APPENDIX 5C – TECHNICAL MEMORANDUM – HISTORICAL OVERVIEW OF THE ALASKA ECONOMY

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

ANCSA	Alaska Native Claims Settlement Act
APSC	Alyeska Pipeline Service Company
CBRF	Constitutional Budget Reserve Fund
CDQ	Community Development Quota
PFD	Permanent Fund dividend
TAPS	Trans-Alaska Pipeline System

C1.0 INTRODUCTION

This technical memorandum offers a historical overview of Alaska's economy. The intent of the memorandum is to increase understanding of the dynamics of the state's economy and describe how Alaska's economic structure differs from that of other states. The memorandum is organized as follows.

- Section 2 provides a socioeconomic snapshot of the state in 1970, shortly before the development of oil resources on Alaska's North Slope. Key demographic and economic characteristics of the state at that time are compared to those of the rest of the United States. The section concludes with a description of land ownership in Alaska in 1970, as it has an important influence on the economic events that follow.
- Section 3 reviews the socioeconomic effects of the construction phase of the Trans-Alaska Pipeline System (TAPS) during the mid-1970s. Included in this discussion are the impacts of TAPS construction activities on population, employment and income, the cost of living, and the social environment.
- Section 4 describes the major socioeconomic developments in Alaska following the start of North Slope oil production. The section begins with the spurt in economic growth resulting from the increase in oil-related state revenues. Then the focus shifts to the longer trends in the state's major economic drivers, including the petroleum industry and federal government. In addition, the post-TAPS discussion examines trends in 1) demographics; 2) the role of miscellaneous economic sectors; 3) the cost of living; and 4) the economy of rural Alaska, particularly as it relates to economic changes experienced by Alaska Natives.
- Section 5 summarizes socioeconomic differences and similarities between Alaska in 1970 and contemporary Alaska. The section also compares selected current socioeconomic characteristics of Alaska and the United States.
- The proposal to construct a natural gas pipeline to transport Alaska's North Slope gas to market has its own historical context. **Attachment A** provides a brief chronology of efforts to build such a pipeline, with a focus on key economic events and federal and state policy initiatives.

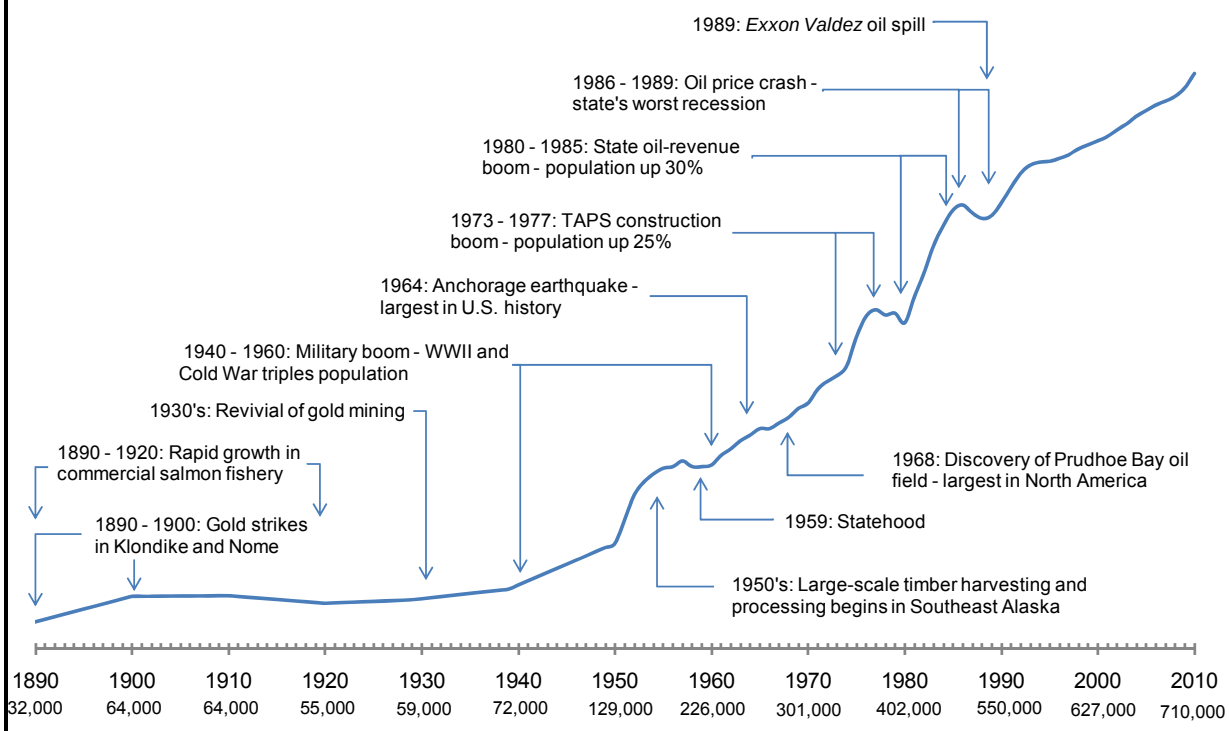
C2.0 ALASKA'S ECONOMY BEFORE THE TRANS-ALASKA PIPELINE SYSTEM

Prior to becoming a state in 1959, Alaska's economic history was one of periodic booms associated with large-scale exploitation of a succession of natural resources — including furs, gold, fish, and timber — followed by busts when the resource became depleted or market conditions turned against continued production (Goldsmith 2010b). The economic booms generated considerable wealth, but most of it went to outside companies that had the capital to successfully explore, develop, and produce Alaska's natural resources, and little was left behind to benefit Alaskans, or to build a stable and permanent economic base (Goldsmith 2010b).[1]

In addition, the federal government exerted considerable control over the territory's economy. At statehood, about 80 percent of jobs in Alaska depended directly or indirectly on federal spending (Goldsmith 2008a). The military accounted for most of the federal expenditures in Alaska, which General Billy Mitchell called "the most important strategic place in the world" because of its proximity to Europe and Asia (Goldsmith 2003; Leask et al. 2006). The first military troops arrived in Anchorage during 1940 (Fried and Windisch-Cole 2006), marking the beginning of a dramatic economic and population expansion that would last through the 1950s (**Figure C2-1)**. After World War II there were fears that demobilization would result in a bust for Anchorage's economy, but the Korean War and Cold War pushed troop levels up (Fried and Windisch-Cole 2006). Toward the end of the 1950s, the relative economic importance of the military in Alaska began to wane, but with 33,000 military personnel stationed there in 1960, the U.S. Department of Defense continued to be the largest single employer (Leask et al. 2006).

[1] Alaska's early commercial salmon fishery illustrates the state's boom-and-bust cycle. By the 1920s, a tax on each case of salmon packed in the territory accounted for 70 percent of general fund revenue (Fried 1996). During the early 1940s, salmon harvest levels reached a record high of over 100 million salmon caught annually (Heard 2003). By 1948, however, revenues from fishing had dropped so dramatically that alcohol taxes had become Alaska's main source of revenue (Alaska Department of Revenue 2011a).

With respect to the lack of local investment capital, Kaufman (1961) notes that total aggregate capital, surplus, undivided profits, and reserves for all 18 Alaskan banks in 1960 were the smallest of any state. Nevada, the state with the next smallest population, had more than twice the amount, and the newest state, Hawaii, had four times the amount.



TAPS – Trans-Alaska Pipeline System.
Adapted from Leask et al. (2001). Additional data from Alaska Department of Labor and Workforce Development, Research & Analysis Division (2011a)

Figure C2-1

Alaska's population, 1890 to 2010

Through the 1960s, Alaska retained an immature, frontier economy; immature because it did not provide the full range of economic goods and services, and frontier because it had relatively high natural resource levels, but the resources were located in remote, sparsely populated regions of the state (Huskey 1982). These two attributes were interrelated. The low population density and underdeveloped character of the state weakened the links between resource development and support sector and population growth. Resource development typically depended on non-resident workers and imported goods and services (Huskey 1982). Because this "enclave" resource development involved limited direct interaction with the regional economy in which it operated, Alaska only marginally benefited from the direct jobs and business activity associated with the development. Furthermore,

the economy missed out on the larger multiplier effect that would be generated by these activities if they occurred in a more developed economic setting (Goldsmith 2010a).[2] High transportation costs made living in the state more expensive than the national average, but the higher prices of consumer goods and housing were at least partially offset by higher wages and income. The following quote (quote from Kaufman 1961) encapsulates the effect of these various factors on the character of the economy's growth:

> "It seems to me that the extra expense, and most of the difficulties of doing business in Alaska go in the proverbial vicious circle. The high cost of doing anything in Alaska is caused mostly by high-priced labor. The high wages are caused by the high cost of living, this is due to the high cost of transportation, transportation is high mostly because of one-way freight and not enough of it to interest much competition. The small amount of freight is due to Alaska's small permanent population, which is due to the lack of basic industrial growth, which is due to the high cost of doing anything in Alaska."

C2.1 SOCIOECONOMIC OVERVIEW OF ALASKA IN 1970

This section examines the Alaska's early demography and economy in more quantitative terms. **Table 2.1-1** compares selected socioeconomic characteristics of Alaska in 1970 with those of the rest of the United States. Socioeconomic differences and similarities between Alaska in 1970 and contemporary Alaska are examined in Section C5.0.

As shown in the top portion of **Table 2.1-1**, Alaska's population in 1970 was only 308,500, the lowest of any state, and was disproportionately male. More men than women came to Alaska for the chance at high-paying but often temporary jobs (Leask et al. 2001). The state had a large indigenous (Alaska Native) population, who primarily lived in rural areas of the state.[3] The median age in the state was 22.9 years, which made Alaska's population by far the most youthful of all the U.S. states. Much of Alaska's population had moved to the state within the previous five years. This occurred both because Alaska was growing quickly and because the large military population added to the high population turnover (Leask et al. 2001). Few non-Natives were born and raised in Alaska, and few people retired in the state, which tended to keep the population young (Leask et al. 2001). Finally, Alaska wages and income were substantially above national averages.

---

[2] The multiplier effect describes how an increase in economic activity starts a chain reaction that generates more activity than the original increase. For example, the sale of Alaska's natural resources draws money into the state that generates revenues for businesses, wages and jobs for Alaskans, and other income. As Alaska businesses and households spend this new money within the state, additional revenues, wages, and jobs are created in other businesses (Goldsmith 2010a).

[3] Alaska Natives include the Iñupiaq, Unangam Aleuts, Yup'ik, St. Lawrence Island Yup'ik, Cup'ik, Sugpiat, Eyak, Tlingit, Haida, Tsimshian and eleven Athabaskan cultures.

Table 2.1-1

Demographic and Economic Characteristics of Alaska and the United States, 1970

Socioeconomic Characteristic	Alaska	United States
Population (000s)	308.5	205,052.2
Male population (%)	54.3	48.6
Alaska Native/American Indian population (%)	17.0	0.4
Median age of population	22.9	28.1
Population that moved from another state within the last five years (%)	44.0	18.5
Total (non-farm) employment (000s)	93.1	71,006.0
Average hourly wage for production workers ($)	4.66	3.36
Annual income per capita ($)	5,248	4,084

	Gross Product		Employment		Earnings	
	(Percent of Total)					
Industry	Alaska	United States	Alaska	United States	Alaska	United States
Mining (excluding oil and gas extraction)	0.3	0.7	2.2	0.5	3.8	0.6
Oil and gas extraction	14.2	1.2	N/A	0.4	N/A	0.5
Construction	9.6	5.0	5.6	5.0	11.2	6.6
Manufacturing	5.8	24.4	5.5	22.5	6.6	27.2
Trade	10.4	17.2	12.3	20.5	11.4	17.2
Transportation and warehousing	9.5	8.8	6.6	5.6	8.8	7.4
Finance, insurance, and real estate	10.0	14.4	3.8	7.0	2.7	5.4
Professional, scientific, and technical services	5.9	8.7	11.1	15.7	8.3	11.6
Health care and social assistance	1.7	3.3	1.6	3.8	1.9	4.4
Government and government enterprises	30.7	13.7	48.3	18.4	43.1	18.6
Other sectors	1.9	2.6	3.0	0.6	2.2	0.5

Source: Adapted from Carrington (1996). Additional data from U.S. Department of Commerce, Bureau of Economic Analysis (2011) and U.S. Census Bureau (2011c).

The rest of **Table 2.1-1** compares the structure of Alaska's economy in 1970 with that of the rest of the United States. Since no single economic measure captures the importance of Alaska's economic sectors, gross product (a measure of the total value of output), employment, and earnings are used to characterize and measure the importance of each sector. Alaska's economic structure exhibited two unusual features. First, the Alaska manufacturing industry was quite small, with the only significant activity in food processing (primarily salmon canning) and lumber products. In contrast, the economic foundation of most other places in the U.S. was the cash brought in by manufacturing and exporting goods. Second, the government sector in Alaska was very large because of the presence of several military bases. Moreover, federal grants covered more than half the state budget. The state's own modest revenues came from various charges and taxes — including taxes on personal income and commercial fish — and from oil and gas production in Cook Inlet, which began in the 1950s (Leask et al. 2001). In 1970, annual Cook Inlet oil production peaked at 82,415 million barrels and as a result, the state's oil revenues accounted for 88

percent of unrestricted general fund revenue (Alaska Department of Natural Resources 2010; Alaska Oil and Gas Association 2010).[4]

In sum, the pre-TAPS Alaska economy was built mainly on the sale of natural resources and inflows of cash from the federal government, while the pre-TAPS population may be characterized as numerically small, youthful, new to the state, male, and relatively likely to be employed by the government (Carrington 1996). The relatively limited trade and service sectors, together with the large non-resident workforce, prevented more recycling of the money that entered the economy from natural resource sales and federal government expenditures. Less recycling — local purchases by businesses and households — meant less job creation (i.e., a smaller multiplier effect) (Goldsmith 2010a).

C2.2 LAND OWNERSHIP IN PRE-TRANS-ALASKA PIPELINE SYSTEM ALASKA

The issue of land ownership is critical to an understanding of the evolution of Alaska's economy after 1970. On the eve of statehood, all but about half a percent of Alaska's 375 million acres belonged to the federal government (Hull and Leask 2000). To help provide a long-term economic base for the new state, Congress included measures in the Alaska Statehood Act that changed land ownership and management (Alaska Humanities Forum 2011a).[5] One measure granted Alaska 90 percent of the revenues from mineral lease sales on federal lands in Alaska (225 million acres, or sixty percent of the land in Alaska was set aside as federal land). A second measure granted Alaska the right to select 104 million acres (28 percent of the land in Alaska) from lands that were not reserved for national parks, military bases, or other purposes. The federal government would transfer the title of this land to the state.

As the new state leaders began selecting Alaska's land allotment, Alaska Native groups protested many of the selections based on a provision in the Statehood Act that prohibited Alaska from claiming any right or title to land that may be subject to Alaska Native title (Alaska Humanities Forum 2011b). Alaska Native land claims had been building before statehood, particularly in Southeast Alaska (Hull and Leask 2000). In the 1960s, however, when the state began selecting lands, Alaska Native groups saw increasing threats to lands they had traditionally used, and they organized statewide to press their land claims. After several years, federal, state, and Alaska Native negotiators agreed on the general outlines of a settlement, and in 1971, Congress passed the Alaska Native Claims Settlement Act (ANCSA). ANCSA settled Alaska Native land claims with a grant of 44 million acres and a

[4] By 1967, Alaska's income derived from oil and gas (as well as other mineral deposits) had surpassed federal military expenditures for the first time in Alaska's history. Oil became the chief source of state income, and fisheries moved to a distant third place (Mcbeath et al. 2008).

[5] During the battle for statehood one of the primary arguments put forward by opponents was that Alaska would not be able to pay the bills that would accrue as a result of statehood (Kaufman 1961).

payment of $1 billion. In addition, it established 12 Alaska-based regional corporations and more than 200 village corporations to manage that land and money.[6]

The Alaska Native corporations created under ANCSA became by far Alaska's largest private landowners, with regional and village corporations owning about 12 percent of Alaska lands. All other private landowners together owned only around one percent (Leask et al. 2001). The federal and state governments together owned approximately 87 percent of the land and a large share of the natural resources in Alaska. Alaska ranked (and continues to rank) number one in the nation in terms of the share of land in public ownership. Public ownership removed a large share of land from the potential property tax base, but offered the opportunity for public revenues from resource exploitation in the form of royalties and other payments (Goldsmith 2010a). As will be demonstrated in the following sections, these land distribution advantages and disadvantages would substantially shape Alaska's subsequent economic development.

