

FERC DOCKET NO. PF09-11-000

APPENDIX 5B – TECHNICAL MEMORANDUM - GEOGRAPHIC AND TEMPORAL SCOPE OF SOCIOECONOMIC ANALYSIS

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ACRONYMS AND ABBREVIATIONS

§	Section
ANV	Alaska Native village
ANVSA	Alaska Native Village Statistical Area
APP	Alaska Pipeline Project
CDP	Census-Designated Place
CEQ	Council on Environmental Quality
FERC	Federal Energy Regulatory Commission
Fed. Reg.	Federal Register
GTP	Gas Treatment Plant
REMI	Regional Economic Models, Inc.
TAPS	Trans-Alaska Pipeline System

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B1.0 INTRODUCTION

The purpose of this technical memorandum is to set the boundaries for the socioeconomic effects analysis in space and time, and to provide a rationale for the spatial and temporal boundaries selected.

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B2.0 GEOGRAPHIC SCOPE

B2.1 INTRODUCTION

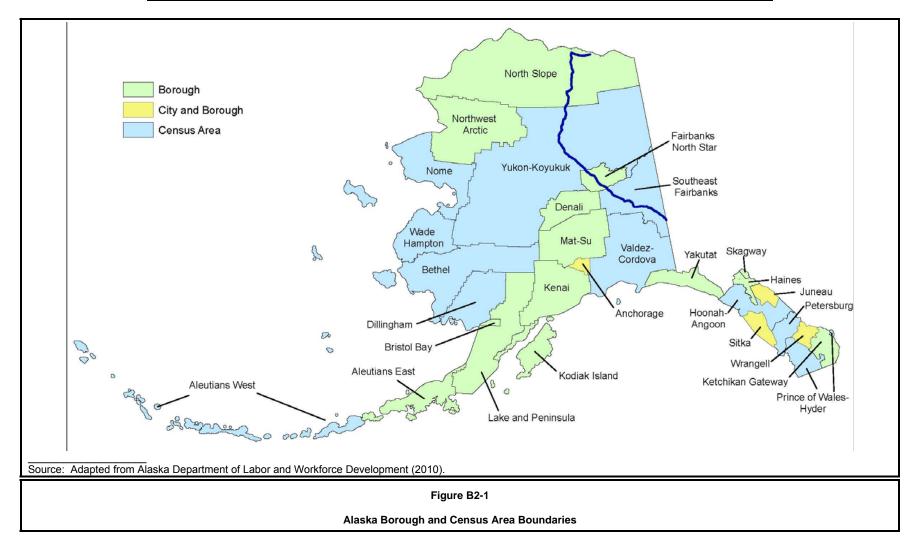
Political jurisdictions are used to describe the boundaries of the socioeconomic impact area. Use of political jurisdictions is consistent with guidelines set forth in FERC (2002), which state that the socioeconomic impact area generally comprises the municipalities or counties in which the facilities would be located or which might be affected by project construction and operation. It is also consistent with the geographic areas of analysis recommended by the CEQ (1997) for socioeconomic resources. These areas include community, metropolitan area, county, state, or country. Using political jurisdictions to define geographic boundaries facilitates the socioeconomic effects analysis because demographic and economic information reported by many data sources, including the U.S. Census Bureau, use political jurisdictions. Moreover, stakeholders and the public can easily understand familiar political boundaries (The Louis Berger Group 2002).

B2.2 ALASKA POLITICAL JURISDICTIONS

Alaska is divided into boroughs rather than counties (**Figure B2-1**). There are currently 18 boroughs in the state. In addition, there are 11 census areas created by dividing the state's one unorganized borough into smaller statistical areas. The census areas do not have regional local governments.

The two place-level geographic entities for which the U.S. Census Bureau publishes data are incorporated places (cities in Alaska) and census-designated places (CDPs). Incorporated places/cities are governmental entities sanctioned by the State of Alaska to perform general-purpose functions. CDPs are unincorporated places delineated by state and borough officials in Alaska and are intended to encompass all people at a given location. Cities and CDPs are mutually exclusive of each other because, by definition, a CDP represents a named, unincorporated area (73 Federal Register [Fed. Reg.] 65,572 [4 November 2008]).

