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Overviews of Selected Business Sectors in the Alaska Economy

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OVERVIEWS OF SELECTED
BUSINESS SECTORS
IN THE ALASKA ECONOMY

by

R. Steven Konkel

completed for the
Department of Commerce and
Economic Development

July, 1983

OIL: A PROFILE OF THE IMPORTANCE OF PRUDHOE BAY
TO THE ALASKAN ECONOMY

The development of the Prudhoe Bay field and the construction of the 800-mile Trans Alaska Pipeline System (TAPS) have changed the Alaskan economy from one based on harvest of renewable resources to one based primarily on oil. Since completion of TAPS in June of 1977, over three billion barrels of oil have been produced at Prudhoe Bay -- with the present rate of production at about 1.6 million barrels per day or about 580 million barrels per year. Despite decreases in world oil prices, very significant investments continue to be made in bringing Alaska's oil reserves to market.

The Prudhoe Bay reservoir has remaining recoverable reserves of around six billion barrels of oil and 28 trillion cubic feet of natural gas. This recoverable reserve estimate accounts for secondary recovery with known technology, such as the Prudhoe Bay Waterflood Project which will allow recovery of about one billion barrels at an investment cost of \$2.5 to \$3 billion. Construction began in 1982 and injection of seawater to increase reservoir pressure will begin in 1984.

Resources

Oil is the single most important commodity in Alaska. In 1982, crude oil production in Alaska had a wellhead value of approximately \$12 billion; for comparison with other minerals, consider the following 1981 and 1982 production values:

	<u>Year</u>	<u>Millions of \$</u>
● natural gas for export to Japan	(1981)	328.5 million
● sand and gravel	(1982)	91.0 million
● gold	(1982)	70.0 million
● coal	(1982)	18.0 million
● stone	(1982)	15.6 million
● tin	(1982)	1.4 million
● silver	(1982)	.2 million
Subtotal		<u>524.7 million</u>

The development of the Kuparuk field west of Prudhoe Bay illustrates the importance of TAPS to the economics of developing new oil fields on the North Slope. Production began in December, 1981, after completion of a 26-mile pipeline connecting the field to TAPS. By 1986, current production levels of 100,000 barrels per day from this field are expected to be increased to about 240,000 barrels per day.

Markets

Production of crude oil from the Prudhoe Bay reservoir is shipped to Valdez through the 48-inch diameter, 800-mile Trans Alaska Pipeline System (TAPS). The market is the West Coast, which receives about 750,000 barrels of North Slope crude per day, and the Gulf Coast, East

Coast and the U.S. Virgin Islands, which receive 750,000 to 850,000 barrels of crude oil per day. Additional transportation costs of \$2.50 to \$3.50 can be incurred to transport the oil from the West Coast to an East Coast refinery: in general, however, the ANS wellhead value varies depending on whether the crude is headed for the West Coast or East Coast destinations. This average margin is about \$1.50. Assuming a present value of \$29.80 for Saudi medium crude oil, transportation costs through the Trans Alaska Pipeline System (TAPS) and tankers to the West Coast reduce the wellhead value of Prudhoe Bay oil to about \$18.00.

There is a potential for Alaska to export significant quantities of oil to Japan. However, this would require changes in federal law which are being considered by Congress. One analysis, done by the U.S. State Department, estimates that partially lifting the export ban could result in export of up to 200,000 barrels of Alaskan oil per day to Japan.

Status

The leasehold interests sold by the State in Prudhoe Bay in the late 1960's reserved a one-eighth (12.5 percent) royalty share for the State for any production emanating from exploration and development of the leases. The State is allowed to take its royalty share either in-value or in-kind. Since the barrel of oil reaching the three billion milestone has just been transported through TAPS, the importance of this oil from the Prudhoe Bay structures cannot be overlooked in any overview of State revenues and economic development prospects.

Oil royalties, bonuses, conservation and severance taxes are major sources of revenues in Alaska. For example, the conservation and severance taxes on oil and gas yielded \$1.2 billion in revenue in 1981. In general, the severance tax is on the order of 12½ percent for the first five years on production from new fields and 15 percent thereafter and on the Prudhoe Bay fields where production began before June of 1981. Bonuses from State lease sales at Prudhoe Bay in 1969 and in the Beaufort Sea have yielded over \$1 billion to the State treasury. The corporate income tax yielded over \$900 million in 1981, a significant percentage of which is related to oil company profits. In recent years, oil revenues have accounted for almost 90 percent of total revenues -- illustrating the importance of world oil supply and demand to the State of Alaska.