[6] A 13th regional corporation, based in Seattle, was created to compensate Alaska Natives living outside Alaska. This regional corporation ceased operations in 2009.

C3.0 THE TRANS-ALASKA PIPELINE SYSTEM ERA

In 1968, test drilling on the North Slope confirmed the existence of the Prudhoe Bay oilfield, which happened to lie beneath some of the land selected for state ownership. The new field contained more than 25 billion barrels of oil, making it the largest in North America (BP 2006). TAPS was designed and constructed to transport Prudhoe Bay oil to the northernmost ice-free port in Valdez, for shipment out of state. With an estimated cost of construction, excluding interest, of $7.94 billion (1977 dollars) (Government Accounting Office 1978), TAPS was the most expensive privately financed construction project up to that time. As discussed in the previous section, Alaska's economy was very small. A consequence of these two factors was the largest localized demand shock in postwar U.S. history (Carrington 1996).

After a series of political and environmental challenges were overcome, pre-construction activities of TAPS began in the spring of 1974, and actual pipeline construction began in early 1975 (Government Accounting Office 1978). Activity and employment for TAPS tailed off substantially by the late fall of each year, since winter construction was limited to relatively few activities (Carrington 1996). Pipeline construction was completed in May 1977, and the first oil entered the line on June 20, 1977 (Government Accounting Office 1978).

The Alyeska Pipeline Service Company (APSC) was formed in 1970 by the owners of the pipeline as their common agent for designing, constructing, and operating TAPS (Government Accounting Office 1978).[7] The company employed roughly 25,000 workers during each summer of the project, and its subcontractors employed roughly 25,000 more (Carrington 1996). APSC's original peak workforce projection was a maximum of 16,000 workers (Government Accounting Office 1978). The need to hire far more workers than expected resulted from an array of factors, including unanticipated site conditions and construction difficulties. Due largely to the additional direct labor hours required to complete the project, TAPS experienced a cost overrun of about $1.5 billion, or 23 percent more than projected (Government Accounting Office 1978).

When construction began on TAPS, Alaska had nowhere near enough workers to fill the required jobs during the two-year construction phase. In fact, before construction began, there were fewer than 8,000 construction jobs in all of Alaska (Wink 2007). As shown in **Table 2.1-1,** non-farm employment for the state totaled only about 93,100. Further, although the state government required that APSC employ qualified Alaska residents whenever possible, it provided very little in the way of workforce training to assist people in obtaining pipeline jobs until fiscal year 1974-1975, when $1.6 million was allocated; $1.1 million from the state and about $0.4 million from APSC (Information Insights 2004). Training did not begin until well into the second construction season. Because there was no

[7] The pipeline owners were Amerada Hess Corporation, ARCO Pipeline Company, Sohio Pipeline Company, Exxon Pipeline Company, Mobil Alaska Pipeline Company, Phillips Petroleum Company, Union Alaska Pipeline Company, and BP Pipelines, Inc. (Government Accounting Office 1978).

recorded follow up with trainees, it was impossible to determine whether or not those trained went on to get pipeline jobs (Information Insights 2004).

Since Alaska's workforce was small and relatively unskilled, the majority of jobs from the construction of TAPS went to non-Alaskans. Estimates indicate that at the peak of oil pipeline construction (December of 1975), Alaska residents made up only 41 percent of pipeline workers. However, even this low percentage may overestimate the involvement of Alaska's resident workforce, since during TAPS construction, state residency was determined by one of four indicators including an intent to establish a permanent residence in Alaska, or voting or *planning* to vote in a local election, neither of which required long-term residency. As reported in Carrington (1996) Dixon (1978) estimated that approximately 40 to 60 percent of the Alyeska workforce was supposedly Alaska residents. No information was reported for the contractor workforce. Today, Alaska residency is defined as those persons that qualify for an Alaska Permanent Fund dividend (PFD), which requires that a person reside in the state for at least one year, often longer, depending on when the residency began and the time period for submittal of information for the PFD.

Many of the workers hired by APSC were career "pipeliners" who built and maintained oil pipelines throughout the world (Carrington 1996). This group included engineers and managers, but they were typically skilled welders and pipefitters. Only a few of these pipeliners were resident Alaskans, with the majority apparently coming from the pipeline industry's base in Texas and Oklahoma. APSC jobs typically included periodic free trips to and from the contiguous United States. The rest of the TAPS workforce consisted of relatively low-skilled labor such as truck drivers, operators of excavation machinery, and other support staff. Many of these people also came from the contiguous United States, but such workers were apparently much more likely to be Alaska residents (free travel for rest and relaxation leaves was not generally provided by subcontractors) (Carrington 1996).

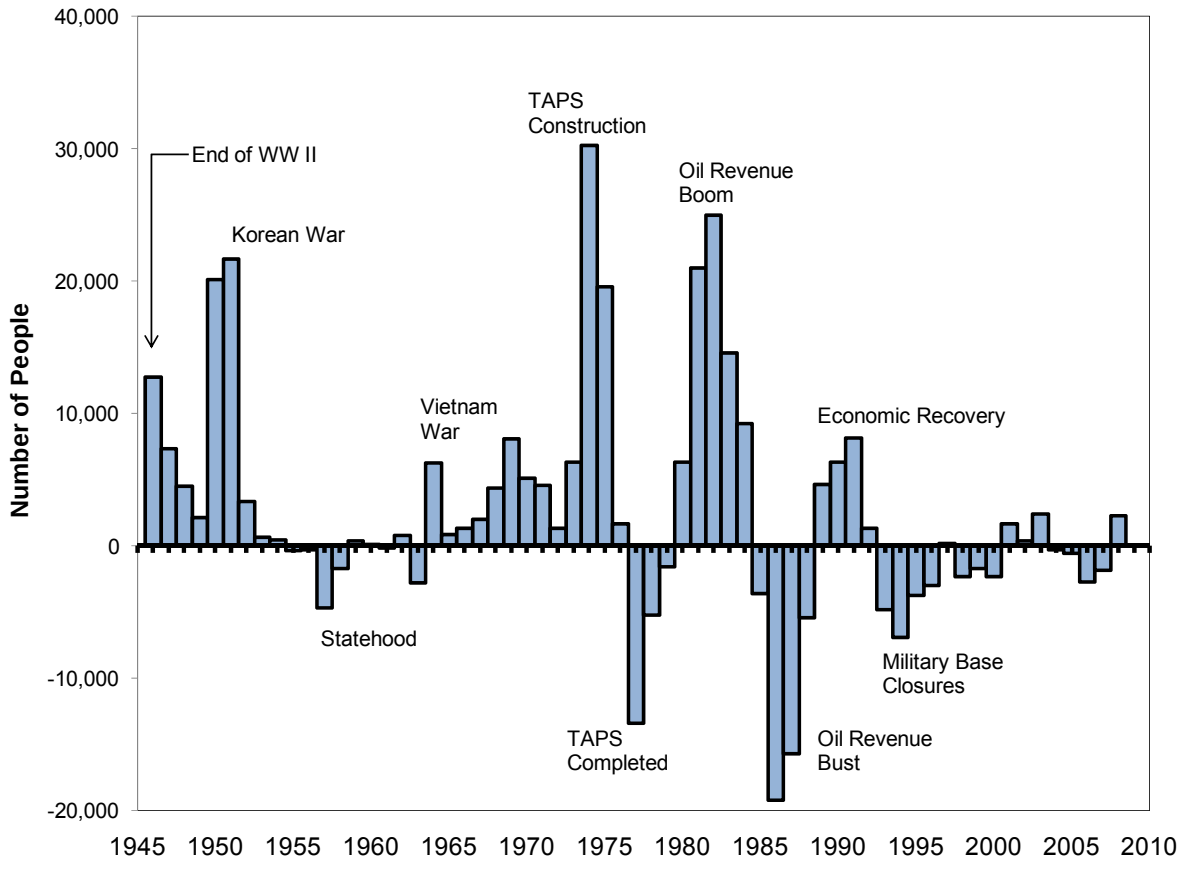
Most APSC employees were hired under an umbrella-type project labor agreement negotiated with 17 international unions in late 1973 and early 1974 (Government Accounting Office 1978). In return for generous wage and travel provisions, the unions promised not to strike for the duration of TAPS construction. Unskilled workers typically applied for APSC jobs at union halls in Anchorage or Fairbanks, while many of the skilled workers were recruited through union halls in Oklahoma and Texas (Carrington 1996).

C3.1 EFFECTS OF THE TRANS-ALASKA PIPELINE SYSTEM ON THE POPULATION AND ECONOMY

C3.1.1 POPULATION

Figure 3.1.1-1 illustrates the dramatic change in Alaska net migration during the period that TAPS was built. The oil pipeline construction was not the only factor fueling population growth in Alaska in the mid-1970s. The project came at a time when a recession in much of the rest of the country made the lure of a booming Alaska economy even stronger (Fried 2009). The 1973-1975 U.S. recession, caused by the 1973 "oil price shock" that followed the Organization of Arab Petroleum Exporting Countries' oil embargo against the U.S., together with the 1973-1974 stock market crash, was at that time the most severe economic downturn since the Great Depression of 1929. As a result of the poor economic conditions

in the contiguous United States, migration to Alaska was probably considerably higher than it would have been if TAPS had gotten underway during a period of more robust national economic growth (Information Insights 2004). On the other hand, there was not the feared inflow of unemployed workers and their families coming to Alaska in search of jobs only to end up on welfare (Information Insights 2004). Most of the individuals who came to Alaska in search of work were able to find employment.



TAPS – Trans-Alaska Pipeline System.
Source: Adapted from Fried (2009). Additional data from Alaska Department of Labor and Workforce Development (2011b)

Figure 3.1.1-1

Alaska net migration, 1945 to 2010

C3.1.2 EMPLOYMENT AND INCOME

Employment in Alaska's construction industry grew from 10,438 in 1973 to 38,453 in 1976, a growth of 268 percent that underscores the extraordinary size of the TAPS employment shock (Carrington 1996). Increase in demand for construction labor led to an increase in construction wages. Some of the rise in average wage rates also reflected an upgrading of the skill level of the average worker rather than an increase in the wage accorded any given worker. As noted above, many in-migrants to Alaska's construction industry were skilled managers and operatives from the oil industry in Oklahoma and Texas, and these workers commanded higher than average wages (Carrington 1996). Nonetheless, wages were extraordinarily high even for relatively low-skill workers such as truck drivers and cooks (Carrington 1996). While the growth in construction employment from 1973 to 1976 was huge, so was the drop in employment and wages that occurred after the pipeline was finished (Carrington 1996).

There is evidence that TAPS construction also had strong positive spillovers into most sectors of Alaska's economy. The TAPS project and general economic boom increased labor demand in certain non-construction industries at the same time that it reduced labor supply (Carrington 1996). The wholesale and retail trade, transportation, public utilities, and finance and service industries all experienced strong employment growth over this period.

The manufacturing and government sectors, however, were relatively untouched by the pipeline boom in terms of employment (Carrington 1996). As discussed in Section C2.0, Alaska's manufacturing industry during this period was small. Virtually all the materials used to construct TAPS were manufactured out-of-state. The demand for government services increased with the boost in population and economic activity, but this demand increase had little effect on the number of state and local government employees. There were, however, significant earnings increases for these employees as the state and local governments sought to retain experienced employees (Carrington 1996).

C3.1.3 UNEMPLOYMENT

The Alaska unemployment rate fell substantially over the TAPS construction period (Carrington 1996). In Fairbanks and Anchorage, unemployment among working-age residents dropped to near zero as Alaskans left their routines to take advantage of the high wages offered by APSC and its subcontractors (Haycox 2009). Carrington (1996) offers a number of reasons why the unemployment rate for the state as a whole did not fall even more. As noted above, TAPS was started in the midst of the 1974-75 recession, when workers from the contiguous United States came to Alaska eagerly seeking even-chance opportunities. In addition, union contracts kept the market for APSC jobs from clearing, and out-of-state workers were willing to wait in unemployment lines in Alaska until a job opened up.

C3.1.4 COST OF LIVING

Relative to the U.S. average, Anchorage consumer prices fell over 1968-73, apparently because of increasing integration of the Alaskan economy with the U.S. mainland. In contrast, Anchorage prices rose roughly five percent faster than the U.S. average over 1975

and 1976. Prices rose even more in Fairbanks where, for example, costs for food were reportedly ten percent higher in Fairbanks than in Anchorage in October of 1976, and costs for non-food items were about nine percent higher. As with the earnings and wage increases, however, the relative cost of living increase was short-lived. After TAPS construction was completed, Anchorage prices quickly returned to the relative price level of 1973 and 1974 (Carrington 1996).

C3.2 SOCIAL IMPACTS OF THE TRANS-ALASKA PIPELINE SYSTEM

A distinctive feature of the TAPS construction project is that it was publicized well in advance of its starting date (Carrington 1996). Legal challenges delayed the start of construction for over three years. APSC ordered $100 million (1969 dollars) of pipe from Japanese mills in April 1969, and the pipe was completely delivered by the end of 1971 (Carrington 1996). Moreover, there was a boom in retail and office construction in Alaska in 1969 and 1970. As Fairbanks was the likely staging area of the proposed pipeline, much of the speculative building was centered there, but Anchorage also experienced a large growth in construction permits (Carrington 1996).

Yet, prior to the start of TAPS construction, Fairbanks, Valdez, and other Alaska communities did not plan for the needs of a project of that magnitude. The ability of municipalities to plan for impacts was limited by the absence of specific, concrete, actionable knowledge from industry on project plans and timelines. Moreover, state government could have assisted municipalities more by providing support and financial help for planning efforts prior to construction. During TAPS construction, the commitment of state funds for impact needs came only after the impact was demonstrated, and when it did come, impact aid was often less than anticipated (Information Insights 2004). Insufficient housing, school overcrowding, teacher shortages, inadequate roads, telephone systems, and other infrastructure, and inadequate or non-existent zoning regulations were some of the negative experiences that could have been addressed through better community planning (Information Insights 2004).

As the only urban community located within the pipeline corridor, Fairbanks was particularly affected. It received the largest number of in-migrants and was also the destination for TAPS workers on rest and relaxation leaves (Government Accounting Office 1978; Carrington 1996). Moreover, Fairbanks was positioned to serve as a service and supply center for TAPS. During peak construction, APSC estimated it spent $800,000 per day in Fairbanks (Information Insights 2004). Anchorage, which served as a headquarters for pipeline administrators and support industries, was another urban area significantly affected. Its population increased 20 percent from 1973 to 1977, and the impact of TAPS was felt on the local economy, municipal infrastructure, education expenditure, property values, housing, transportation, utilities, and public services (Information Insights 2004).

While many of the social impacts of TAPS construction were concentrated in the urban areas of Fairbanks and Anchorage, scores of rural Alaska's communities also experienced impacts to some extent, especially workforce shortages because of the large number of local residents who left for pipeline jobs. The smaller villages felt the most severe impact, as few people were qualified to take over for essential personnel who left (Information Insights

2004). On the other hand, construction of TAPS contributed to a substantial increase in employment and income for Alaska Natives in rural Alaska. Close to 6,000 Alaska Natives, representing roughly 10 percent of the total workforce, were hired during construction (Martin and Hill 2009).

C3.3 LONG-TERM ECONOMIC IMPACTS OF THE TRANS-ALASKA PIPELINE SYSTEM

While 1973-76 employment and population growth in Alaska was enormous, so was the reduction in employment and population that occurred after the pipeline was finished in 1977. As shown in **Figure 3.1.1-1**, there was a large out-migration in the years immediately following completion of TAPS. Employment shrank by more than 8.5 percent between 1976 and 1977, and by 1981, Alaska employment was very close to what would have been predicted by the pre-1974 trend. Thus, the employment and population effect of the construction phase of TAPS was largely short-term (Carrington 1996).

The long-term impacts of TAPS on the state economy, however, were huge, as they were magnified considerably by the state's decision to share its newfound oil wealth through capital projects, school debt reimbursement programs, subsidized mortgage rates, power cost equalization, and the PFD (Information Insights 2004). The state spending fueled an "oil boom" from 1980 to 1985. This period of unprecedented economic growth is described in more detail in the next section, which describes the long-term economic aftermath of TAPS as well as other developments in Alaska's economy during the past 33 years.

C4.0 POST-TRANS-ALASKA PIPELINE SYSTEM ERA

The final weld was completed on TAPS on May 31, 1977, and for the next three decades Alaska's economy would go through a transformation few could imagine (Fried 2007). Of all the natural resources produced and sold in Alaska since its purchase from Russia, petroleum has accounted for 90 percent of the total value (Goldsmith 2007).