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In addition, Alaska Native Village Statistical Areas (ANVSAs) reported or delineated for the 2010 Census are used to define the socioeconomic impact area. The U.S. Census Bureau states that ANVSAs are statistical geographic entities representing the residences, permanent and/or seasonal, for Alaska Natives who are members of or receive governmental services from the defining Alaska Native village (ANV), and that are located within the region and vicinity of the ANV's historic and/or traditional location. ANVSAs are intended to represent the relatively densely settled portion of each ANV and include only an area where Alaska Natives, especially members of the defining ANV, represent a substantial proportion of the population during at least one season of the year (at least three consecutive months) (73 Fed. Reg. 65,572 [4 November 2008]).

ANVSAs are not constrained by other place-level geographic entities; that is, ANVSAs may or may not overlap cities and CDPs (73 Fed. Reg. 65,572 [4 November 2008]). A preliminary comparison based on 2010 Census demographic data indicates that the following ANSVAs have populations that differ from those of the cities or CDPs with the same name: Skagway, Mentasta Lake, Dot Lake, Tazlina, Gakona, Chistochina, Copper Center, and Gulkana. Each of these ANVSAs is listed separately in the description of the socioeconomic impact area in order to distinguish it from the corresponding city or CDP.

Proper specification of the socioeconomic impact area is important because the type, intensity, and duration of social and economic effects may vary depending on the geographical area of focus. For the socioeconomic effects analysis of the Project, the affected area is delineated in two principal ways: 1) the area inside the pipeline corridor — this area includes the boroughs, census areas, cities, CDPs, and ANVSAs through which the Alaska Mainline would transit; and 2) the area outside the Project's immediate corridor. The following subsections describe each of these delineations.

B2.3 AREA INSIDE PIPELINE CORRIDOR

B2.3.1 CONSTRUCTION PHASE

Some of the effects specific to the pipeline corridor during the construction phase are related to the number of construction workers that would work on the Project and their impact on population, public services and infrastructure, and temporary housing during construction. Some of the Project construction jobs would be filled by workers from inside the pipeline corridor, however, given the large size and wide occupational range of the required workforce and limited labor force in the pipeline corridor (63,462 total persons in 2009 according to Alaska Department of Labor and Workforce Development [2011]), it is anticipated that a substantial number of the construction workers would move into the pipeline corridor on a temporary basis from other regions of Alaska or the contiguous United States.

Other potential effects in the pipeline corridor related to construction activities include increased traffic or disruption of normal traffic patterns. Increased traffic could occur both within and outside the corridor. A large portion of the Project construction materials and equipment would travel to construction sites by truck. Especially in summer, Project-related truck traffic may disrupt the transportation patterns of tourists and local travelers (PROLOG Canada 2003).

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Additional socioeconomic effects that could occur in the pipeline corridor during the construction phase include increased job opportunities and income associated with local construction employment, and with local expenditures by the pipeline operating company, contractors, and non-local construction workers. In addition, local taxes (e.g., sales tax, hotel/motel occupancy tax) would be generated on items and services purchased in pipeline corridor communities (Office of the Governor 2009), however, most of the firms supplying the construction materials needed on the Project are located in cities outside the pipeline corridor. The exception is the City of Fairbanks, which is the only urban community located within the pipeline corridor. Fairbanks is Interior Alaska's largest commercial center and is the region's transportation hub. Given its position to serve as a service and supply center for the Project, Fairbanks would benefit substantially from some of the construction period expenditures. Moreover, Fairbanks would likely experience long-term population and economic growth from the construction and operation of the Project.

For the purpose of defining the socioeconomic impact area, a borough, census area, city, CDP, or ANVSA is considered inside the pipeline corridor if the Project right-of-way would be physically located within its boundaries. The Alaska Mainline would pass through the North Slope Borough, Yukon-Koyukuk Census Area, Fairbanks North Star Borough, and Southeast Fairbanks Census Area. Using Geographic Information System mapping tools and information from other sources, an initial list of cities, CDPs, and ANVSAs inside the pipeline corridor was developed (**Table B2.3.1-1**).