In conclusion, the exploration, development, and production from the Prudhoe Bay field have had and is expected to continue to have a dominate effect on the Alaska economy.

FISHERIES DEVELOPMENT

This overview describes resource characteristics of the fisheries, markets, and the status of Alaskan fisheries development. It should facilitate efforts to provide analysis and prioritize issues.

Understanding fisheries is a complex task. Resource ownership questions, such as those being addressed in the salmon treaty discussions between the U.S. and Canada, affect management and involvement of government. There is extensive regulation of competition for limited finfish and shellfish resources among subsistence, sportfishing, and commercial fishermen -- also in allocating catch levels among gear types such as purse seine, set and drift gillnet, and troll.

Resources

Fisheries can be profiled in numerous ways -- including catch (pounds, number of fish), payments to fishermen, wholesale value after processing and number of fishermen employed, for example. Since the catch and the value of the harvest vary from year to year, any given statistic is relevant only in the context of previous experience. Fishery stocks move and are affected by biological factors, which complicates estimates made by Alaska Dept. of Fish and Game of the numbers of fish or shellfish which can be harvested in any given year. The commercial and subsistence fisheries extend from Southeast to Barrow and Demarcation Point, along the coast and up the major river basins.

Alaska manages its fisheries according to sustained yield principles. The stocks are managed to enhance natural survival and hatcheries increase numbers of certain species -- particularly salmon -- available for harvest. At present, salmon and shellfish represent about 90 percent of the wholesale value ("as prepared for shipment from Alaska") of \$900 million to \$1.1 billion; this is split almost evenly between the two although the apparent crash of the king crab stock implies salmon may increase in relative importance. Alaska is near sustained yield in salmon harvest state-wide at harvest levels on the order of 100 million fish, though annual catch has been as low as 22 million and as high as 113 million in the last 10 years.

Alaska has tremendously diverse finfish and shellfish resources which are distributed throughout its regions. The crab, shrimp and herring fisheries are important to fishermen as well as halibut and bottomfish such as pollock, cod, and flounder. Of these stocks, crab and shrimp appear stressed in several important fisheries: in 1982, king crab and snowcrab (tanner crab) catches were down to 34.5 and 69.0 million pounds, respectively. This compares to record catches of these crab species of 185 and 131 million pounds. Dungeness crab is also a recognized fishery. In addition, scallops, clams, abalone, and octopus are harvested in commercial quantities: total catch was 1.07 million

pounds, 438,000 pounds, 81,000 pounds, and 118,000 pounds in 1982, respectively.

Markets

There are world-wide markets for Alaskan seafood products. For example, canned salmon has a steady domestic market and it is advertised in major U.S. cities like Boston and New Orleans as well as the United Kingdom. Markets are diverse and competitive; frozen Alaska salmon is sold in Europe and Japan, for instance, and must compete with Norwegian salmon and other protein sources.

Markets can be quite cyclical due to harvest levels, quality control problems, and work economic conditions. Of concern here is difficulty of effectively intervening in these markets. Overfishing of king crab, the botulism poisoning of a Belgian man, and the problem a strong dollar brings to exporters are examples of factors that encourage cyclical trends.

Some markets are very specific due to tastes and preferences in other countries relative to U.S. demand. The herring roe market in Japan is a good example. Also, the demand for whitefish is much greater in the Pacific Rim countries because of higher fish consumption in their diets.

Status

In 1981, the processing industry consisted of at least 156 land based processors, with 15 firms controlling 64 plants. Offshore, Japanese processors have the capability to enter the market when harvests exceed onshore processing capacity. A survey done by the Commercial Fisheries and Agriculture Bank estimated 1981 total sales of the processing facilities at \$1.18 billion.

Employment associated with fishing, processing, transportation of finfish and shellfish and service sector support is an important component of Alaska's economic base -- up to 50,000 people earn some of their income from fishing or related activity. Seasonality of jobs is a significant aspect of fishing. Many fishermen move among fisheries and processors vary their operations according to fish availability. Wage and salary employment statistics tend to understate the importance of fishing because of the seasonal nature of employment and its effect on reported data, exclusion of self-employed workers, and the overlap with jobs in the service and transportation sectors.