The next sections describe how the Alaska economy has developed since the completion of TAPS, starting with the spurt in economic growth resulting from the increase in state revenues. The focus is on the trends in what have been the major economic drivers, including the petroleum industry and federal government. In addition, the post-TAPS discussion examines trends in demographics, the role of other economic sectors, the cost of living, and the economy of rural Alaska, particularly as it relates to economic changes experienced by the Alaska Native population.

C4.1 1980s BOOM-AND-BUST

C4.1.1 THE BOOM

The story of Prudhoe Bay and the Alaska economy would have been much different if the State of Alaska did not own the land and petroleum resources beneath the Prudhoe Bay oil development (Goldsmith et al. 2009). State ownership of the land where the oil is produced has meant that a large share of the value added from production, and most importantly, a large portion of the economic rent from that production, could be captured by state government through taxes and royalties (ownership payments based on the wellhead value of the oil) (Goldsmith 2010b).

In 1970, the state treasury received a major economic kick start in the form of $903 million in oil-related rents and lease bonus payments (Goldsmith et al. 2009). Taxation on North Slope oil production was crafted by the Alaska Legislature in 1973. With the oil price increase that resulted from the Iranian Revolution in 1979, the state's oil revenues, including royalties, grew dramatically. The state's budget doubled in one year from $1.6 billion in 1980 to $3.4 billion in 1981 (Fried 2007). By 1985, Alaska's combined state and local government spending per resident had climbed to 300 percent of the national average (Leask et al. 2001).

Before TAPS, taxpayers in Alaska bore the second-highest tax burden in the country. In 1980, with rising oil tax revenue, Alaska repealed its personal income tax and by 1982, it was sending out PFD checks to Alaskans instead (IHS Global Insight 2010). The Permanent Fund was established in 1976, with fund deposits coming from a 25 percent share of state oil and gas royalties (Goldsmith 2010b). The fund balance was invested in a portfolio of assets to maximize its long-run rate of return. To ensure that all Alaska residents benefited from oil production on state-owned lands, the state legislature passed a plan in 1982 that annually paid each resident, regardless of age, an equal amount out of the appropriable earnings of the Permanent Fund (Goldsmith 2010b).

As a result of the oil wealth, nearly every aspect of the state's economy grew at breakneck speed during the first five years of the 1980s (Fried 2007). The employment opportunities

created by oil-fueled state spending contributed to population growth throughout the state. Between 1980 and 1985, the state's population grew by more than 120,000, a state record for a five-year period (**Figure C2-1** and **Figure 3.1.1-1**). In fact, it would take another 22 years before the state would add that many people again (Fried 2007). As during the construction phase of TAPS, the post-TAPS oil boom coincided with a national economic downturn, which amplified the population impacts. The 1980-1982 U.S. recession, which was partially caused by the Iranian oil embargo, left millions of workers in the contiguous United States unemployed and more likely to move in search of work. In contrast, Alaska had an especially strong economy with high wages and plentiful jobs (Fried 2009).

C4.1.2 THE BUST

The post-TAPS economic boom in Alaska came to an abrupt halt in 1986, when the world oil price fell to $10 per barrel after Saudi Arabia linked its oil price to the spot market for crude oil and increased production. The resultant drop in State of Alaska oil revenues led to severe cutbacks in government services and programs, and economic activity in the state declined markedly (Haycox 2009). The 1986-1989 state recession caused major population and structural changes to the economy. Between 1985 and 1989, 44,000 more people left Alaska than arrived (**Figure 3.1.1-1),** and there was a dramatic increase in home loan foreclosures and business bankruptcies (Fried 2007). The construction workforce, which was dominated by young, single males with high incomes, was cut in half over a very short period. Unemployed construction workers tended to leave the state rather than work in other industries (Information Insights 2004). The dramatic economic downturn underscored the vulnerability of Alaska's economy to the volatility of international commodity markets.

In 1989, cleanup activities after the *Exxon Valdez* oil spill in Prince William Sound created a high level of economic activity in Alaska (Haycox 2009; Powell 2010), and the state's economy started to rebound. The first years of the economic recovery were also marked by the years of peak North Slope oil production (Fried 2007). The economic recovery also coincided with the 1990-1991 U.S. recession caused by the 1989 Savings and Loan Crisis, and another wave of economic refugees arrived in Alaska (**Figure 3.1.1-1**). By 1990, the state's population and workforce had hit record highs (Fried 2007).

The two decades following the initial economic recovery would be the longest period of uninterrupted growth in the state's history, albeit significantly slower than previous periods (Fried 2007). From 1959 to 1987, employment in Alaska grew by nearly six percent per year versus two percent during the most recent expansionary period, and population growth slowed to about one percent versus three percent per year (Fried 2007). Declining North Slope oil production has been the major reason for the general slowdown in economic activity. On the other hand, rapid growth in federal spending, together with sharply higher oil prices and a new oil and gas production tax structure in the most recent years, have helped offset the effects of decreasing oil production (Leask et al. 2006). The next sections describe these demographic and economic developments in more detail.

C4.2 SOCIOECONOMIC TRENDS IN THE POST-TRANS-ALASKA PIPELINE SYSTEM ERA

C4.2.1 POPULATION AND EMPLOYMENT

In the more than 30 years since TAPS construction began, the Alaska population and economy have grown significantly. Alaska's pre-pipeline population, 302,603 in 1970, had more than doubled to an estimated 692,314 by 2009. The state's economy and workforce have grown correspondingly, as evidenced by the fact that the state's construction labor pool alone is now almost equal to the total APSC workforce at the peak of TAPS construction. In addition to being much larger, U.S. Census Bureau data and other sources indicate that Alaska's population has changed over the past three to four decades in other ways, including the following:

- More diverse. Alaskans have become more ethnically diverse, especially in urban areas (Leask et al. 2006).
- More stable. The share of residents who had been in Alaska at least 5 years grew from 56 percent in 1970 to around 81 percent by 2000, the most recent year for which data were available.
- Older. Alaskans' median age was 22.9 in 1970 and 32.7 in 2009.
- More gender balanced. The population was 54.3 percent male in 1970; by 2009, it was 52.3 percent male.
- More concentrated. Alaskans have become increasingly concentrated in the Southcentral region because the boroughs to the north and south of Anchorage grew so fast in recent decades (Leask et al. 2006). In 1970, Anchorage, the Matanuska-Susitna Borough, and the Kenai Peninsula Borough made up just under half the state population. By 2009, that share was 62 percent. Nearly 80 percent of Alaskans live in the five largest urban areas, the Southcentral region plus the Fairbanks North Star Borough and Juneau. That is up from 69 percent in 1970.

Despite Alaska's population growth, only three states have smaller populations, and Alaska remains by far the least densely populated state (Goldsmith 2010a). The small population means there is still a lack of competition in some industries and an inability of firms serving the in-state market to take advantage of economies of scale in operations. These factors contribute to persistent higher prices to consumers and a higher cost of living. Moreover, the small population limits the size of the labor market and the range of expertise it includes (Goldsmith 2010a).

It is also important to note that Alaska's labor needs extend beyond the demand for more workers. The state's skilled workforce is aging, and these proficient and productive workers are retiring in increasing numbers. The aging skilled workforce is a national issue, but it is accentuated in Alaska, where aging "baby boomers" (persons born between 1946 and 1964) dominate demographics more than most states (Rosen 2007). The problem is rooted in historical circumstance. As discussed above, in the late 1970s and early 1980s, just as the rest of the nation was mired in recession, Alaska's economy was exploding with jobs

associated with construction of TAPS and the subsequent state oil-revenue boom. Tens of thousands of youthful and footloose baby boomers poured into the state during this period (Rosen 2007).

Many of the migrants remained in Alaska after the economic surge faded, and the demographic impact can be seen in the decades that followed (Hadland and Williams 2000). Although only 7.5 percent of Alaskans were older than 65 in 2009 — compared to the nation's 12.9 percent — Alaska's senior population is growing faster than in most other states. As noted, the share of baby boomers in Alaska's population is among the highest of any state. As these individuals move into their retirement years, the state's 65-plus population is expected to more than double by 2020 (Fried 2010b).

The aging population is evident in the composition of Alaska's workforce. Between 1998 and 2008, the percent of Alaska resident workers between the ages of 55 and 64 increased from 6.7 to 12.4 percent (Kreiger 2010). While the number of older workers is small relative to other age groups, older workers are of particular interest because they earn higher wages and possess skills and knowledge acquired over many years (Kreiger 2010). There is concern that the skills of the young residents may be inadequate to replace the talent and expertise of the baby boomers exiting the workforce. In general, Alaska's education infrastructure is more robust now than 30 years ago (Alaska Department of Labor and Workforce Development 2007), however, only 62 percent of Alaskan high school graduates remain in Alaska for training or employment each year. The rest leave the state. Furthermore, while over 90 percent of Alaskans have completed high school or equivalency (which is well above the national average of 84.5 percent) (IHS Global Insight 2010), only 28 percent of Alaskans age 18 to 24 attend any type of education after high school, the lowest percentage of any state (Alaska Department of Labor and Workforce Development 2007). Consequently, employers in Alaska often have difficulty recruiting individuals who have more than the most basic job skills. In short, just as a disproportionately large number of Alaskans approach retirement age, Alaska employers may find an increasingly shallow pool of available, skilled workers from which to draw (Hadland and Williams 2000; Hunsinger 2007).

In recent years, recognition that construction of a major natural gas pipeline would require the development of a skilled workforce has led to increased efforts to address workforce development in Alaska. In 2008, the Alaska Department of Labor and Workforce Development developed the "Alaska Gasline Inducement Act Training Strategic Plan," the overall purpose of which is to enhance Alaska's existing training programs so that Alaskans are afforded the opportunity to upgrade skills and acquire new ones in preparation for replacing an aging workforce and for possible gas pipeline jobs. The U.S. Department of Labor made a federal grant award of $7.5 million for the Alaska Department of Labor and Workforce Development to spend on skill training programs for jobs in pipeline construction and maintenance (Office of the Governor 2007). In addition, there have been significant Alaska legislative investments that connect with pipeline-related occupations, including $3.5 million per year for construction academies in various communities in the state and $8.7 million in state funding toward a comprehensive pipeline worker training facility in Fairbanks (Alaska Department of Revenue and Department of Natural Resources 2009).

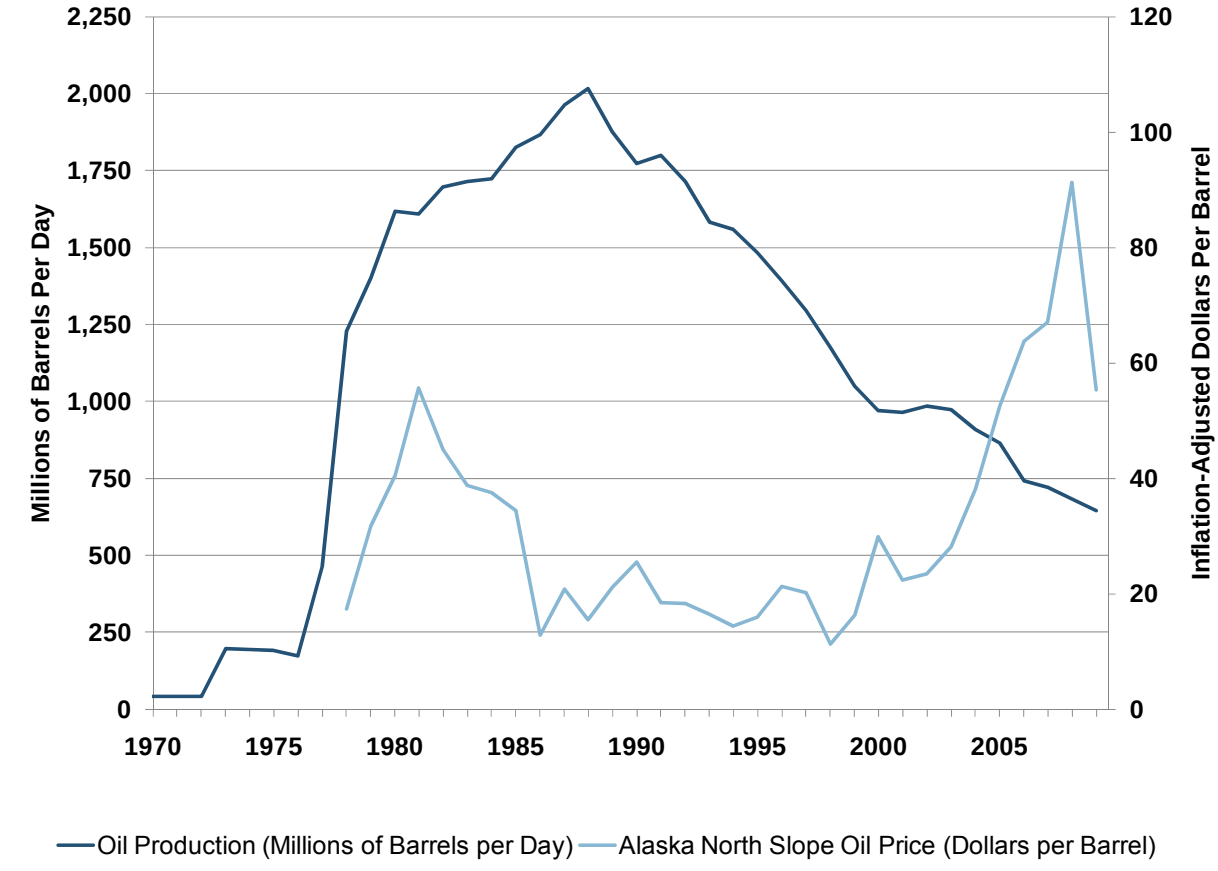
C4.2.2 PETROLEUM INDUSTRY

By far, petroleum continues to be the most important natural resource sector in the state and the largest private economic driver, as demonstrated by the following economic statistics provided by Goldsmith (2007).

- Oil production accounts for roughly 82 percent of the value of all marketed natural resource production in the state.
- Investment spending by the oil industry directly accounts for 60 percent of all private investment (including hospitals, residential housing, etc.)
- Oil production (not including support activities) directly accounts for a quarter of total gross state product.
- About a third of all personal income in the state can be traced to the oil industry (either due to work in oil production-related activities, spending of the state's oil revenues, or the Permanent Fund dividend).
- Similarly, about a third of all jobs can be traced to the oil industry, even though only about three percent of all jobs are directly involved in the production, transportation, and refining of oil.

Petroleum has maintained its economic importance despite the fact that annual North Slope crude oil production has declined to less than a third of its 1988 peak. Production has decreased as the pressure created by underground deposits of natural gas, which helps drive oil to the surface, has lessened, and the most easily accessible oil has been extracted.[8] The value of crude oil production, however, is determined not only by production, but also by price. Because of volatility in the price of crude, the annual wellhead value has fluctuated considerably in the last several years. Inflation-adjusted oil prices reached an all-time low in 1998 as the "Tiger Economies" of East Asia spiraled into crisis, cutting oil demand. Just 10 years later, however, oil prices reached a record high due to strong demand, stagnating world production, speculation or other factors. **Figure 4.2.2-1** shows that Alaska's oil production decreased even as prices rose.

[8] Natural gas produced with the North Slope crude oil is re-injected to maintain field pressure, except for a small share used for various purposes on the leases and for power generation. Natural gas is also produced in the Cook Inlet region, where a small amount of crude oil is also produced. Historically, the largest uses of Cook Inlet gas were conversion to liquefied natural gas and production of ammonia-urea fertilizer at facilities in Nikiski. However, these facilities have closed due to poor market conditions. Currently, most Cook Inlet gas is used for space heating or electricity generation in Southcentral.