Deadhorse	Mentasta Lake ANVSA
Barrow	Northway
Kaktovik	Northway Junction
Nuiqsut	Big Delta
Point Hope	Delta Junction
Point Lay	Alcan
Wainwright	Dot Lake
Atqasuk	Dot Lake ANVSA
Anaktuvuk Pass	Dry Creek
Tanacross	Wiseman
Tok	Nenana
Tetlin Junction	Livengood
Mentasta Lake	Coldfoot
A city/CDP and the corresponding differ.	NVSA are listed separately only if the populations of the two geographical units

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B2.3.2 OPERATIONS PHASE

A major socioeconomic benefit (effect) that would occur during post-construction activities is the accrual of oil and gas property taxes to boroughs and cities in the pipeline corridor. An initial list of boroughs and cities that may experience revenue effects during the operations phase of the Project was identified based on information provided by Information Insights (2004), including:

- North Slope Borough;
- Fairbanks North Star Borough;
- City of Fairbanks;
- City of North Pole; and
- City of Delta Junction (Delta Junction is a second-class city that has not used its taxation powers to date.)

This list was adjusted to reflect those cities and boroughs that may receive oil and gas property tax revenues from the Project. Some CDPs in the pipeline corridor could incorporate in the future and thereby be eligible to receive oil and gas property tax revenues from the Project.

In addition, jobs would be created to operate and maintain the Project. A portion of this new employment created during the Project operations phase would likely come from the labor pool in the Fairbanks area because much of the existing transportation infrastructure to Alaska's North Slope is linked to that city. Delta Junction, Tok, Glennallen, and other communities in the pipeline corridor could also provide part of the labor force during the operations phase because of the proximity of these population centers to the Project.

B2.4 AREA OUTSIDE PIPELINE CORRIDOR

Construction and operation of the Project would also have measurable socioeconomic effects in areas outside the pipeline corridor. During the construction phase, these effects include increased job opportunities and income associated with construction employment, expenditures by the pipeline operating company and contractors, and transportation effects. During the operations phase, potential effects include increased state revenues and long-term changes in population and economic growth.

B2.4.1 IN-STATE AREA

B2.4.1.1 Statewide Construction Phase Effects

Employment Effects

A wide range of occupations are needed to construct and operate a natural gas pipeline, and it is likely that workers in all regions of Alaska would benefit from the additional employment opportunities created by the Project (Rae 2009). The Alaska Department of Labor and Workforce Development (2009) identified 113 occupations critical to the completion and operation of a gas pipeline. Job categories range from office and field

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engineering to safety, camps, and catering. The largest concentration of workers with gas pipeline-related occupational skills is in highly populated Southcentral Alaska, however, when the percentage of total workers with such experience is considered, it is apparent that all areas of the state have workers with gas pipeline-related occupational skills, including areas outside the pipeline corridor (**Figure B2.4.1-1**). Many of Alaska's rural areas have workers experienced in the occupations most needed for building a gas pipeline (Rae 2009). Although the number of workers in rural communities is small in comparison to urban areas, the proportion of workers who have experience in gas pipeline occupations may be large, and therefore, the employment effects of the Project may be substantial. For example, during construction of the Trans-Alaska Pipeline System (TAPS), all of the communities of Interior Alaska experienced manpower shortages to some extent because of the large number of local residents who left for pipeline jobs (Information Insights 2004).

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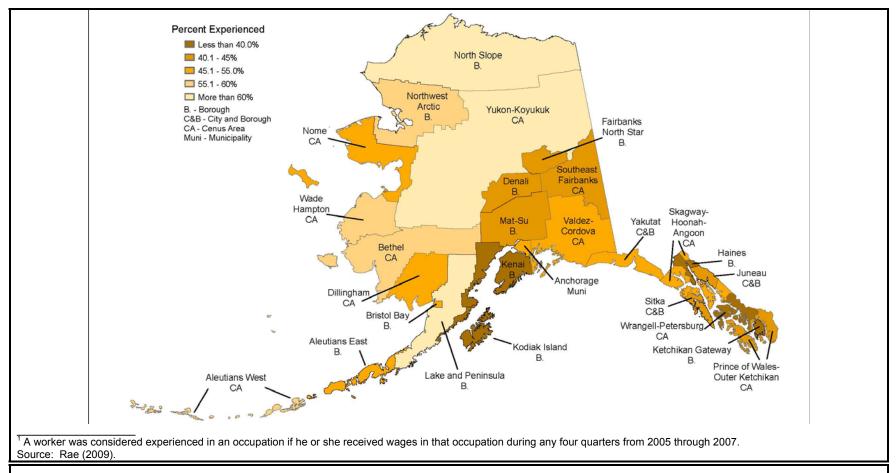