Benefits from fisheries development are widely distributed among in-state and outside fishermen and processing workers and others. Presence of large numbers of out-of-state fishermen and workers in processing plants affects Alaskan employment and incomes. Benefits are distributed among fleets based in Japan, Canada, and other foreign countries, as well as Alaska, Washington, and other states. It has been estimated that over 70 percent of the fish landed by Washington-

based vessels (representing 422 million pounds) comes from Alaskan waters.

Realization of investment benefits depends on resource ownership and predictable management allocations: unresolved questions are evident in the Law of the Sea treaty negotiations over the 200-mile limit as well as the salmon treaty discussions of harvest allocations between the U.S. and Canada. The Fisheries Conservation and Management Act of 1976 has been a factor influencing perceived resource ownership in the Fishery Conservation Zone (FCZ) and investment in joint ventures for bottomfish harvesting and processing.

Regulation includes limited entry permits, quotas and seasonal restrictions. Limited entry is an intricate system for allocating fish among gear types, while maximizing in theory the profits of fishermen. Management objectives and implementing regulations vary considerably depending on laws and tradition. ADF&G advises the Board of Fisheries on exercising jurisdiction within three miles of the shore. The North Pacific Fishery Management Council makes recommendations to the federal government on quotas and policies for species harvested within the 200-mile limit but outside the area of state responsibility.

ALASKA'S TOURISM INDUSTRY

This profile highlights the efforts of the Alaska Division of Tourism in promoting and developing Alaska's tourism industry. Primary emphasis is on resources, markets and the status of increasing the numbers and expenditures of visitors.

For most Americans and foreigners, visiting Alaska requires a relatively large investment of time and money. This is significant because it may limit Alaska's market unless there are clearly offsetting factors, such as the quality of the experience. Although the natural environment in Alaska is unsurpassed in many respects, the trade-off between taking vacation time and spending large sums of money does limit Alaska's potential market share. However, commercial airlines have shortened the time penalties imposed in traveling the large geographic distances from major cities to Alaska's preeminent attractions, such as Denali and Glacier Bay National Park; thereby lessening these other opportunity costs.

Resources

Alaska's natural resources are numerous, unique, majestic in size, scale and diversity. History, the culture of the Native people, and the glaciers, mountains, wildlife and recreational opportunities attract visitors. These resources are found throughout Alaska, although areas accessible from Anchorage, Fairbanks and Juneau receive the highest visitation. Opportunities to visit these resources are affected by accessibility, cost, and whether or not the attraction is being actively promoted by the Alaska Division of Tourism, Alaska Visitors Association, federal agencies, or private interests.

Resources, defined according to accessibility and cost criteria, vary enormously from the Inside Passage to the gold-bearing sands of Nome. Cruise ships ply the Inside Passage and make port calls throughout Southeast Alaska. Several of these ships also visit communities and the Columbia Glacier in Prince William Sound. The Railbelt region, generally those communities connected by rail and highway from the Homer spit through Anchorage and on up to Fairbanks, contains the enormously popular Kenai salmon rivers as well as Alyeska ski resort and Denali. The only way to see the old gold dredges in Nome or the wildlife in the Pribilofs is to fly in -- usually on flights originating in Anchorage, covering more than 500 air miles.

Markets

The primary target for marketing Alaska's tourism industry has been potential visitors from out-of-state, particularly the lower 48 states. Television and magazine advertising have been the media most used to promote travel to Alaska. These trends are expected to continue, despite increasing costs for advertising space due to the 1984 summer Olympics and presidential elections.

Foreign visitors represent about 10 percent of the total visitors. Canadians, Germans, and Japanese have historically outnumbered tourists from other foreign countries. Last year approximately 30,000 visitors came from Canada and 15,000 each from Germany and Japan.

Due to the time and money costs associated with travel to Alaskan destinations, people generally try to schedule visits to specific locations where "peak experiences" are available. Thus, Mt. McKinley, trophy wildlife, and Glacier Bay are all in great demand. The potential visitor, however, may have itineraries as different as meals on a wilderness backpacking adventure are from those on a first-class cruise. There has been an increase in the number of people traveling to Alaska who are willing to forego having rigid itineraries, choosing to modify the package tours or independently plan their trips. Analysis of demographic, economic, and marketing response data is therefore applicable in targeting new marketing efforts to the needs and interests of particular populations. Finally, the in-state population has more access to resources; tends to be less peak experience-oriented, and has the money to experience Alaska: these factors indicate that there is untapped potential in the tourism industry.