Source: Energy Information Administration (2011) and Alaska Department of Revenue (2011b)

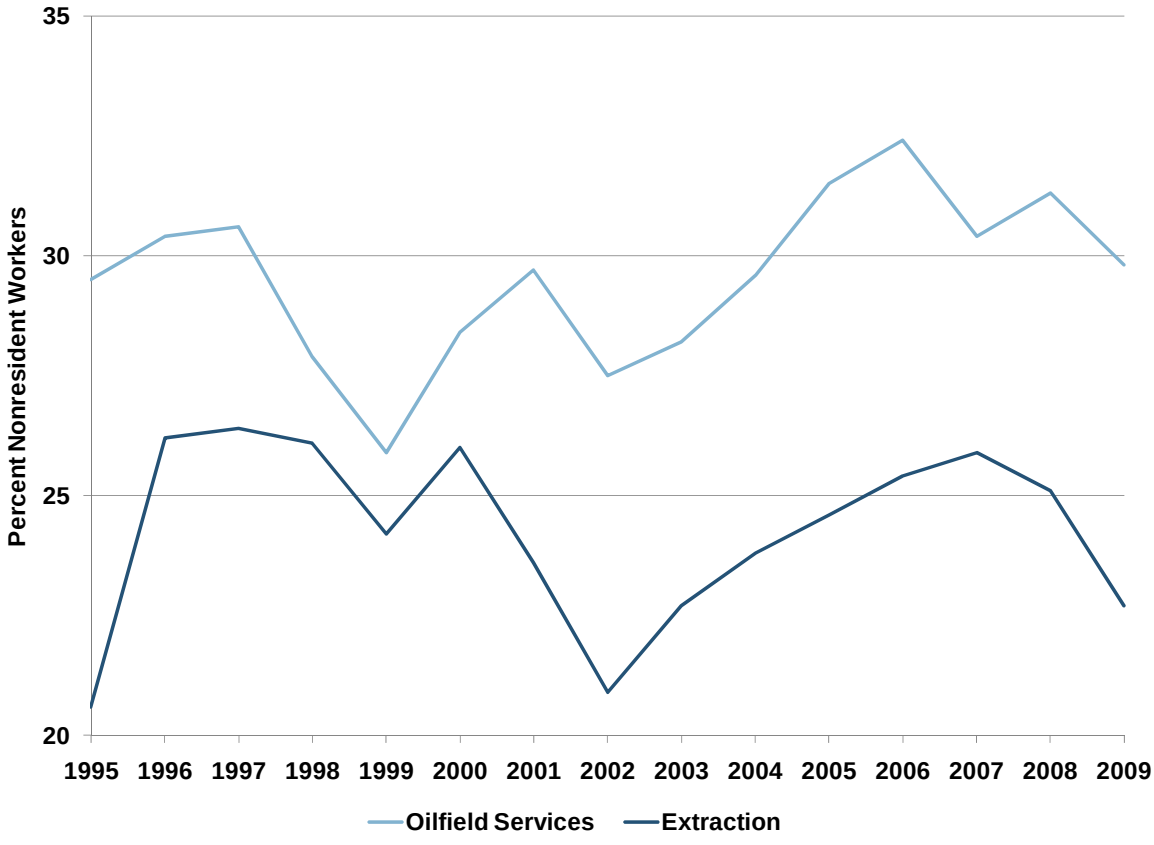
Figure 4.2.2-1

Alaska Oil Production and Average Annual Price, 1970 to 2009

As noted above, although about a third of all jobs in Alaska are linked to the petroleum industry, only about three percent of all jobs are directly involved in oil production, transportation, and refining. Because the oil industry is very capital intensive, both increases and decreases in output have a more muted impact on employment than in labor-intensive industries (IHS Global Insight 2010).

In addition, while jobs in Alaska's petroleum industry tend to be high-paying (average payroll and compensation is the highest of all Alaska industries), many of these jobs are filled by non-resident workers (Goldsmith 2010a). Due to Alaska's limited pool of local workers with specialized oil-related skills, there has often been a tendency for employers to recruit a substantial portion of their workers from outside the state (Hadland et al. 2011). Further, most oilfield jobs are located in remote worksites or camps and have a two-week-on, two-week-off rotation. It adds only a few more hours of flying time to take rest and relaxation leaves in Houston, for example, rather than Anchorage. By commuting to an established

home outside of Alaska, families can avoid a potentially disruptive move and the higher cost of living in Alaska (Goldsmith et al. 2009). Non-residents accounted for about 30 percent of the oil industry workers (including major oil companies and oilfield services workers) in 2009 (Figure 4.2.2-2), the most recent year for which data were available. The payroll accruing to non-resident workers does not contribute significantly to the Alaska economy, as these workers generally do not own homes or consume the bulk of their earnings in the state (Goldsmith 2010a).



Source: Adapted from Hadland et al. (2011)

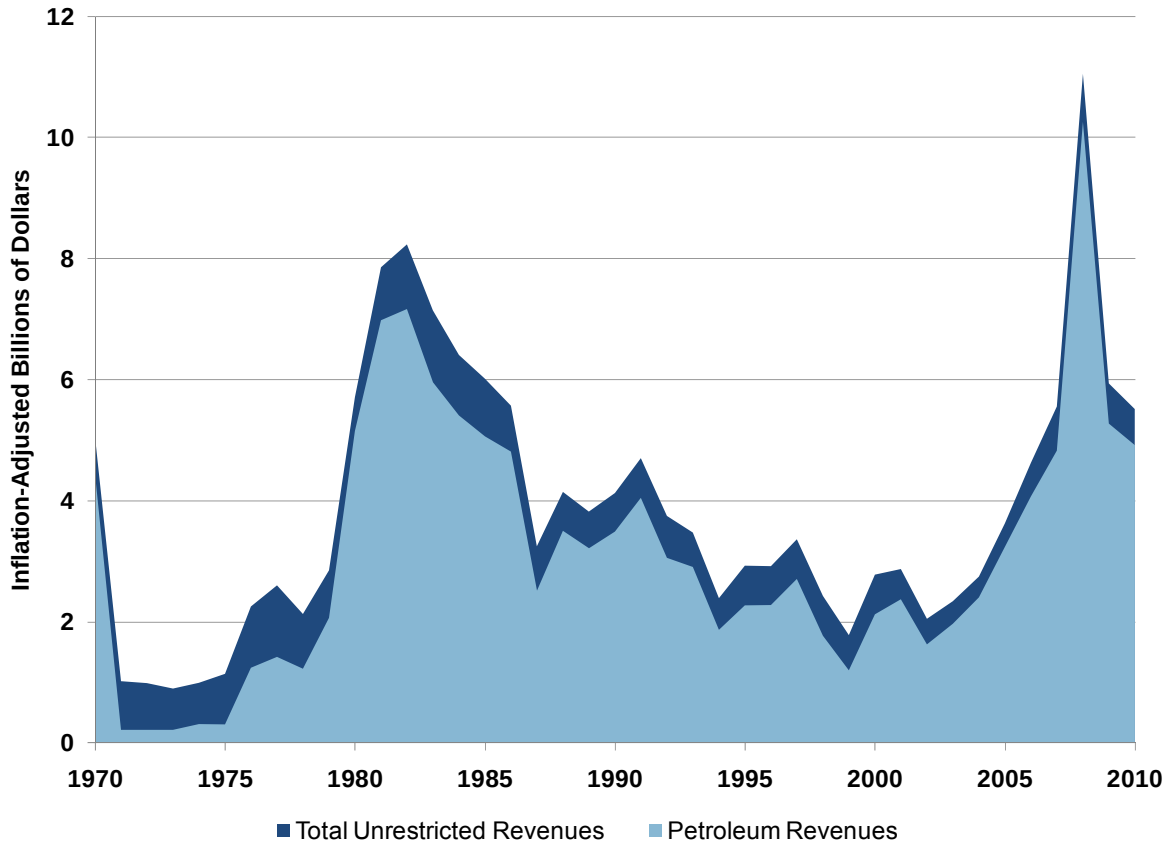
Figure 4.2.2-2

Percent Non-resident Workers in Alaska's Oil Industry, 1995-2009

C4.2.2.1 State Revenue

As discussed above, another important linkage of the oil industry to the Alaska economy is public revenues because the state itself is a producer. The cumulative value of the 16 billion barrels of oil that have been produced from state land since 1959 has been about $500 billion, and the state has collected about $150 billion (2009 dollars) of that total (Goldsmith 2010b).

For over two decades, about 80 percent of Alaska's unrestricted general fund revenue has come from oil taxation (**Figure 4.2.2-3**). Today, revenue from oil production continues to dominate the state's revenue picture, providing close to 89 percent of the general fund unrestricted revenue in Fiscal Year 2009 (Alaska Department of Revenue 2009). As a result of this oil revenue, Alaska's state and local tax burden on households has been the lowest among states over the past several years (IHS Global Insight 2010).



Source: Adapted from Leask et al. (2001). Additional data from Alaska Department of Revenue (2011a)

Figure 4.2.2-3

Alaska Unrestricted General Fund Revenues, 1970-2010

Another legacy of oil, the Permanent Fund, has poured over $13 billion in dividends into the state's economy since 1982 (Fried 2007). Currently, the fund, at $37 billion, ranks 10th in the world by assets among oil-funded sovereign wealth funds and 18th among all sovereign

wealth funds (Sovereign Wealth Fund Institute 2010).[9] The 2009 dividend added about $900 million in purchasing power to the economy (before taxes), roughly equivalent to the total wages of state government or the retail trade sector (Goldsmith 2010b).

As noted above, however, Alaska's oil production has been in decline, and oil prices have been volatile. After climbing to 300 percent of the national average in 1985, Alaska's combined state and local government per-resident spending had dropped back to about 150 percent of the U.S. average by 1999, about the same as in 1965 (Leask et al. 2001). The Alaska legislature has prevented wide swings in state expenditures by tapping the Constitutional Budget Reserve Fund (CBRF) (Fried 2007). As early as the late 1970s, numerous groups and individuals had pointed out the need for Alaska to establish a savings fund to protect against swings in commodity prices for natural resources (Alaska Department of Revenue 2009). It was not until 1990, however, that Alaska voters approved a constitutional amendment requiring the state to deposit all settlements from oil and gas tax and royalty disputes into the CBRF (see **Figure 4.2.3-1**).[10] The CBRF has served the state well as a budget stabilization fund in years of low oil revenue (Alaska Department of Revenue 2009).

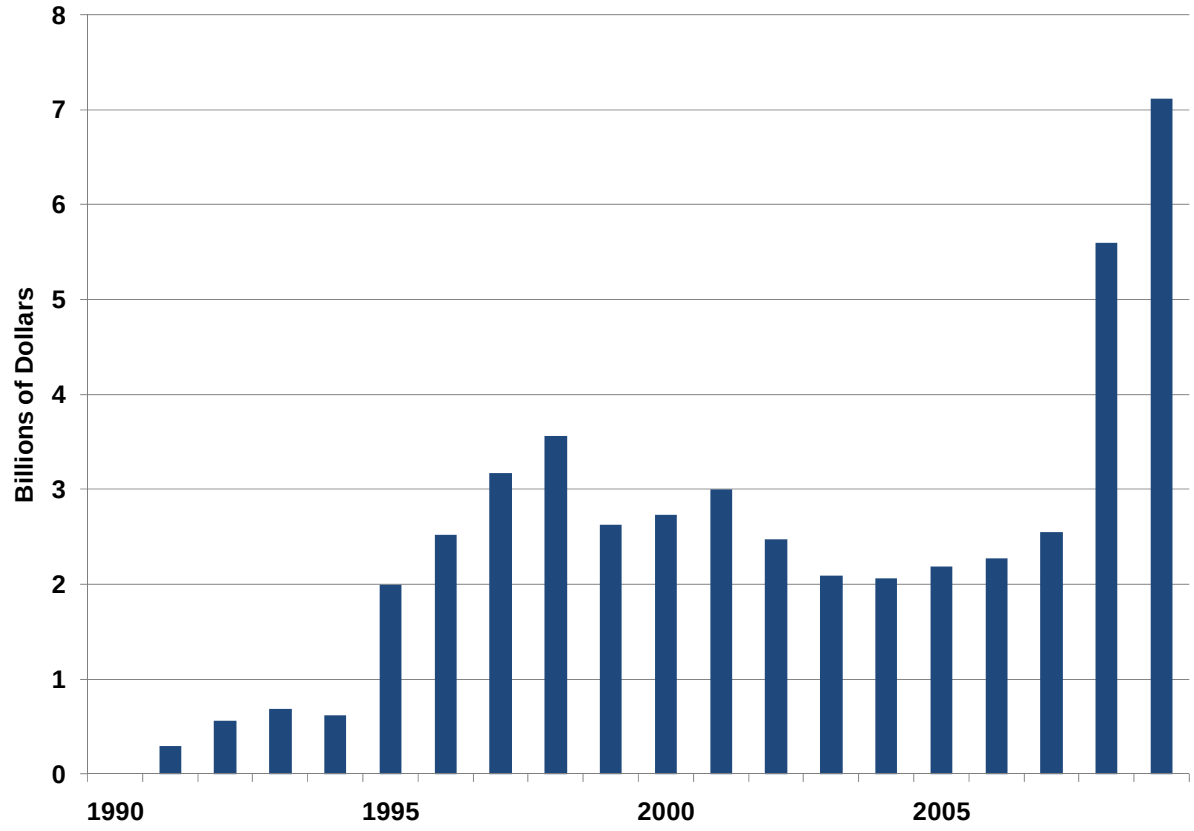
C4.2.3 FEDERAL EXPENDITURES

As discussed in Section C2.0, the federal government has long played an important economic role in Alaska. After statehood, development of the private sector and a decline in the military presence gradually reduced federal importance to Alaska's economy (Fried 2007). For example, when the Soviet threat began to evaporate in the early 1990s and Cold War tensions eased, the number of military personnel in Alaska fell as bases around the state were closed (Fried and Windisch-Cole 2006). As shown in **Figure 4.2.3-2**, starting in the late 1990s, federal spending in Alaska began growing again at a much faster pace, and the federal government re-emerged as a major economic force (Fried 2007). Between 1995 and 2005, federal spending in Alaska increased by $5 billion, or 118 percent. No other sector of the economy generated that kind of economic punch (Goldsmith 2008a). Until 1996, per capita federal spending in Alaska was about 38 percent above the national average; by 2008 it was 71 percent higher (Goldsmith 2008a). Currently, about a third of the jobs and personal income in Alaska can be traced directly or indirectly to all types of federal spending (Goldsmith 2010b).

---

[9] Sovereign wealth funds are government-owned investment funds composed of financial assets such as stocks, bonds, property, precious metals, or other financial instruments (Sovereign Wealth Fund Institute 2010).

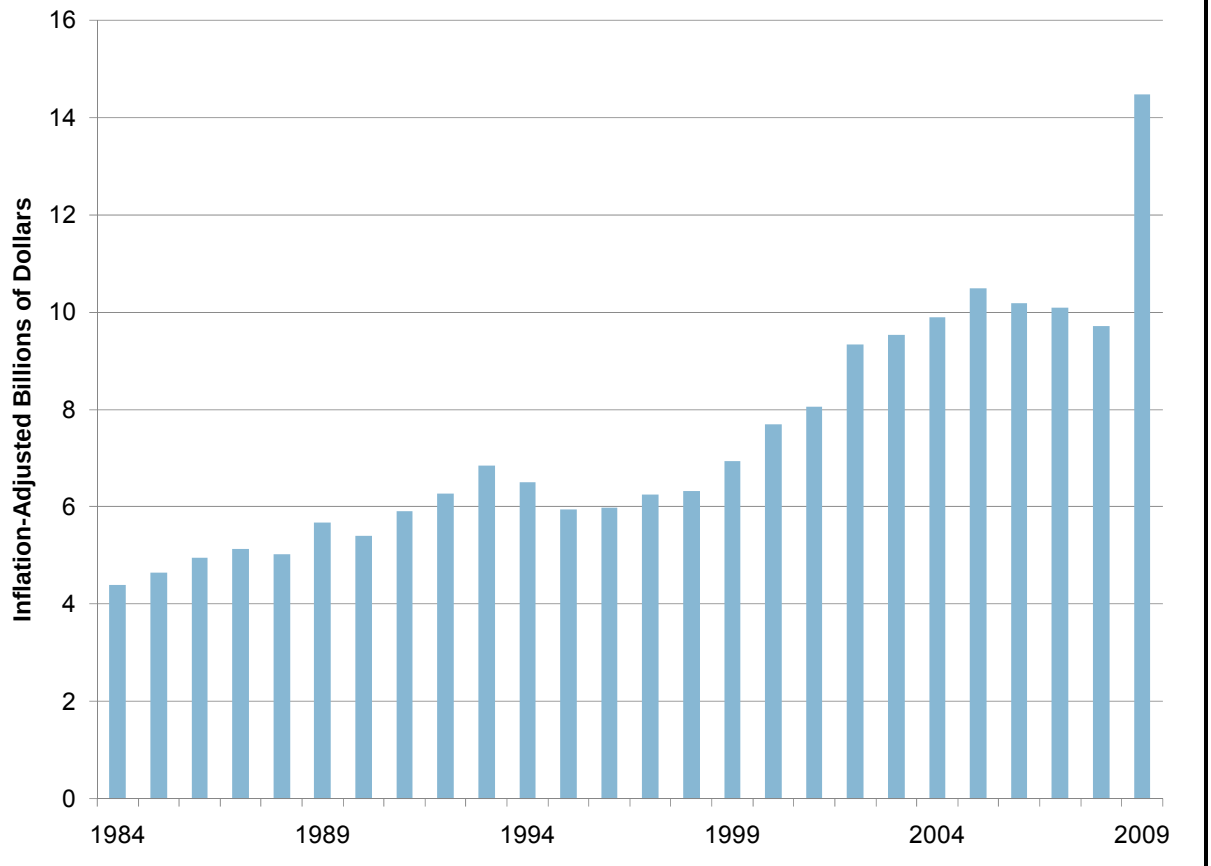
[10] In 1986, as Alaska's economy cratered under the pressure of $10 per barrel oil, the Alaska legislature created a "rainy day" account, the Statutory Budget Reserve. The Statutory Budget Reserve covered general fund shortfalls using "excess revenues" from more profitable years. The legislature seeded the account with the balance of the remaining general funds at the end of Fiscal Year 1991, but by Fiscal Year 1994, all of the money had been appropriated. The Statutory Budget Reserve lay empty until 2008, when state revenue soared as the price of oil reached a record high, and the legislature deposited approximately $1 billion in the account (Alaska Department of Revenue 2009).