Figure B2.4.1-1

Residence of Workers Who Have Experience in Gas Pipeline Occupations, 2007¹

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Transportation and Infrastructure Effects

The Alaska state government may incur costs for new state highway and port projects if it decides that such improvements should be sought in advance of gas pipeline construction. Absent new funding for these projects, if federal highway aid is used to support the pipeline-related transportation infrastructure, existing projects on the State Transportation Improvement Plan would be delayed up to a year to accommodate these projects (Information Insights 2004).

In addition, the state is likely to incur costs from law enforcement and health and human services impacts. The State of Alaska Department of Public Safety provides law enforcement in the unorganized areas of the state (census areas) and in areas of municipalities without police powers. The Alaska State Troopers enforce all criminal and traffic laws of the State of Alaska. State and tribal programs provide most health and human services in Alaska. Finally, to the extent that additional children would enter Alaska schools as workers and their families move into the state to fill or search for Project jobs, the State of Alaska would see an increase in public school costs (Information Insights 2004).

B2.4.1.2 Statewide Operations Phase Effects

During the operations phase, the Project would generate revenues for the State of Alaska as a result of production taxes, royalties, income taxes, and property taxes. These additional state revenues would support education, health facilities, and other public infrastructure and services in communities throughout Alaska.

In addition, it is anticipated that the Project would provide a steady source of natural gas for in-state use. The construction of off-take points would make it possible to provide natural gas to areas in Alaska that currently do not, as well as provide additional natural gas to areas that do. This gas could potentially be used for commercial, industrial, and residential heating needs as well as for additional electricity generation capacity (Northern Economics 2010).

As noted earlier, the operations phase of the Project would generate direct employment opportunities. Some employees would come from communities in the pipeline corridor, while others would come from communities elsewhere in the state. The Southcentral boroughs (Anchorage, Kenai Peninsula Borough, and Matanuska-Susitna Borough) provide the largest share of the current North Slope petroleum workforce and would likely provide a similar share of workers for the GTP.

B2.4.1.3 Area-Specific Effects

Long-Term Economic Effects

The availability of a natural gas pipeline that would take North Slope gas resources to market could result in additional exploration activity for natural gas reserves on the North Slope. This activity could increase employment and economic growth in many, if not all, of the communities in the North Slope Borough.

The concentration of major engineering, construction, and manufacturing firms in Anchorage makes it probable that this Alaska city would benefit substantially from construction period expenditures. Anchorage is the current Alaska headquarters for the Project, and the

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pipeline operating company's Alaska office could remain in Anchorage or move to Fairbanks for the operating life of the Project.

Anchorage, together with the adjoining Matanuska-Susitna and Kenai Peninsula boroughs, would also likely experience long-term population and economic growth as a result of construction and operation of the Project. As Alaska's major urban area, Anchorage grew dramatically in population during construction of TAPS, and it attracted a large share of the state's oil-tax dollars in the boom that followed (Information Insights 2004). TAPS affected Anchorage's economy, municipal infrastructure, education expenditures, property values, housing, transportation, utilities, and public services. Comparatively low housing costs and a reasonable commute to Anchorage for employment and services has made the Matanuska-Susitna Borough the fastest growing area of Alaska over the past several years (Fried 2010). Most of the Matanuska-Susitna Borough's population lives within 40 to 50 miles of Anchorage by a major highway (Fried 2007), and the borough has become in many ways, an Anchorage suburb.

Transportation Effects

During the construction phase of the Project, transportation effects would occur in ports of entry for freight and along the subsequent transportation routes for supplies, equipment, and labor. Major material items, such as steel pipe, would be manufactured out-of-state and shipped via marine transport to one or more Alaska ports depending on the final transportation logistics. Depending on the ports selected, Project materials could then move via the Alaska Railroad to the Fairbanks area, or via truck to other lay down yards. The heavy-walled pipe planned for the Project would require a large number of trucks to move the pipe to construction sites (Bradner 2010). Additionally, personnel and freight may transport to and from the Project using Ted Stevens Anchorage International Airport in Anchorage and other Alaska airports (Information Insights 2004).