Status

Economic impact of tourism is often measured in terms of the number of visitors, total expenditures, and total jobs in the industry. In 1982, nearly 700,000 people visited Alaska. Their estimated expenditures were \$457,000,000, accounting for 9,860 direct jobs. To illustrate how times have changed, consider that in 1964 there were 59,000 visitors and an estimated 1,600 jobs.

Airlines are the dominate carriers serving visitors traveling to and from Alaska. In the 1960's, the percentages of visitors entering the state by highway were approximately twice the number entering by ferry or by airline. Almost 70 percent of tourists entered Alaska by air in 1977. The following figures on numbers of visitors and transportation modes are being updated through 1982 by an Alaska Department of Labor Visitor Survey:

<u>1977 Visitor Survey</u>		
<u>Transportation mode</u>	<u># of visitors</u>	<u>Percentage</u>
airlines	266,000	68
cruiseship	58,800	15
highway	42,800	11
ferry	21,400	6
<u>Total</u>	389,000	100

Benefits of tourism are widely distributed among tour companies, hotels and motels, airlines, cruiseship companies, local retailers and others. This broad base of involvement among business sectors is one reason why it is difficult to accurately measure employment in tourism;

another is the seasonal nature of the industry. The State of Alaska also receives corporate income taxes and fees and local governments can benefit from sales and hotel/motel taxes. Alaskans are generally supportive of tourism: in a current Dittman survey, 4 out of 5 residents favored tourists coming to their own communities.

Of the 735,000 expected tourists in 1983, 126,000 cruiseship passengers may visit Juneau. The 15 ships making 184 visits to Juneau are booked from late May through September. Ketchikan, Wrangell, Petersburg, Sitka, Skagway, and Haines also benefit from the cruiseship visits. Extension of port calls up to Prince William Sound is an indication of increased demand for cruise experiences. Demographic and economic factors continue to encourage significant growth in this market.

There are some undesirable side effects of tourism, although it is difficult to separate these effects from societal problems in general. Overuse can harm natural areas, including the impact of overfishing and trophy hunting on areas which are accessible and therefore experience excess or conflicting demands. Crowding of facilities and high prices were cited in a recent survey as problems. Crime is perceived as a minor problem. Some Native communities have backed away from promoting tourism, tired of being the focus of curiosity.

The Division of Tourism in DCED and the Alaska Visitors Association, a heterogeneous group of firms with business interests in tourism, continue to promote Alaska as a travel destination. By designing and implementing joint marketing efforts, the state has become a partner with private interests in the aggressive competition among states to attract visitors. State decision makers involved with the tourism industry may evaluate the effectiveness of marketing efforts in terms of increasing the number of visitors and associated visitor expenditures on a state-wide basis.

HARD-ROCK MINERAL DEVELOPMENT IN ALASKA

This profile concentrates on hard-rock mineral resources, markets, and the status of development efforts in Alaska. Presently mining and milling of gold is the most significant activity in this sector. There are 500-600 placer miners in the State who work their claims on an intermittent basis. The Greens Creek, Quartz Hill and the Red Dog deposits, noted below, indicate that Alaska's relatively high development and operating costs are not firm barriers if the ore bodies are of sufficient size and grade and world markets are favorable.

Capital and labor costs are high in Alaska and roads, railroads, ports, and energy facilities are currently unavailable to make many deposits economically attractive. The pace of development will therefore be quite sensitive to world price trends and the ability to overcome these production cost disadvantages. This is especially true for base and precious metals, although interest in gold has historically been high enough to generate long-term investment as well as overnight stampedes.

Resources

Alaska has significant deposits of many important minerals such as gold, silver, copper, chromium, nickel, cobalt, platinum, and tin. Development of this rich mineral potential is determined by world supply and demand factors relative to site-specific mining costs.