[1] The CBR sub-account is a separate fund invested and managed with a longer time horizon than the main fund.
Source: Alaska Department of Revenue (2011a)

Figure 4.2.3-1

Ending Balance of Alaska's Constitutional Budget Reserve Main Account and Sub Account, 1990-2009[1]



Source: Adapted from Goldsmith (2008a). Additional data from U.S. Census Bureau (2011b).

Figure 4.2.3-2

Federal Expenditures in Alaska, 1984 to 2009

Even with numbers of military personnel at about two-thirds of 1960 levels, the military remains Alaska's single largest employer, and Department of Defense spending remains vital to the state's economy. In 2009, the Department of Defense spent $7.36 billion in Alaska (excluding the Coast Guard, which is now in the Department of Homeland Security) (U.S. Census Bureau 2011b), which represented more than half of total federal spending in the state. Department of Defense expenditures in Alaska were $8,652 per capita in 2009, compared to $1,710 for the nation as a whole. This placed Alaska number one among the states in the importance of Department of Defense spending (U.S. Census Bureau 2011b).

Nondefense federal spending is also critical to Alaska's economy. Federal civilians were the third largest group of employees in the state in 2009 (Fried 2010c). Federal employment in Alaska is more than three times the average for the entire U.S. and second only to Hawaii.

State and local government employment also ranks high among the states, but does not diverge nearly as much from the national average (Goldsmith 2010a).

Nondefense federal spending in Alaska can be divided into three main categories. The first is the direct operations of federal government agencies. The second consists of the direct payments (transfers) to individuals and private and public entities, the most important programs in terms of dollar amounts being Social Security, federal-civilian retirement, and health-related programs like Medicare. The third component consists of capital and operating grants to state and local governments as well as to non-profit corporations (Goldsmith 2010a).

Grants have been the fastest-growing federal expense in Alaska since the late 1990s, jumping from $1.3 billion to $3.1 billion from 1996 to 2002 (Goldsmith 2003). Federal grants account for most of the state capital budget and for important shares of some state agency operating budgets like the Alaska Department of Health and Social Services. Grants are also important for the operation of Alaska Native non-profit health and housing programs (Goldsmith 2010a).

The sharp spike in Alaska's share of federal spending was largely attributable to the seniority of Alaska's congressional delegation, including chairmanship of the U.S. Senate Appropriations Committee from 1997 to 2005 (except for the 18 months when Democrats controlled the chamber). The chairmanship gave Alaska considerable influence for home-state project funds (Goldsmith 2003). In the past few years the amount of these "earmarks" has declined, in part because of changes in Alaska's elected representatives, but also due to tightening of the federal budget and a decrease in the political popularity of earmarks (Bolstad 2010). Alaska's congressional delegation secured $87 million in earmarks in 2010, compared to $227 million in 2009 (Bolstad 2010; Taxpayers for Common Sense 2010). Across states, Alaska's per capita share of earmark money dropped from first to sixth (Taxpayers for Common Sense 2010). Nevertheless, **Figure 4.2.3-2** shows that federal expenditures in Alaska hit a record high in 2009 due largely to funds received under The American Recovery and Reinvestment Act of 2009. While this level of "stimulus funding" is not expected to continue, military bases and other existing federal infrastructure, large federal land holdings, and obligations to Alaska Natives ensure that federal expenditures in Alaska will remain high in the foreseeable future (Leask et al. 2006; Bolstad 2010).

The dominant role of the public sector also has a number of negative impacts on Alaska's economy. For example, one effect is that it makes the state's labor market less responsive. Further, it creates a potential fiscal distortion since government enterprises enjoy tax-exempt status, but contribute to the demand for public goods and services. Although some forms of payment by the federal government are designed to compensate the state and local governments for this distortion, it is not clear whether this tax-exempt status shifts some of the burden of paying for public services to the private economy (Goldsmith 2010a). Alaska does not have a personal income or statewide sales tax that would generate revenues to offset the costs of public services provided to government enterprises.

C4.2.4 OTHER ECONOMIC DRIVERS

The wealth from North Slope oil production and the local availability of petroleum products have given "non-oil" economic drivers a boost. Low taxes and high public spending on both operations and infrastructure have provided the tourism, fishing, mining, and air cargo industries with growth opportunities they would not otherwise have had (Goldsmith 2007).

Of course, factors besides the development of the state's oil industry also contributed to the expansion of these other economic drivers. Alaska's seafood industry expanded in the 1970s and 1980s with the recovery of Alaska salmon runs, development of profitable new crab fisheries, and replacement of foreign boats with American boats and processors in the Bering Sea groundfish fisheries (Leask et al. 2001). As a result of development of the domestic groundfish fisheries, Dutch Harbor-Unalaska has been the leading U.S. fishing port in quantity of commercial fishery landings since 1997 (NOAA Fisheries Service 2009). In the 1990s, over-capitalization and competition from farmed salmon from Norway and Chile severely eroded profits in Alaska's salmon fisheries. The economic condition of the salmon fisheries has improved in recent years, however, due to larger harvests and modest increases in salmon prices.

Since the 1990s, tourism has been one of the fastest growing contributors to the state's economy. The number of visitors climbed from 39,000 in 1961 to 1.6 million in 2009 (Leask et al. 2001; McDowell Group 2009a). In particular, cruise ship passenger volumes in Alaska began to accelerate in the late 1990s as cruises became more affordable. While total travel expenditures in Alaska are small compared to other western states, Alaska ranks high on the basis of per capita visitor spending, behind only Nevada, Hawaii, and Wyoming. These expenditures support employment, expand the payrolls, and generate profits for the businesses operating in the tourist industry, such as restaurants, hotels, and sightseeing businesses (Goldsmith 2010a).

Mining added few jobs until the 1990s, when mineral production — chiefly zinc — increased sharply as a result of relatively strong prices (Leask et al. 2001; Gilbertsen and Robinson 2003). More recently, Alaska mineral production value increased from $1 billion in 2003 to more than $3 billion in 2007, due largely to higher prices rather than changes to production amounts (Fried and Robinson 2008; Hughes et al. 2010). The mining industry in Alaska (and elsewhere) has encountered large barriers to entry. Finding, developing, and producing the minerals and metals is time-consuming and expensive, and because mineral and metal prices are highly cyclical, companies must time their activities so that mines do not become active as mineral and metal prices decline.

Timber harvests and employment grew through the 1980s, but by the late 1990s, increased supplies of raw material in the global marketplace had driven prices down and increased competition (Leask et al. 2001; Gilbertsen and Robinson 2003). Both of Alaska's pulp mills closed in the 1990s due to high costs and supply constraints. By 2009, there were only about 600 jobs in the timber industry, down from 4,000 jobs in 1990 (Schultz 2010).

Alaska's air cargo trans-shipment industry is an economic driver that has developed largely since statehood. Among the advantages of Ted Stevens Anchorage International Airport as a global air cargo center are that it lies equidistant between Europe and Asia and has the lowest landing fees and terminal rental rates among major cargo airports

(Inboundlogistics.com 2004). In 2009, this airport was one of largest in the United States in terms of amount of cargo handled, second only to Memphis International Airport (and had the sixth highest amount of cargo of any airport in the world) (Airports Council International 2011).

On the other hand, Alaska continues to be the state with the fewest manufacturing companies. Currently, manufacturing makes up only about three percent of Alaska's employment and represents just three percent of the gross state product. Seafood processing represents nearly three-quarters of the manufacturing employment (Fried 2010a). While seafood processing remains a major industry in Alaska, in recent years processing capacity has been lost to low-cost countries in Asia as a result of outsourcing of some fish processing operations, including cleaning, filleting and packaging (Bauman 2007). With respect to Alaska's oil and gas industry, forward linkages to refining and petrochemical manufacturing have emerged in Alaska, but only on a modest scale. A small share of the state's crude oil production feeds refineries at North Pole, Nikiski, and Valdez that provide the majority of gasoline, diesel, heating oil, and jet fuel for local markets (Goldsmith 2010a).[11]

C4.2.5 SUPPORT INDUSTRIES

Alaska's economy continues to have limited capability to supply inputs to the exploitation of the natural resources that are the basis for the economy (Goldsmith et al. 2009). Development of the support sector has been hamstrung by the state's small market size and high cost of business (IHS Global Insight 2010). The lack of backward linkages (purchases of goods and services) with other industries makes it difficult for the state to capture much of the economic activity directly associated with development of petroleum and other natural resources. There have been some advances, however, such as firms in Anchorage and Fairbanks that provide transportation, logistics, and warehousing services for the petroleum industry operations on the North Slope (Goldsmith 2010a). Toward the end of the 1990s, for the first time, companies in Alaska assembled industry modules destined for Prudhoe Bay (although larger modules are still fabricated outside the state and barged directly to the North Slope) (Goldsmith et al. 2009; Goldsmith 2010a).

By the early to mid-1990s, most of the state's growth in employment was sustained by a mixture of industries in the trade, healthcare, and social service sectors (Fried 2007). These sectors have increased due to overall population growth, the growing senior population, and expansion of the tourist industry. Injection of about $1 billion annually into the economy from Permanent Fund dividends has also continued to fuel growth in these sectors (Leask et al. 2001). During the first five years of the 1990s, which are sometimes referred to as Alaska's retail boom years, approximately 5,400 new retail jobs were created, due largely to an influx of big box stores and discount warehouses (Fried 2004). In 2009, the retail and wholesale trade sector accounted for 11.5 percent of all employment, making it the single largest private sector employer group in the state (U.S. Department of Commerce 2011).

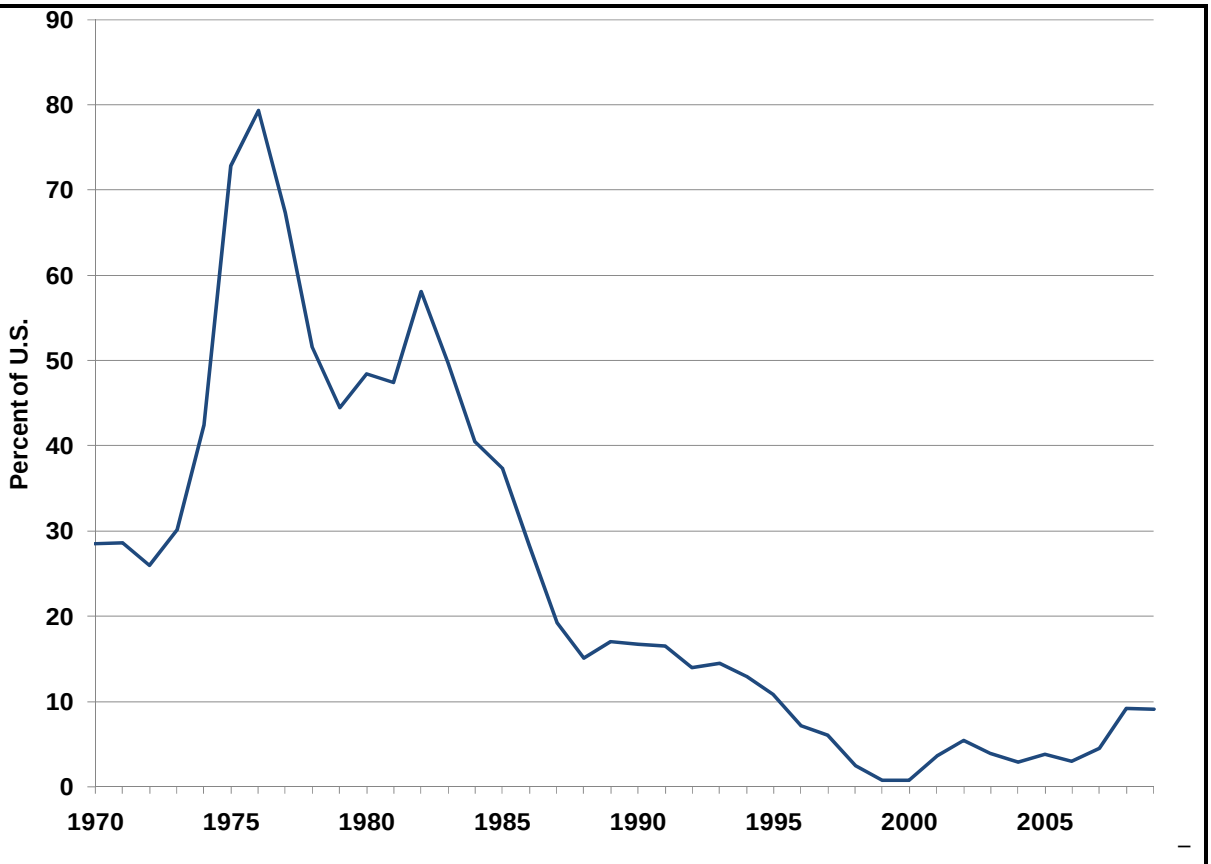
[11] The state government has taken a portion of its oil royalties in kind — that is, in oil — and sold the oil under long-term contracts to help develop local refineries (Leask et al. 2006).

Between 2000 and 2009, healthcare employment increased 46 percent, about five times as fast as the state's population and three times as fast as all other sectors of the economy (Health Workforce Planning Coalition 2010).

Low wages and a preponderance of part-time and seasonal employment reduce the trade sector's contribution to payroll. Retail trade pays the lowest average monthly wage of any industry in the state (Fried 2004). While Alaska's retail and wholesale industry represented 11.5 percent of total employment in 2009, only 7.4 percent of the total payroll came from that industry (U.S. Department of Commerce 2011). Per capita incomes of Alaskans increased sharply in the 1970s, reflecting the pipeline construction boom that created many high-paying jobs (**Figure C4.2.5-1**). Incomes remained 50 percent above the U.S. average in the early 1980s, during the boom created by high state spending, however, Alaska incomes had fallen to the U.S. average by 2000. The decline reflects slower job growth, elimination of some high-paying jobs in the oil industry, and the addition of lower-paying retail trade and service jobs (Leask et al. 2001).