APP Draft Resource Report 1 identified facilities potentially affected by Project-related transportation effects during the construction phase. Gulf of Alaska marine ports and the West Dock at Prudhoe Bay were mentioned in that document. The following is a preliminary list of Alaska ports that could be potentially affected including:

- Anchorage
- Dutch Harbor
- Haines
- Point MacKenzie
- Prudhoe Bay
- Seward
- Skagway
- Whittier
- Valdez

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The report also identified Alaska airports (**Table B2.4.1-1**) that could be used to support the construction of the Project. Some of the airports listed in **Table B2.4.1-1** (e.g., Galbraith Lake, Chandalar) are not located within cities or CDPs.

Table B2.4.1-1		
Alaska Airstrips That May Experience Transportation Impacts		
Borough or Census Area	Airport	
North Slope Borough	Badami	
North Slope Borough	Deadhorse Airfield	
North Slope Borough	Franklin Bluffs Airfield	
North Slope Borough	Happy Valley Airfield	
North Slope Borough	Galbraith Lake Airport	
Yukon-Koyukuk census area	Chandalar Airfield	
Yukon-Koyukuk census area	Dietrich Airport	
Yukon-Koyukuk census area	Coldfoot Airfield	
Yukon-Koyukuk census area	Old Man Camp Airfield	
Yukon-Koyukuk census area	Five Mile Airport	
Yukon-Koyukuk census area	Livengood Airfield	
Fairbanks North Star Borough	Fairbanks International Airport	
Southeast Fairbanks census area	Delta Junction Airfield	
Municipality of Anchorage	Ted Stevens Anchorage International Airport	
Valdez-Cordova census area	Whittier Airport	
Valdez-Cordova census area	Valdez Airport	
Kenai Peninsula Borough	Seward Airport	
Southeast Fairbanks census area	Tanacross Airfield	
Southeast Fairbanks census area	Tok Airport	
Southeast Fairbanks census area	Tetlin Airfield	
Southeast Fairbanks census area	Northway Airport	
Skagway-Hoonah-Angoon census area	Skagway Airport	
Municipality of Haines Borough	Haines Airport	
Juneau City and Borough	Juneau International Airport	

APP Draft Resource Report 1 also identified overland transportation routes that could be used to move construction materials and workers (**Table B2.4.1-2**). At this time, it is anticipated that no major infrastructure (e.g., road, bridge, port, airport) improvements will be needed; however, the Project continues to work with the Alaska Department of Transportation and Public Facilities to ascertain potential improvements. In addition, based on the anticipated increase in traffic volumes resulting from the Project during the construction phase, municipal law enforcement and emergency response services may have to be expanded along Project transportation routes (Information Insights 2004).

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Table B2.4.1-2		
Alaska Highways and Railway Lines That May Experience Transportation Impacts		
Highways Railway Lines		
Alaska	Alaska Railroad (Seward-Anchorage Whittier-Anchorage,	
Dalton	Anchorage-Fairbanks, Point MacKenzie-Fairbanks [if operational])	
Elliott	White Pass Railroad (Skagway-Canada)	
Glenn		
Haines		
Klondike		
Parks		
Richardson		
Seward		
Tok Cutoff		

Boroughs and census areas through which potential overland transportation routes pass include the Municipality of Anchorage, Fairbanks North Star Borough, Valdez-Cordova Census Area, Kenai Peninsula Borough, Municipality of Haines Borough, Southeast Fairbanks Census Area, Denali Borough, and Municipality of Skagway. Using Geographic Information System mapping tools, a preliminary list of the cities, CDPs, and ANVSAs along overland transportation routes was prepared (**Table B2.4.1-3**).

