	Total Operating Budget	Population Sensitive Percentage of General Fund	Population Sensitive Component of General Fund as Percentage of Total Budget
1. Education	218310.4	77421.9	6379.0	---	302111.3	49873.8	351985.1	403227.4	86	75
2. Transporation	---	58085.8	---	9263.5	67349.3	82973.0	150322.3	172670.9	45	39
3. University of Alaska	---	79466.6	---	---	79466.6	23107.1	102573.7	171825.1	77	46
4. Social Services	46128.5	50183.4	---	100.0	96411.9	2767.1	99179.0	177390.0	97	54
5. Administration of Justice	2988.2	87627.1	448.3	---	91063.6	5613.6	96677.2	99658.3	94	91
6. Natural Resources Management	---	13762.7	663.5	11143.2	25569.4	65612.3	91181.7	117748.4	28	22
7. General Government	---	---	22753.8	55952.1	78705.9	8819.7	87525.6	133170.7	90	59
8. Health	22916.1	47803.1	---	---	70719.2	2850.0	73569.2	119011.1	96	59

Agency	General Fund: Population Sensitive: Entitlements	Direct User Group Correlation	Quasi-Public Goods	Government Support Activities	Subtotal	Nonpopulation Sensitive (Col. 5-9)	Total General Fund	Total Operating Budget	Population Sensitive Percentage of General Fund	Population Sensitive Component of General Fund as Percentage of Total Budget
9. Development	903.6	50184.2	430.6	812.6	52331.0	14760.3	67091.3	77169.7	78	68
10. Public Protection	---	18721.0	4694.3	745.5	24160.8	4001.7	28162.5	36762.4	86	66
TOTAL	291246.8	483255.8	35369.5	78016.9	887889.0	260378.6	1148267.6	1508634.0	77	59

TABLE B.7
THE LARGEST ITEMS IN THE 1981 STATE GENERAL FUND
BUDGET BY EXPENDITURE CATEGORY

Entitlements

Budget Request Unit (Agency)	1000s of Dollars
1. Foundation Program Components (Education)	215,092.9
2. Medicaid, General Relief-Medical (Health & Social Services)	21,898.1
3. Assistance Payments (Health & Social Services)	19,681.0
4. Alaska Longevity Bonus (Administration)	15,014.7
5. Old Age Assistance (Health & Social Services)	4,479.5
6. Senior Citizens' Tax Relief (Community & Regional Affairs)	3,141.6
7. Public Assistance Eligibility Determination (Health & Social Services)	2,858.7
8. Public Defender (Administration)	2,653.8
9. Administration & Support (Education)	1,654.4
10. Executive Administration (Education)	1,563.1

Direct User Group Correlation

Budget Request Unit (Agency)	1000s of Dollars
1. Administration & Support: Maintenance & Operations (Trans. & Pub. Fac.)	54,623.4
2. Financial Support Program (Education)	35,697.2
3. Local Government Assistance Grants (Community & Regional Affairs)	27,465.8
4. University of Alaska - Fairbanks	25,543.6
5. University of Alaska - Community Colleges	24,274.4
6. Alaska Court System	23,018.9
7. Adult Confinement (Health & Social Services)	19,231.1
8. Program Services (Health & Social Services)	19,087.5
9. Shared Taxes (Revenue)	18,926.8
10. Teachers' Retirement (Administration)	18,111.8

Quasi-public Goods

Budget Request Unit (Agency)	1000s of Dollars
1. Legislative Council, Legislative Budget & Audit Committee; Ombudsman (Legislature)	20,739.4
2. Public Broadcasting Commission (Education)	4,484.5
3. Alaska Public Utilities Commission, Transportation Commission, Pipeline Commission (Com. & Econ. Dev.)	3,709.0
4. Elections (Office of the Governor)	2,014.4
5. Insurance (Com. & Econ. Dev.)	783.1
6. State Museum (Eudcation)	739.4
7. State Repertory Theater (Education)	600.0
8. Alaska Historical Commission (Education)	500.0
9. Criminal Justice Planning Agency (Law)	448.3
10. Alaska Power Authority	430.6

Government Support Activities

Budget Request Unit (Agency)	1000s of Dollars
1. Public Facilities Maintenance & Operations (Trans. & Pub. Fac.)	11,883.9
2. Audit, Petroleum Revenue; Enforcement; Treasury Management, Administration & Support (Revenue)	9.962.0
3. Commissioner's Office, Internal Review, Administrative Services, Financial Management (Trans. & Pub. Fac.)	9,263.5
4. Facilities Planning & Research, Public Facilities Design & Construction (Trans. & Pub. Fac.)	7,014.2
5. Land Management; Forest, Land & Water Administration (Natural Resources)	6,384.5
6. Legal Services (Law)	5,612.9
7. Executive Office;, Contingency Fund; Executive Mansion; Regulatory Reform Office, Lieutenant Governor's Office (Office of the Governor)	4,427.3
8. Fish & Game, Administration & Support (Fish & Game)	3,267.0
9. Personnel (Administration)	3,007.4
10. Accounting (Administration)	2,658.9