C4.2.6 COST OF LIVING

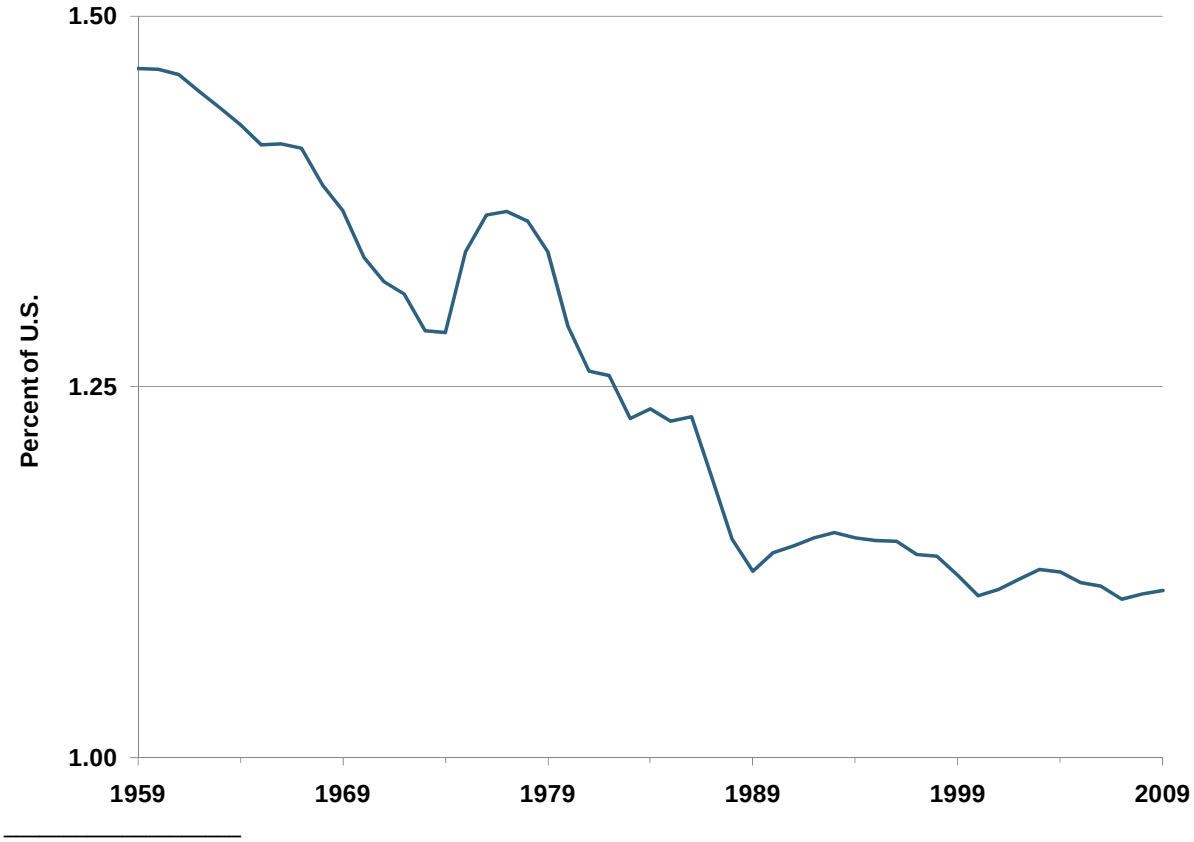
Although Alaska's per-capita income advantage largely disappeared, **Figure 4.2.6-2** shows that the cost of living, particularly in the more urban parts of the state, also moved closer to the U.S. average, largely due to larger local economies, more efficient transportation, and lower inflation in Anchorage than in other U.S. cities (Fried 2007). Nevertheless, the cost to live in Anchorage, Juneau, Fairbanks, and Kodiak is still well above the national average (Fried 2010d). Expensive housing in Alaska's cities is not the only component that drives up overall consumer costs. Consumer expenditures in all categories continue to be above the U.S. city standard (Fried 2010d).



Source: Adapted from Leask et al. (2006). Additional data from U.S. Department of Commerce, Bureau of Economic Analysis (2011)

Figure 4.2.6-1

Alaska Per Capita Income as a Percentage of U.S. Per Capita Income, 1970 to 2009



Source: Adapted from Leask et al. (2006) . Additional data from Goldsmith (2011).

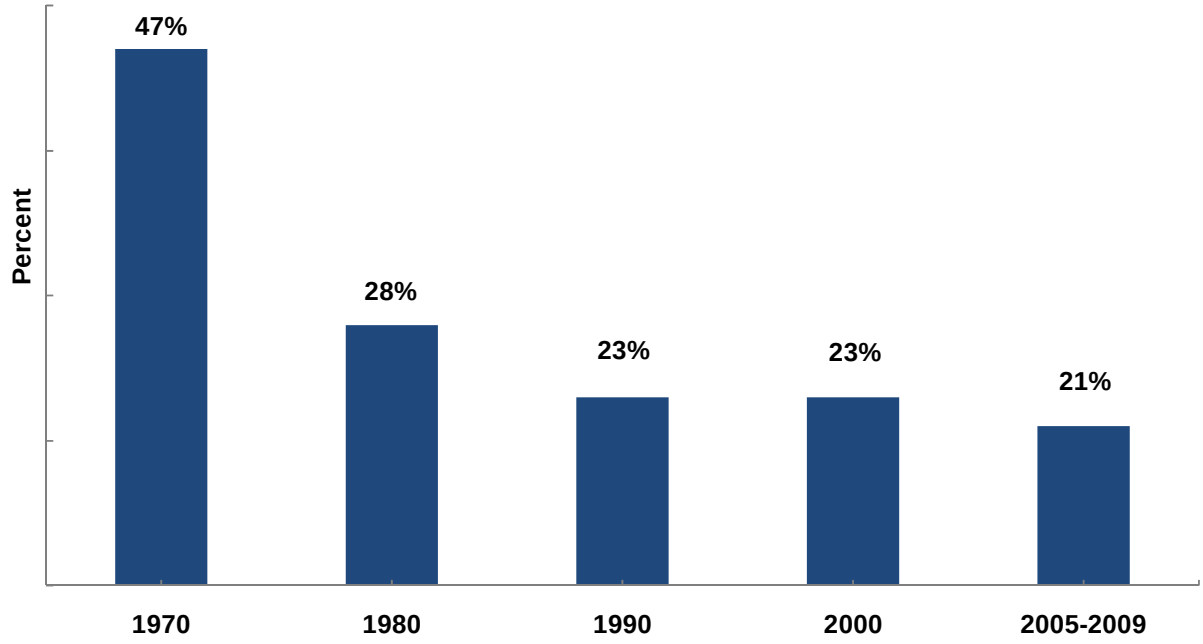
Figure 4.2.6-2

Anchorage Living Costs as a Percentage of U.S. Living Costs, 1959 to 2009

C4.2.7 RURAL ALASKA AND THE ALASKA NATIVE POPULATION

Living in the remote parts of the state off the road system is costlier still because of the high cost of transporting goods (and services). For example, the cost of living in rural communities in Alaska's Interior is about 31 percent higher than in Anchorage, while the cost of living in small villages in the state's Arctic Region is 48 percent higher (McDowell Group 2009b). The higher costs are exacerbated by the lack of year-round employment opportunities and lower money incomes in rural areas (Leask et al. 2001). Several of rural Alaska's predominant industries, particularly seafood harvesting and processing, tourism, construction, and timber, are highly seasonal and result in total employment for the summer exceeding that in the winter by at least 16 percent, or 50,000 (not counting the self-employed who are not fish harvesters) (Goldsmith 2010a). On the other hand, many rural Alaskans continue to secure subsistence harvests (e.g., hunt and fish), which substantially reduces their costs for food (Leask et al. 2001).

The PFD is particularly important in rural parts of the state (Goldsmith 2010b). As noted, rural households are cash poor, and subsistence harvests can fluctuate dramatically from year to year. Under these circumstances, the cash provided by the dividend is significant, not only because of its size, but also its predictability. Moreover, as an addition to the "safety net," the dividend has been one factor in the decline in the official poverty rate since Alaska attained statehood, particularly among Alaska Natives (Goldsmith 2010b). The Alaska Native poverty rate fell from 47 percent in 1970 to 21 percent in more recent years (**Figure 4.2.7-1**).



Source: Adapted from Martin and Hill (2009). Additional data from U.S. Census Bureau (2011a)

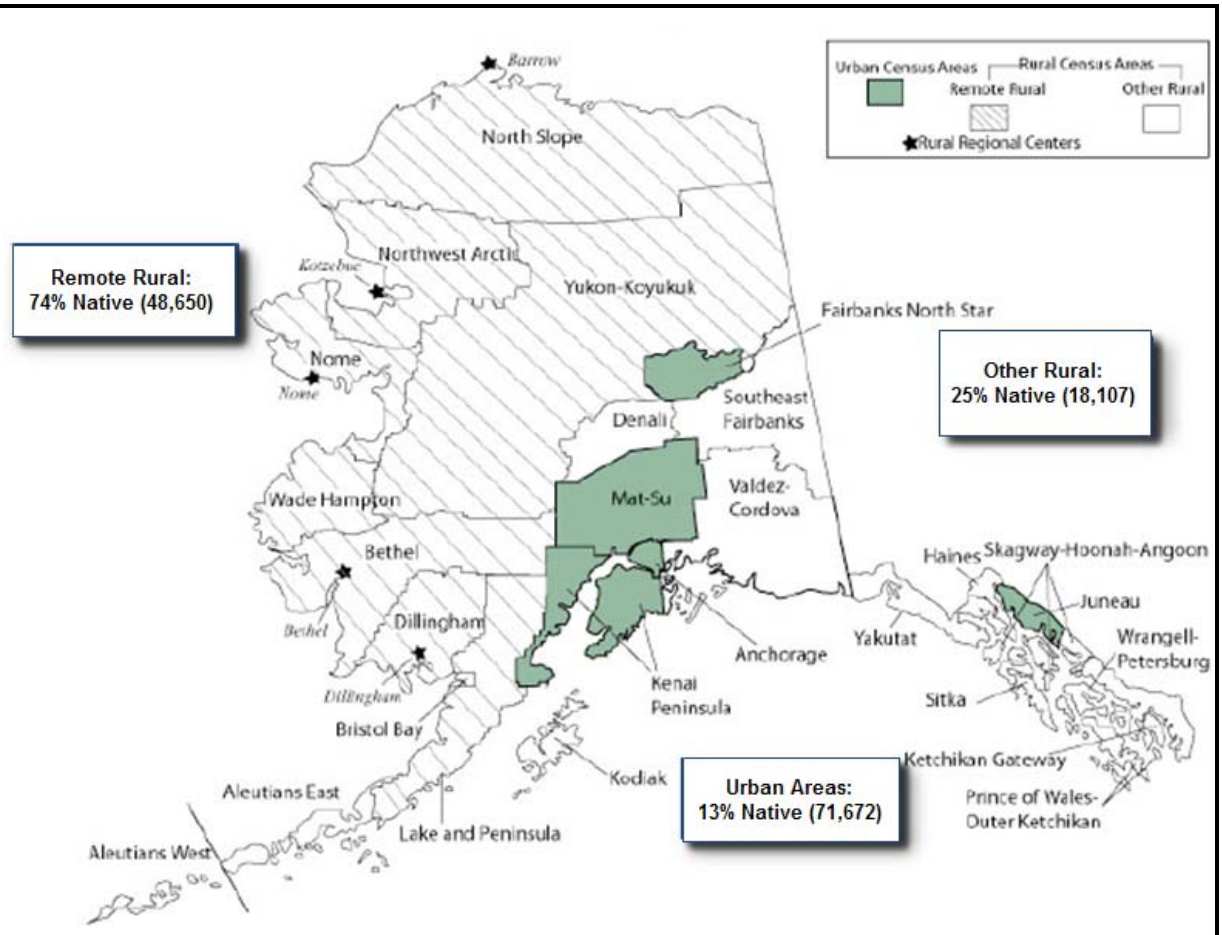
Figure 4.2.7-1

Percentage of Alaska Natives Living Below the Poverty Line, 1970 to 2005-09

Alaska's Native population more than doubled between 1970 and 2009, from 50,801 to 111,873 (Martin and Hill 2009; Mercer 2011).[12] That growth partly reflects improved healthcare for Alaska's Native peoples in recent decades, which helped adults live longer and reduced infant mortality (Leask et al. 2001). As it did in 1970, Alaska has the highest share of indigenous Americans of any state (Martin and Hill 2009); currently, about one in five residents are Alaska Native. The estimated share of Alaska Natives residing in the

[12] The 2009 estimate is the number of people who reported they were American Indian / Alaska Native and no other race. The number of people who reported they were American Indian / Alaska Native alone or in combination with another race could not be compared to the 1970 population estimate because the 1970 U.S. Census asked people to report only one race.

urban areas of Alaska increased from 17 to 45 percent from 1970 to 2009 (Leask et al. 2001; Mercer 2011). Today, about 28 percent of Alaska's Native population lives in Anchorage (Mercer 2011), however, Alaska Natives remain the majority population in remote rural areas, which Goldsmith (2008b) defines as areas of rural Alaska where most communities are small and far off the state's main road and ferry systems. As shown in **Figure 4.2.7-2,** in 2009, 35 percent of Alaska Natives lived in eight remote rural boroughs and census areas where Natives accounted for about 74 percent of the total population.



Source: Adapted from Goldsmith (2010a). Additional data from Mercer (2011)

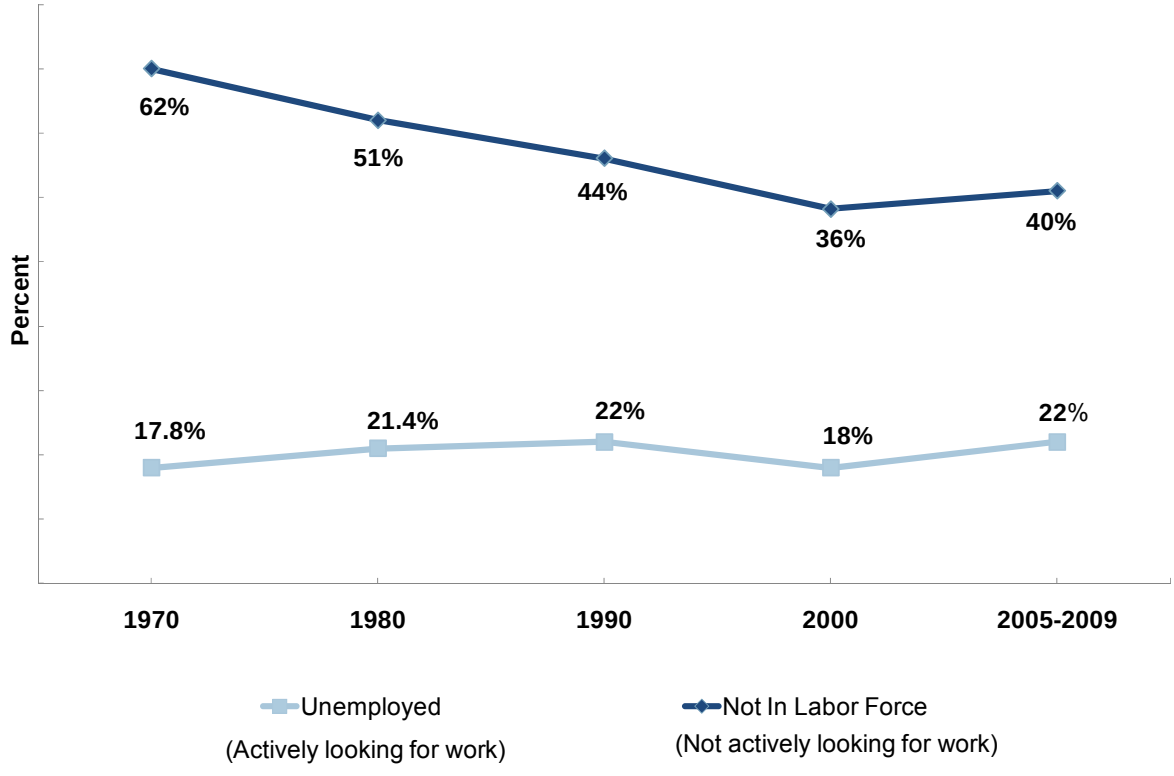
Figure 4.2.7-2

Distribution of Alaska Native Population, 2009

Alaska Natives are much more likely to have jobs and high school degrees today than they did in 1970 (Martin and Hill 2009). The percentage of Alaska Native adults not in the workforce has dropped from 62 percent to around 40 percent since 1970 (Figure C4.2.7-3). Alaska Native women in particular have moved into the workforce in the past several

decades. In 1970, just over one-quarter of adult Native women had jobs; by 2000, that figure was approaching half (Martin and Hill 2009).

Trends in the economic condition of Alaska Natives have not been entirely positive though. While poverty among Alaska Natives is less than half what it was in 1970, **Figure 4.2.7-3** shows that the major improvement was between 1970 and 1980. The percentage of Alaska Native people living below the federal poverty line has stayed around 23 percent since 1990. Moreover, even as numbers of Alaska Natives with jobs grew, so did unemployment (**Figure 4.2.7-3**). The recent unemployment rate is higher than it was in 1970 because the number of jobs has not increased as fast as the size of the workforce. A growing Alaska Native population means more people are looking for work. Additionally, some of those considered "not in the labor force" (because they aren't actively looking for work) would like to have jobs, but aren't looking because they live in small remote villages with few jobs (Martin and Hill 2009).