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Dalton Highway	Richardson Highway	Klondike Highway
Deadhorse	Paxson	Skagway City/Skagway ANVSA
Wiseman	Gulkana CDP/Gulkana ANVSA	Parks Highway
Coldfoot	Glennallen	Ester
Elliott Highway	Tazlina CDP/Tazlina ANVSA	Nenana
Livengood	Copper Center CDP/Copper Center ANVSA	Anderson
Fox	Valdez	Healy
Alaska Highway	Tok Cutoff	McKinley Park
Fairbanks	Gakona CDP/Gakona ANVSA	Cantwell
North Pole	Chistochina CDP/Chistochina ANVSA	Talkeetna (rail)
Big Delta	Slana	Willow
Delta Junction	Mentasta Lake CDP/Mentasta Lake ANVSA	Houston
Dry Creek	Glenn Highway	Big Lake
Dot Lake CDP/Dot Lake ANVSA	Sutton	Knik-Fairview
Tanacross	Palmer	Wasilla
Tok	Eklutna	Seward Highway
Tetlin	Eagle River	Girdwood
Northway Junction	Anchorage	Whittier
Northway	Chickaloon	Moose Pass
Alcan		Seward
		Haines Highway
		Haines
		Klukwan

B2.4.2 OUT-OF-STATE AREA

The State of Alaska expects that the number of workers required for the construction phase of the Project would be greater than what the Alaska workforce can provide (Alaska Department of Revenue 2006). .Some of the jobs would have to be filled by out-of-state workers, most of whom reside in the contiguous United States. Moreover, a portion of the jobs created during the operations phase would also likely be filled by out-of-state workers.

In addition to employment effects, a number of other nationwide socioeconomic effects are expected because of construction and operation of the Project, including the following.

- Construction of the Project would require materials, supplies, and equipment from the rest of the U.S. and other countries.
- After the Project begins operations, the additional natural gas supplies could reduce the cost of natural gas to consumers in the contiguous United States and Alaska.

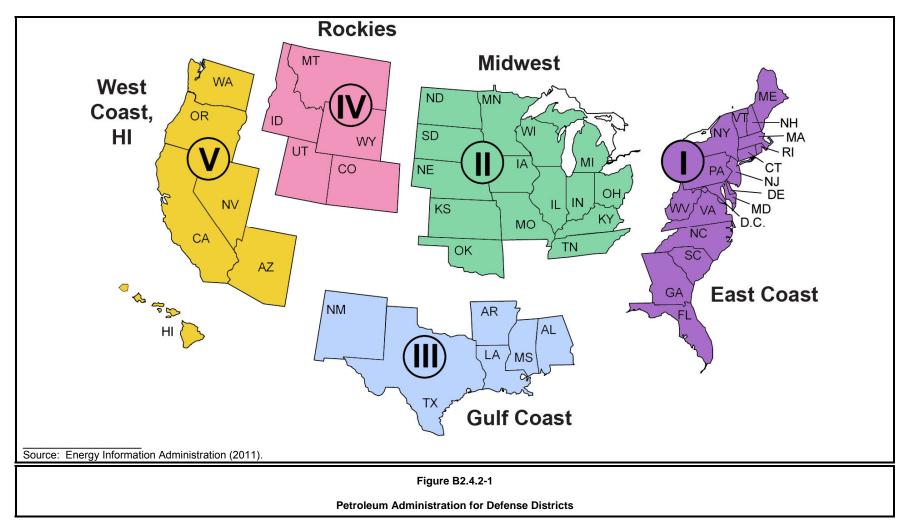
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- The fiscal effects of the Project during the operations phase would increase federal revenues. .
- The \$18 billion federal loan guarantee authorized under the Alaska Natural Gas Pipeline Act of 2004 for the Alberta case project (including the Canadian portion of the Project) would expose the federal government to financial risk.

There would be differences across states in the percent of materials, supplies, equipment, and labor provided toward construction of the Project, as well as the reductions anticipated in natural gas prices, and the distribution of federal revenues. Many of these variances would be regional in nature rather than state-specific. Therefore, it is appropriate to model these national effects on a regional basis. After review of various regional aggregations, the Energy Information Administration's five Petroleum Administration for Defense Districts (PADDs) were selected for discussing the out-of-state socioeconomic effects of the Project (**Figure B2.4.2-1**).