APPENDIX C

CALCULATION OF LOCAL GOVERNMENT PER CAPITA OPERATING COSTS

This appendix presents the method by which the per capita local government operating expenditures were calculated. Five areas were included in the analysis:

Anchorage

Fairbanks

Juneau

Kenai Peninsula

Matanuska-Susitna

In all cases, the operating expenses of the boroughs and their constituent cities were considered.

Local tax revenue (property tax and sales tax where collected) was taken as a proxy for locally financed expenditures. Apart from payments for debt service, all expenditure was assumed to be population sensitive. In order to distinguish between the per capita costs of the adult population and of the population as a whole, two population-sensitive expenditure totals were calculated, one including education spending and the other excluding it.

All financial information used in the calculations was taken from published annual financial reports or was obtained by personal communication with local government officials. Alaska Department of Labor figures were used to calculate per capita costs. The size of the adult population was estimated using the MAP model demographic profile.

ANCHORAGE

1979	Local tax revenue	78,405,773
	Less debt service	5,877,060
Total population-sensitive revenue was		72,528,713
Less education appropriation		27,038,216
Adult population-sensitive revenue was		45,490,497

1979 total population = 177,981
1979 adult population = 126,367

Per capita locally funded population-sensitive expenditure (total)	=	$407.51
Per capita locally funded population-sensitive expenditure (non-education)	=	$359.99

FAIRBANKS

North Star Borough

1978/79	Local tax revenue	12,717,630
1979/80	Local tax revenue	18,440,898
		31,158,528
1979	Average local tax revenue	15,576,264
	Less average debt service	4,779,162
Total population-sensitive revenue was		10,797,102

Cities of Fairbanks and North Pole

1979	Local tax revenue	11,510,410
	Less debt service	987,044
Total population-sensitive revenue was		10,523,366

Borough and cities population-sensitive revenue was	21,320,468
Less education expenditure	10,445,000
Borough and cities adult population-sensitive revenue was	10,875,468

1979 total population = 54,000
1979 adult population = 38,340

Per capita locally funded population-sensitive expenditure (total)	=	$394.82
Per capita locally funded population-sensitive expenditure (non-education)	=	$283.66

JUNEAU

1978/79	Local tax revenue	9,044,193
1979/80	Local tax revenue	9,716,599
		18,760,792
1979	Average local tax revenue	9,380,396
	Less debt service	2,319,085
Total population-sensitive revenue was		7,061,312
Less education appropriation		3,072,600
Adult population-sensitive revenue was		3,988,712

1979 total population = 18,317
1979 adult population = 13,005

Per capita locally funded population-sensitive expenditure (total)	=	$385.51
Per capita locally funded population-sensitive expenditure (non-education)	=	$306.71

KENAI PENINSULA BOROUGH

Borough

1978/79	Local tax revenue	11,576,442
	Less debt service	5,317,199

Total population-sensitive local revenue was 6,259,243

Six Cities (Homer, Kenai, Kachemak, Seldovia, Seward, Soldotna)

1978/79	Local tax revenue	5,785,217
	Less debt service	927,721

Total population-sensitive local revenue was 4,857,496

Borough and cities population-sensitive revenue was	11,116,739
Less education expenditure	4,180,860

Borough and cities adult population-sensitive revenue was 6,935,879

*1978/79 total population = 25,898
*1978/79 adult population = 18,388

Per capita locally funded population-sensitive expenditure (total)	=	$429.25
Per capita locally funded population-sensitive expenditure (non-education)	=	$377.20

*Average of 1978 and 1979, Alaska Department of Labor estimates

MATANUSKA-SUSITNA BOROUGH

Borough

1978/79	Local tax revenue	5,098,000
	Less debt service	913,056
Total population-sensitive local revenue was		4,184,944

Palmer

1978/79	Local tax revenue	596,144
	Less debt service	3,989
Total population-sensitive revenue was		592,155

Borough and city population-sensitive revenue was	4,777,099
Less education expenditure	3,768,899
Borough and city adult population-sensitive revenue was	1,008,200

*1978/79 total population = 17,155
*1978/79 adult population = 12,180

Per capita locally funded population-sensitive expenditure (total)	=	$278.47
Per capita locally funded population-sensitive expenditure (non-education)	=	$ 82.78

*Average of 1978 and 1979, Alaska Department of Labor estimates