Source: Adapted from Martin and Hill (2009). Additional data from U.S. Census Bureau (2011a)

Figure 4.2.7-3

Percentage of Alaska Native Adults (16 and Older) Unemployed or Not in Labor Force, 1970 to 2005-2009

C4.2.8 ALASKA NATIVE CORPORATIONS AND WESTERN ALASKA COMMUNITY DEVELOPMENT QUOTA PROGRAM

As noted in Section C4.2.5, Alaska's natural resource industries — including petroleum, commercial fishing, timber, cruise ship tourism, and mining — are characterized by enclave development that has generated limited backward linkages with in-state firms. Moreover, the resource production that drives the Alaska economy is still dominated by large companies headquartered outside of Alaska, much as it was four decades ago (Goldsmith 2010a). For example, the state's large oil and gas producers are multi-national corporations for which Alaska is only one of a portfolio of operating venues (IHS Global Insight 2010). In 2009, only one of the 49 largest Alaska-owned firms, Usibelli Coal Mine, Inc., was a producer of natural resources (Goldsmith 2010a). As discussed in the following sections, the Alaska Native corporations created under ANCSA (Section C2.0) and the Western Alaska Community Development Quota (CDQ) Program established under the Magnuson-Stevens Fishery Conservation and Management Act have proven to be a partial solution to this issue.

C4.2.8.1 Alaska Native Corporations

Since their establishment in 1971, Alaska Native corporations (ANCSA corporations) have come to play a major role in Alaska's economy and an even more important role in their individual regions. By their charter, most ANCSA corporations have some motivation or incentive to take the long-term view regarding investments in Alaska (IHS Global Insight 2010). Many of them are free to invest their assets (which exceed $4 billion currently) anywhere in the world, and they have done so aggressively (Goldsmith 2010a). Most ANCSA corporation stockholders, however, are based in Alaska, and their well-being will ultimately be driven by the underlying health of the Alaska economy. Thus, ANCSA corporations have an incentive to direct a significant part of their assets into investments that will have a pay-off in the medium- to long-term (IHS Global Insight 2010).

In 2009, 45 percent of the 49 largest Alaska-owned firms, based on revenues, were ANCSA corporations (Cutler 2010). In recent years, a number of regional and village ANCSA corporations have become involved in Alaska's natural resource industries through subsidiaries of their parent companies. These have been largely in a supporting role in the petroleum sector in activities like oilfield services and drilling, but some of the companies are directly involved in the production of timber and seafood (as well as providing services to tourists) (Cutler 2010).[13] ANCSA corporations have also formed partnerships with major resource development corporations. For example, NANA, an ANCSA corporation owned by the Iñupiat of Northwest Alaska, negotiated an operating agreement with Teck Alaska, Inc., a U.S. subsidiary of Teck Resources Limited, to develop the Red Dog Mine, a zinc mine that

[13] ANCSA regional corporations in the oilfield services industry include Bristol Bay Native Corporation; NANA; Ahtna, Inc.; Arctic Slope Regional Corporation; Calista Corporation; Chugach Alaska Corporation; Cook Inlet Region, Inc.; and Doyon, Ltd. Large village corporations also are active in this sector (Linxwiler 2007). For example, the oilfield service company UMIAQ, LLC is a division of the Ukpeaġvik Iñupiat Corporation, the ANCSA village corporation for Barrow.

accounted for approximately 54 percent of the total value of Alaska's mineral production in 2009 (Hughes et al. 2010).

ANCSA corporations also employ many Native (and non-Native) Alaskans. In 2008, the most recent year for which data were available, ANCSA regional corporations created 13,848 jobs in Alaska, with a combined payroll of $774 million (Hoffman and Orr 2010). Overall, the regional corporations employed 3,577 Alaska Natives, representing more than 10 percent of their total worldwide employment of 35,430. Some ANCSA corporations have substantially higher rates of Alaska Native employment. For example, Kakivik Asset Management, LLC, a subsidiary of the Bristol Bay Native Corporation, has successfully met the Alaska Native Utilization Agreement component of the Section 29 requirements of the federal Agreement and Grant of Right-of-Way for TAPS (Bonham-Colby 2007). Kakivik is contracted by APSC to perform the inspection, quality control, corrosion engineering, and non-destructive testing on the oil pipeline. The company currently employs 171 individuals, of which 23 percent are Alaska Natives / American Indians (King 2009).

In addition, non-profit ANCSA corporations now administer a number of federal health and social service programs for Alaska Natives. These non-profits provide employment opportunities in rural communities as well as essential services (Martin and Hill 2009).

C4.2.8.2 Western Alaska Community Development Quota Program

The full development of domestic fishing and seafood processing sectors in the highly productive Bering Sea fisheries between 1976 and 1990 generated substantial wealth, however, little of that wealth flowed to the small, rural villages along the coast of western Alaska. While the communities bordered some of the richest fishing grounds in the world, the high capital investment required to compete in these large-scale, industrialized fisheries precluded small communities from participating in their development.

This concern provided part of the impetus behind the creation of the CDQ Program by the North Pacific Fishery Management Council in 1992 (National Research Council 1999). Initially, the CDQ Program set aside 7.5 percent of the Bering Sea / Aleutian Islands fishery management area's annual total allowable catch of pollock for allocation to qualifying communities. Over the years, the CDQ Program has expanded to include harvest allocations for a wide array of Alaska fisheries. Currently, 65 communities located along the Bering Sea are eligible for the CDQ Program. These communities are aligned into six CDQ groups: Aleutian Pribilof Island Community Development Association, Bristol Bay Economic Development Corporation, Central Bering Sea Fishermen's Association, Coastal Villages Regional Fund, Norton Sound Economic Development Corporation, and Yukon Delta Fisheries Development Association.

The total net income generated by the CDQ Program from 1992 through 2005 (the most recent year for which data were available) was approximately $362 million.[14] Initially, program revenues were from royalties obtained from leases of CDQ Program catch allocations. Eventually, this revenue stream permitted the CDQ groups to make substantial fisheries-related investments, including acquiring ownership interests in large fishing vessels and shore-side seafood processing plants. The value of CDQ group assets in aggregate increased from about $13.3 million in 1992, to over $415 million in 2005. In addition, some CDQ groups have promoted investment in local, small-scale fishing operations targeting salmon, herring, halibut, or other species. In 2004, CDQ earned-income exceeded royalty revenues for the first time in program history, and earned-income doubled royalty revenues in 2005 (Southwest Alaska Municipal Conference 2007).

The creation of employment opportunities for residents of participating communities has been one of the most tangible direct benefits of the CDQ Program. Jobs generated by the CDQ Program include work aboard harvesting vessels, internships with fishing industry partners or government agencies, work at processing plants, and management / administrative positions.

Finally, the Alaska Department of Commerce, Community, and Economic Development (2002) notes that an important effect of the CDQ Program has been its “Alaskanizing” influence on the state’s seafood industry. While Bering Sea groundfish and crab fisheries continue to be dominated by Seattle-based companies, no other mechanism has been as successful as the CDQ Program in promoting involvement of Alaskans in those fisheries.

[14] Annual CDQ Program statistics have not been compiled and published by the State of Alaska or NOAA Fisheries Service after amendments to the CDQ provisions of the Magnuson-Stevens Act altered the administrative aspects of the CDQ Program in 2006, including the CDQ reporting requirements, and state and federal oversight roles.

C5.0 SUMMARY

This section examines socioeconomic differences and similarities between Alaska in 1970 and contemporary Alaska, and compares selected current socioeconomic characteristics of Alaska and the United States. Table C5-1 presents the comparative statistics.

Table C5-1
Demographic and Economic Characteristics of Alaska and the United States, 1970 and 2009

Socioeconomic Characteristic	1970 Alaska	2009 Alaska	2009 United States
Population (000s)	308.5	692.3	307,006.5
Male population (%)	54.3	52.3	49.3
Alaska Native/American Indian population (%)	17.0[1]	20.0[1]	1.6[1]
Median age of population	22.9	32.7	36.5
Population that moved from another state within the last 5 years (%)	44.0	18.7[2]	11.3[2]
Total (non-farm) employment (000s)	93.1	321.2	130,911.0

	1970			2009					
	Gross Product	Employment	Earnings	Gross Product[3]		Employment		Earnings	
	(Percent of Total)			(Percent of Total)					
Industry[4]	Alaska			Alaska	U.S.	Alaska	U.S	Alaska	U.S
Mining (excluding oil and gas extraction)	0.3	2.2	3.8	4.9	0.7	2.9	0.3	5.3	0.5
Oil and gas extraction	14.2	N/A	N/A	24.5	1.4	1.0	0.5	3.2	0.9
Construction	9.6	5.6	11.2	4.0	4.5	5.6	5.6	7.2	5.5
Manufacturing	5.8	5.5	6.6	3.2	11.6	3.3	7.2	2.8	10.3
Trade	10.4	12.3	11.4	6.0	11.7	11.5	13.9	7.4	11.1
Transportation and warehousing	9.5	6.6	8.8	9.2	2.8	5.3	3.2	6.4	3.3
Finance, insurance, and real estate	10.0	3.8	2.7	11.2	21.2	6.5	9.9	4.5	9.0
Professional, scientific, and technical services	5.9	11.1	8.3	3.8	7.5	5.3	6.9	6.3	10.1
Health care and social assistance	1.7	1.6	1.9	4.9	6.9	10.0	11.0	9.5	11.1
Government and government enterprises	30.7	48.3	43.1	17.2	12.2	24.3	14.4	32.6	18.4
Other sectors	1.9	3.0	2.2	11.1	19.5	24.3	27.1	14.8	19.8

1 The 1970 estimate includes only persons who reported they are American Indian/Alaska Native alone, while the 2009 estimate includes persons who reported they are American Indian/Alaska Native alone or in combination with one or more races.

2 Population mobility estimate is for 2000, the most recent year for which data were available.

3 Gross product estimate is for 2008, the most recent year for which data were available.

4 Industry groupings were adjusted to account for differences between the U.S. Standard Industrial Classification system and North American Industrial Classification System.

Source: Adapted from Carrington (1996). Additional data from U.S. Department of Commerce, Bureau of Economic Analysis (2011) and U.S. Census Bureau (2011a)

Despite Alaska's population growth over the past three decades, only three states have a smaller population than Alaska. The small population means that the local market has remained small, which contributes to persistent higher prices for consumers and a higher cost of living. Moreover, the small population limits the size of the labor market and the range of expertise. Alaska's population is still disproportionately male, but it more closely resembles the U.S. gender composition. The population has also aged substantially, with a median age of 32.7 in 2009 versus 22.9 in 1970. Evidence that Alaska's aging skilled workforce could create labor shortages, particularly in high-demand occupations, has led to recent state and industry initiatives to prepare and improve Alaska's workforce. While the state's population is more stable than it was four decades ago, there is still a fairly high level of turnover. Alaska ranks fourth among the states in the share of population recently moving into the state (Goldsmith 2010a).

As Alaska's economy has matured and diversified, it appears to have moved out of the boom-and-bust cycles of the past. Relatively new industries such as tourism and transportation have expanded, and the state's workforce has increased more than threefold over the past four decades. Moreover, as a young state with a relatively small population, Alaska had for years been underserved by consumer goods and service industries, such as retail and healthcare, until development of those sectors occurred in the 1990s (Fried 2007; Fried and Robinson 2008). Although no good measure of this "import-substitution" effect exists, there is little doubt that a dollar spent in Alaska's economy today remains in the economy longer (Fried 2007).

On the other hand, the economy still depends heavily on federal and state government spending and on a few natural resource industries, just as it did in 1970. Petroleum is the dominant natural resource and accounts for about a quarter of the state's gross product. Although the oil and gas industry generates little direct employment, the indirect employment effects are huge. As discussed above, about a third of all jobs in Alaska can be attributed to oil, directly or indirectly. Had Alaska remained dependent on the private resource sectors that were driving the economy in 1970 (fishing, mining, timber). In addition, two legacies of the state's oil revenues, the Permanent Fund and CBRF — are of particular value. For the first time, Alaska has transformed a temporary resource into permanent assets that help stabilize the economy (Leask et al. 2006; Fried 2007).

It is also noteworthy that Alaska's reliance on the oil industry and government helped the state weather the recent economic downturn much better than the rest of the country. Oil prices remained high, supporting state revenues and employment, and government jobs tend not to have the volatility as those in other sectors of the economy (Forgey 2010).

C6.0 REFERENCES

Alaska Department of Revenue. 2006. Interim Findings and Determination Related to the Stranded Gas Development Act For a Contract between the State of Alaska and BP Alaska (Exploration), Inc., ConocoPhillips Alaska, Inc., and ExxonMobil Alaska Production, Inc. Contract Version dated May 24, 2006 with Proposed Amendments. Anchorage, AK.

Airports Council International. 2011. Cargo Traffic 2009 Final. Available online at http://www.aci.aero/cda/aci_common/display/main/aci_content07_c.jsp?zn=aci&cp=1-5-54-4819-9813_666_2. Accessed February 4, 2011.

Alaska Department of Commerce, Community, and Economic Development. 2002. Strategic Economic Concepts for the Alaska Fishing & Seafood Industry. Anchorage, AK.

Alaska Department of Labor and Workforce Development. 2007. Gas Pipeline Workforce Development Strategic Plan. Anchorage, AK.

Alaska Department of Labor and Workforce Development, Research & Analysis Division. 2011a. Current Employment Statistics. Available online at http://laborstats.alaska.gov/?PAGEID=67&SUBID=228. Accessed January 3, 2011.

Alaska Department of Labor and Workforce Development, Research & Analysis Division. 2011b. Population. Available online at http://laborstats.alaska.gov/?PAGEID=67&SUBID=115. Accessed January 3, 2011.

Alaska Department of Natural Resources, Division of Oil and Gas. 2010. Alaska Oil and Gas Report. Anchorage, AK.

Alaska Department of Revenue. 2006. Interim Findings and Determination Related to the Stranded Gas Development Act For a Contract between the State of Alaska and BP Alaska (Exploration), Inc., ConocoPhillips Alaska, Inc., and ExxonMobil Alaska Production, Inc. Contract Version dated May 24, 2006 with Proposed Amendments. Anchorage, AK.

Alaska Department of Revenue, Tax Division. 2009. Revenue Sources Book, Fall 2009. Anchorage, AK.

Alaska Department of Revenue, Tax Division. 2011a. Revenue Sources Book. Available online at http://www.tax.alaska.gov/programs/sourcebook/index.aspx. Accessed January 23, 2011.

Alaska Department of Revenue, Tax Division. 2011b. ANS Yearly Average Price. Available online at http://www.tax.alaska.gov/programs/oil/oilprices/ansyearly.aspx. Accessed January 23, 2011.

Alaska Department of Revenue and Department of Natural Resources. 2009. AGIA Gas Pipeline Project Report. Anchorage, AK.

Alaska Humanities Forum. 2011a. Modern Alaska: Statehood. Available online at http://www.akhistorycourse.org/articles/article.php?artID=138. Accessed January 10, 2011.

Alaska Humanities Forum. 2011b. Modern Alaska: Alaska Native Claims Settlement Act. Available online at http://www.akhistorycourse.org/articles/article.php?artID=139. Accessed January 10, 2011.

Alaska Oil and Gas Association. 2010. History – 1970′s. Available online at http://www.aoga.org/industry/history-1970/. Accessed January 28, 2011.

Bauman, M. 2007. China's factory closures may help Alaska fish. Alaska Journal of Commerce. Available online at http://www.alaskajournal.com/stories/070807/hom_20070708027.shtml. Accessed February 4, 2011.

Bolstad, E. 2010. Alaska moving to new era as congressional earmarks fade. ADN.com. Available online at http://www.adn.com/2010/11/21/1566328/alaska-moving-to-new-era-as-earmarks.html. Accessed December 23, 2010.

Bonham-Colby, N. A. 2007. Pipeline jobs promised to natives under section 29: Twenty percent Native hire is the goal of Alyeska. Alaska Business Monthly 23 (9):100-106.

BP. 2006. Prudhoe Bay Fact Sheet. Available online at http://www.bp.com/liveassets/bp_internet/us/bp_us_english/STAGING/local_assets/downloads/a/A03_prudhoe_bay_fact_sheet.pdf. Accessed December 23, 2010.

Carrington, W. J. 1996. The Alaskan Labor Market during the Pipeline Era. The Journal of Political Economy 104 (1):186-218.

Cutler, D. 2010. 2010 Alaska's Top 49ers: Still Growing Strong. Alaska Business Monthly 26 (2):52-76.

Energy Information Administration. 2011. Petroleum. Available online at http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html. Accessed January 23, 2011.