The REMI model developed for the socioeconomic effects analysis was used to determine changes in employment, labor income, population, output, and other factors in the five Petroleum Administration for Defense Districts and Alaska related to construction and operation of the Project. The REMI model results indicated that the Project would have minimal socioeconomic effects in any U.S. region outside of Alaska (e.g., less than 0.01 percent change in total employment).

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B3.0 TEMPORAL SCOPE

Defining the temporal scope for the socioeconomic effects analysis is based upon the duration of the effects of the proposed action and alternatives. It is the duration of the effects of the action that is relevant, not the duration of the action itself (U.S. Department of the Interior 2010). The socioeconomic effects analysis covers the development, construction and operations phases of the Project.

B3.1 DEVELOPMENT PHASE

The term "development" as used here includes all procurement and pre-construction activities such as design and engineering, permitting, surveying, and other activities that would take place prior to full funding of the Project. This phase would extend from 2011 through 2014.

B3.2 CONSTRUCTION PHASE

The construction phase would extend from January 1, 2015, to the end of post-construction activities (e.g., equipment demobilization) in 2021. However, a small amount of construction activity associated with the GTP is scheduled to occur in the last part of the fourth quarter of 2014.

B3.3 OPERATIONS PHASE

First gas is projected for 2020, with full gas in 2021. TAPS was originally authorized to operate for 30 years. Assuming a similar period for the Project would suggest that the temporal period for the operations phase would extend to 2050. The REMI model extends economic and demographic forecasts through 2050, which is consistent with the timeframe of the temporal scope of the socioeconomic analysis.

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B4.0 SUMMARY

Table B4-1 presents an initial list of the boroughs, census areas, and communities that may experience socioeconomic effects because of the Project and related transportation activities as described in the previous sections of this technical memorandum. The political jurisdictions in this list, together with the State of Alaska, five regions of the U.S., and the U.S. as a whole, form the basis for analyses required to prepare Resource Report 5, and for the REMI model.

With respect to the temporal scope of the socioeconomic analysis, the starting point of the analysis is 2011, and the ending point is 2050. This time period includes the development, construction, and operations phases of the Project.



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Table B4-1			
Alaska Boroughs, Census Areas, Cities, Census-Designated Places, and Alaska Native Village Statistical Areas in the Socioeconomic Impact Area ^a			
Inside Pipeline Corridor	Outside Pipeline Corridor		
North Slope Borough	Denali Borough	Valdez-Cordova Census Area	
Barrow	Anderson	Chistochina CDP/Chistochina ANVSA	
Wainwright	Cantwell	Copper Center CDP/Copper Center	
Atqasuk	Healy	ANVSA	
Nuiqsut	McKinley Park	Gakona CDP/Gakona ANVSA	
Kaktovik	Municipality of Haines	Glennallen	
Point Lay	Borough	Gulkana CDP/Gulkana ANVSA	
Point Hope	Haines	Paxson	
Anaktuvuk Pass	Klukwan ^b	Slana	
Yukon-Koyukuk Census Area	Kenai Peninsula Borough	Tazlina CDP/Tazlina ANVSA	
Wiseman	Moose Pass	Tonsina	
Coldfoot	Seward	Valdez	
Livengood	Matanuska-Susitna Borough	Whittier	
Nenana	Big Lake	Other	
Fairbanks North Star Borough	Chickaloon	Unalaska	
Fox	Houston		
Fairbanks	Knik-Fairview		
Ester	Palmer		
North Pole	Sutton		
Salcha	Talkeetna		
Southeast Fairbanks Census Area	Wasilla		
Delta Junction	Willow		
Big Delta	Municipality of Anchorage		
Dot Lake CDP/Dot Lake ANVSA	Eagle River		
Dry Creek	Eklutna		
Tanacross	Girdwood		
Tok	Municipality of Skagway		
Tetlin Junction	Borough		
Northway Junction	Skagway ANVSA		
Northway			
Mentasta Lake CDP/Mentasta Lake ANVSA			
Alcan			
differ.	ANVSA are listed separately only if	the populations of the two geographical units	
^b Although Klukwan is located in the Municipality of Haines Borough.	e Hoonah-Angoon Census Area, it is	entirely surrounded by territory of the	
Notes:			
ANVSA – Alaska Native Village Statistical A	rea		
CDP – Census-Designated Place			

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