Forgey, P. 2010. Alaska's economy powers through recession. JuneauEmpire.com. Available online at http://www.juneauempire.com/stories/082410/sta_699586622.shtml. Accessed January 28, 2011.

Fried, N. 1996. Alaska Seafood Processing-A Growing Job Source? Alaska Economic Trends 16 (3):1-8.

Fried, N. 2004. Retail Trade. Alaska Economic Trends 24 (10):13-17.

Fried, N. 2007. Alaska's Economy Transformed. Alaska Economic Trends 27 (9):14-16.

Fried, N. 2009. The U.S. Economy and Alaska Migration. Alaska Economic Trends 29 (6):4-8.

Fried, N. 2010a. Alaska’s “Other” Manufacturing. Alaska Economic Trends 30 (11):12-16.

Fried, N. 2010b. Alaska's Health Care Industry. Alaska Economic Trends 30 (3):4-9.

Fried, N. 2010c. The Trends 100. Alaska Economic Trends 30 (7):4-12.

Fried, N. 2010d. The Cost of Living in Alaska. Alaska Economic Trends 30 (8):3-10.

Fried, N. and D. Robinson. 2008. Alaska's Economy Since 2000. Alaska Economic Trends 28 (4):4-13.

Fried, N. and B. Windisch-Cole. 2006. The military is big business in Anchorage. Alaska Economic Trends 26 (6):4-14.

Gilbertsen, N. and D. Robinson. 2003. Natural Resources: Mining and Timber. Alaska Economic Trends 23 (12):3-13.

Goldsmith, S. 2003. What Does $7.6 Billion in Federal Money Mean to Alaska? Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Goldsmith, S. 2007. How North Slope Oil Has Transformed Alaska's Economy. Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Goldsmith, S. 2008a. How Vulnerable Is Alaska's Economy to Reduced Federal Spending? Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Goldsmith, S. 2008b. Understanding Alaska's Remote Rural Economy. Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Goldsmith, S. 2010a. Structural Analysis of the Alaska Economy: What are the Drivers? Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Goldsmith, S. 2010b. The Alaska Permanent Fund Dividend: A Case Study in Implementation of a Basic Income Guarantee. Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Goldsmith, S. 2011. University of Alaska Anchorage, Institute of Social and Economic Research. Personal communication with Northern Economics, Inc., January 26, 2011.

Goldsmith, S., J. Kruse and E. Larson. 2009. Petroleum and the Alaska Economy. In: S. R. Braund and J. Kruse. Synthesis: Three Decades of Research on Socioeconomic Effects Related to Offshore Petroleum Development in Coastal Alaska. Anchorage, AK: Stephen R. Braund & Associates.

Government Accounting Office. 1978. Lessons Learned from Constructing the Trans-Alaska Oil Pipeline. Washington, D.C.

Hadland, J., C. Schultz and S. Dapcevich. 2011. Nonresidents Working in Alaska 2009. Alaska Department of Labor and Workforce Development, Research & Analysis Section. Anchorage, AK.

Hadland, J. and G. Williams. 2000. The Aging of Alaska's Workforce. Alaska Economic Trends 20 (9):3-9.

Haycox, S. 2009. Brief Economic History of Alaska. In: S. R. Braund and J. Kruse. Synthesis: Three Decades of Research on Socioeconomic Effects Related to Offshore Petroleum Development in Coastal Alaska. Anchorage, AK: Stephen R. Braund & Associates.

Health Workforce Planning Coalition. 2010. Alaska Health Workforce Plan. Prepared for Alaska Workforce Investment Board. Anchorage, AK.

Heard, W. 2003. Alaska Salmon Enhancement: A Successful Program for Hatchery and Wild Stocks. In: Y. Nakamura, J.P. McVey, K. Leber, C. Neidig, S. Fox, K. Churchill. Ecology of Aquaculture Species and Enhancement of Stocks. Sarasota, FL: Mote Marine Laboratory.

Hoffman, D. and M. Orr. 2010. Transformations: ANCSA Regional Association Report of Economic Data for 2008. Prepared for ANCSA Regional Association. Anchorage, AK.

Hughes, R. A., D. J. Szumigala and L. A. Harbo. 2010. Alaska's Mineral Industry 2009: A Summary. Prepared for Alaska Department of Natural Resources, Division of Geological & Geophysical Surveys. Anchorage, AK.

Hull, T. and L. Leask. 2000. Dividing Alaska, 1867-2000: Changing land ownership and management. Alaska Review of Social and Economic Conditions 32 (1):1-14.

Hunsinger, E. 2007. Population Projections, 2007 to 2030. Alaska Economic Trends 27 (10):4-11.

Huskey, L. 1982. Structural Change, Economic Growth, and the Alaska Economy. In: Economic and Demographic Structural Change in Alaska. Springfield, VA: National Technical Information Service.

IHS Global Insight. 2010. Alaska Forward: Phase I Situational Analysis. Prepared for Alaska Partnership for Economic Development.

Inboundlogistics.com. 2004. Alaska: Cargo Crossroads of the World. Available online at http://www.inboundlogistics.com/articles/features/0804_feature03.shtml. Accessed January 2, 2011.

Information Insights, Inc. 2004. Stranded Gas Development Act Municipal Impact Analysis. Prepared for Municipal Advisory Group. Juneau, AK.

Kaufman, A. 1961. Trends in Alaska's Mineral Industry. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.

King, P. 2009. Kakivik: Providing critical assistance. Indian Country Today. Available online at http://www.indiancountrytoday.com/business/78789062.html. Accessed January 4, 2011.

Kreiger, R. 2010. Older Workers in Alaska. Alaska Economic Trends 30 (5):4-7.

Leask, L., M. Killorin and P. Cravez. 2006. Understanding Alaska: People, Economy, and Resources. Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Leask, L., M. Killorin and S. Martin. 2001. Trends in Alaska's People and Economy. Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Linxwiler, J. D. 2007. The Alaska Native Claims Settlement Act at 35: Delivering on the Promise. 53rd Annual Rocky Mountain Mineral Law Institute, Vancouver, Canada, July 19-21, 2007.

Martin, S. and A. Hill. 2009. The Changing Economic Status of Alaska Natives, 1970-2007. Institute for Social and Economic Research, University of Alaska, Anchorage. Anchorage, AK.

Mcbeath, J., M. Berman, J. Rosenberg and M. F. Ehrlander. 2008. The Political Economy of Oil In Alaska. Lynne Rienner Publishers, Boulder, CO.

McDowell Group. 2009a. Alaska Visitor Statistics Program V: Interim Visitor Volume Report, Summer 2009. Prepared for Alaska Department of Commerce, Community and Economic Development, Office of Economic Development. Anchorage, AK.

McDowell Group. 2009b. Alaska Geographic Differential Study 2008. Prepared for Alaska Department of Administration. Anchorage, AK.

Mercer, E. A. 2011. Alaska Department of Labor and Workforce Development. Personal communication with Northern Economics, Inc., January 28, 2011.

National Research Council. 1999. The Community Development Quota Program in Alaska. National Academy Press, Washington, D.C.

NOAA Fisheries Service, Office of Science and Technology. 2009. Total Commercial Fishery Landings At Major U. S. Ports Summarized By Year And Ranked By Poundage. Available online at http://www.st.nmfs.noaa.gov/st1/commercial/landings/lport_yearp.html. Accessed January 28, 2011.

Office of the Governor. 2007. Governor Applauds U.S. Department of Labor for Federal Award. Press Release. Available online at http://www.dog.dnr.state.ak.us/agia/labor_award.pdf. Accessed August 21, 2009.

Powell, M. 2010. How Alaska Became a Federal Aid Magnet. NYTimes.com. Available online at http://economix.blogs.nytimes.com/2010/08/18/how-alaska-became-a-federal-aid-magnet/. Accessed December 22, 2010.

Rosen, Y. 2007. Alaska Faces Skilled-Worker Shortage. The Christian Science Monitor.

Schultz, C. 2010. Alaska's Timber Industry. Alaska Economic Trends 30 (10):12-15.

Southwest Alaska Municipal Conference. 2007. Southwest Alaska Comprehensive Economic Development Strategy Annual Update 2007. Anchorage, AK.

Sovereign Wealth Fund Institute. 2010. Sovereign Wealth Fund Rankings. Available online at http://www.swfinstitute.org/fund-rankings/. Accessed January 28, 2011.

Taxpayers for Common Sense. 2010. TCS FY2010 Earmark Analysis: Apples to Apples Increase in Earmark Totals. Available online at http://www.taxpayers.org/user_uploads/file/Appropriations/FY2010/databases/Final/FY10bigkahunaanalysisfinal.pdf. Accessed December 23, 2010.

U.S. Census Bureau. 2011a. American FactFinder. Available online at http://factfinder.census.gov/home/saff/main.html?_lang=en. Accessed January 23, 2011.

U.S. Census Bureau. 2011b. Consolidated Federal Funds Report. Available online at http://www.census.gov/govs/cffr/. Accessed January 23, 2011.

U.S. Census Bureau. 2011c. Census of Population and Housing 1970. Available online at http://www.census.gov/prod/www/abs/decennial/1970.html. Accessed February 14, 2011.

U.S. Department of Commerce, Bureau of Economic Analysis. 2011. U.S. Economic Accounts. Available online at http://www.bea.gov/. Accessed January 7, 2011.

Wink, A. 2007. A Supply of Alaska Workers for the Gas Line. Alaska Economic Trends 27 (4):4-14.

ATTACHMENT A: HISTORICAL OVERVIEW OF ALASKA NATURAL GAS PIPELINE PROJECTS

Interest in constructing a pipeline to bring the estimated 35 trillion cubic feet (tcf) of natural gas on Alaska's North Slope to market spans nearly four decades. The following historical overview of private sector interest and federal and state policy initiatives to bring North Slope gas to market is based largely on information presented by the Alaska Department of Revenue (2006).

The benefits of bringing North Slope gas to market were first discussed in the 1970s, and a series of gas pipeline projects were proposed by the oil and gas industry. In 1974, Arctic Gas, a consortium of U.S. and Canadian natural gas pipeline and distribution companies, proposed a route through the Beaufort Sea and then through Canada to Chicago. Another option proposed that year involved piping the gas to various Southcentral Alaska tidewater locations, converting it to liquefied natural gas (LNG), and loading it onto tankers for export. In 1976, another consortium of U.S. and Canadian companies, led by the Northwest Alaskan Pipeline Company and Foothills Pipe Lines, Ltd., proposed constructing a gas pipeline along the southern Alaska Highway route.

These industry proposals were accompanied by United States (U.S.) policy initiatives in support of a pipeline project. The Trans-Alaska Pipeline Authorization Act of 1973 determined that the early development and delivery of oil and gas from the North Slope to domestic markets was in the national interest because of growing domestic shortages and increasing dependence upon insecure foreign sources. The Act directed the U.S. President to enter into negotiations with Canada with respect to the possibility of an overland oil and gas pipeline from Alaska.

In 1975, the Federal Power Commission (FPC), the predecessor to the Federal Energy Regulatory Commission, ordered a comparative hearing to select among the three projects. In 1976, as the hearing was underway, Congress passed the Alaska Natural Gas Transportation Act to expedite and elevate the normal FPC administrative and court appeal procedures required for the necessary government authorizations of an Alaska gas transportation system. The legislation established a framework for presidential selection of the best delivery system after comparative hearings before the FPC.

In 1977, President Jimmy Carter selected the Alaska Highway route and chose the Alcan Pipeline Company, a subsidiary of the Northwest Alaskan Pipeline Company, to build the Alaskan segment of the project. Also in that year the U.S. and Canada signed an agreement in principle to govern relations between the two countries for the transportation of Alaskan gas to market via the preferred route. After a protracted competitive regulatory process, the Government of Canada passed into law the Northern Pipeline Act of 1978, which issued a certificate of public convenience and necessity to Foothills Pipe Lines, Ltd to construct the Canadian portion of the pipeline. By the end of the 1970s, the first phase of the portion of the pipeline in Canada, known as the "prebuild," had been constructed under the aforementioned certificate.

The larger pipeline project was suspended in 1982, however, due to numerous challenges, the most notable being extremely low gas prices in the U.S. market that followed the deregulation of U.S. natural gas supply and development of lower cost resources in the contiguous U.S. and Canada. The Natural Gas Policy Act of 1978 ended federal control over the wellhead price of "new" gas as of January 1, 1985, but kept in place wellhead price controls for older vintages of gas. Prices at the producing well became further deregulated with passage of the Natural Gas Wellhead Decontrol Act of 1989. In 1993, all remaining price regulations were eliminated, allowing the market to completely determine the price of natural gas at the wellhead.

The removal of price controls and other regulatory developments in the gas market resulted in changes that had the intended effect on both producers and consumers. As more gas was found and offered to market, gas prices fell sharply in the mid-1980s and stayed low through the 1990s, although periodic episodes of cold weather, hurricanes, and other short-lived factors generated a few price "spikes." The low prices prompted steady growth in gas consumption, aided by its reputation as a clean fuel for industrial uses and electricity generation. From 1986 to 2000, U.S. annual natural gas consumption grew from 16.2 tcf to 23.3 tcf.

Low prices also provided weak incentives for producers to find new reserves, and at times in the 1990s, they began withdrawing resources not only from ongoing exploration but also from development of existing fields. In 2000, the "quiet" market conditions of the 1990s abruptly ended as prices began a steady climb early in the year. Concern about the increasing price was accompanied by questions regarding the adequacy of natural gas supplies for the U.S. market. Imports, predominantly from Canada, met 40 percent of the increased demand in the U.S. market. Based on an assessment from Canada's National Energy Board, however, future production from Canada was unlikely to support a continued increase in U.S. imports.

By late 2000, the market had no reserve capacity, and the tight supply created a trend toward higher and more volatile prices. These market conditions led to a reevaluation of the feasibility of developing Alaska gas reserves. ConocoPhillips, BP Plc., and ExxonMobil Corporation, the three major North Slope oil producers that own 90 percent of the known North Slope natural gas reserves, formed a partnership called the Alaska Gas Producers Pipeline Team to re-investigate the potential of developing a gas pipeline. The results of their $125 million analysis, released in 2002, concluded that the project was technically feasible, but given the estimated cost $15-20 billion, the State of Alaska and federal governments in the U.S. and Canada would need to play a role in reducing costs and associated risks.

The Alaska legislature had anticipated the need for state government involvement when it passed the Stranded Gas Development Act (SGDA) in 1998. The SGDA established a process by which applicants and the State of Alaska could negotiate long-term fiscal terms tailored to the particular economic conditions of a proposed gas pipeline project and develop a binding contract. Federal interest in the development of Alaska's natural gas was renewed in the early 2000s as natural gas prices continued to soar and the George W. Bush Administration sought energy security. A consensus package of provisions to clarify and

expedite the process of building a gas pipeline was developed by Congress, resulting in the Alaska Natural Gas Pipeline Act of 2004.

Following a solicitation for pipeline proposals by the State of Alaska in late 2003, several entities submitted applications, including the following: a) a consortium representing the three major North Slope oil producers; b) the TransCanada Corporation; c) the Alaska Gasline Port Authority, a municipal port authority established in 1999 by the North Slope Borough, Fairbanks North Star Borough, and City of Valdez; d) Enbridge, Inc.; and e) MidAmerican Energy Holdings Company and MEHC Alaska Gas Transmission Company, LLC (collectively, MAGTC). All the applicants proposed a pipeline following the Alaska Highway route with one exception, the Alaska Gas Port Authority's concept consisted of a pipeline to Valdez and a LNG facility or a "Y-line," which essentially combined the LNG project and Alaska Highway route.

For various reasons, by the beginning of 2006, the State of Alaska was negotiating a SGDA fiscal contract exclusively with the producer consortium, although discussions continued with TransCanada regarding the Canadian segment of the project. In 2003, the TransCanada Corporation purchased the remaining interest in Foothills Pipe Lines Ltd., thereby acquiring full ownership of the certificates granted under the Northern Pipeline Act to transport North Slope gas across Canada. Incentives offered by the state in the proposed fiscal contract included 20 percent equity participation by the state in the project. Negotiations abruptly ended, however, when Alaska Governor Frank Murkowski lost his re-election bid, and his successor, Sarah Palin, opted to solicit another round of pipeline proposals under new legislation that replaced the SGDA. Under the Alaska Gasline Inducement Act of 2007, the entity that won the competitive bidding qualified for an exclusive state license and certain incentives, including matching state funds of up to $500 million. In 2008, after the competitive application process and public and legislative review, the state awarded TransCanada Alaska Company, LLC and Foothills Pipe Lines, Ltd its exclusive license to build the North Slope gas pipeline.