Sand and gravel and gold mining and milling dominate present mineral production figures, excluding oil and gas which are profiled separately. Sand and gravel extraction was worth \$91 million in 1982, with reported gold production at about \$70 million at an assumed average 1982 price of \$400 per ounce. There may be significant gold production which is not reported by miners. Platinum, silver, jade, tin, and mercury production in 1982 was small by comparison, totaling \$1.6 million.

Expenditures for development of base and precious metals increased from \$15.3 million in 1981 to \$29.6 million in 1982. This increase in development expenditures reflects progress on both the Greens Creek joint venture and the U.S. Borax development: eventual capital costs could reach \$100 million plus for Greens Creek and \$1 billion for the U.S. Borax project. Metal production value increased significantly in 1982, up 27 percent from 1981 to \$71.67 million. Ninety-seven percent of this is attributable to gold production.

Alaska's Mineral Industry 1982¹ describes Alaska's operating mines and development plans for promising deposits. Among the projects reviewed in the report, the Greens Creek, Quartz Hill and Red Dog

deposits appear to have the best chance of becoming world-class operating mines in the near future:

Little Squaw Mining Co.	gold
Alaska Gold Co.	gold
Silverado Mines, Ltd.	gold
Livengood Joint Venture	gold
Alaska Asbestos	asbestos
Goodnews Bay Mining Co.	platinum metals
Northland Dredging Co.	gold
Alaska Apollo Gold Mines, Ltd.	gold, copper, lead, zinc, silver
Independence Mine-Starkey Wilson et al.	gold
Greens Creek Joint Venture	silver, lead, zinc, copper, gold
Yakobi Island/Mirror Harbor	nickel, copper, cobalt
U.S. Borax, Quartz Hill	molybdenum
Cominco, Red Dog	zinc, lead, silver

Markets

Wide swings in metal prices affect the economics of resource development. For instance, in 1966 the price of gold was fixed by law at 35 dollars an ounce: the total value of production in Alaska then was less than \$1 million. Prices have ranged from an all-time high of \$850 per ounce 2 and 1/2 years ago to a recent low of \$296 per ounce in June, 1982. Another example is copper: prices have ranged from \$.60 to \$1.40 per pound in the last two years.

Major improvements in Alaskan project feasibility depend on favorable world mineral demands and prices. Investors in world markets evaluate a particular deposit by comparing its production costs to those of alternative sources of supply. Additional exploration and core drilling can improve estimates of mineable ore and mineral concentration. Much is already known about the location of major deposits in Alaska.

Status

The steps in mineral development are exploration, development, production, and processing. Overall exploration expenditures went down to \$45 million in 1982 from \$76 million in 1981 due to companies having completed previous exploration on the location and viability of mineral deposits and the depressed outlook in many world minerals markets. Adverse economic conditions also affected the ability of mining companies to finance exploration.

There are tens of thousands of mineral claims throughout Alaska. Many require major infrastructure to become commercially viable. An excellent example is the Red Dog mine, located in the De Long Mountains 90 air miles north of Kotzebue and 55 miles from the Chukchi Sea. The

Nana Regional Corporation - Cominco joint venture estimates that the deposits contain 85 million tons of mineralization, averaging 17.1 percent zinc, 5 percent lead, and 2.4 ounces of silver per ton. This deposit is large enough to influence the world zinc and lead mining industry for several decades.

Development of projects in the Ambler River/Survey Pass quadrangle of the Brooks Range face similar transportation hurdles to those posed by the Red Dog situation. The transport of one and one-half million tons of concentrate to tidewater each year, presumably by building a 55-mile road, may follow a southerly route to avoid crossing rivers and disturbing the fishery -- a major concern of Native groups. The port facility could cost as much as one-third of the total mine cost.

After initial discovery of a commercial lode, many mines have lead times of up to 15 years before development and production. Many factors influence lead time. Beside solving transportation problems and completing engineering analyses, major considerations include financial analysis of the company's cash flow and the effect of changes in world prices on the value of production. Energy production costs may be important in relation to total operating costs. Because of risks and uncertainties affecting profitability, companies are sensitive to both environmental control costs and time required to obtain all construction permits.

Information on the name, location, mineral commodity, type of operation, and references for more than 6,500 mineral deposits in many locations throughout Alaska has been computerized by the Juneau office of the U.S. Bureau of Mines. Acquiring an on-line computer interface to use this data base could improve analytical capabilities in state government, particularly in DGGG (DNR) the Office of Mineral Development (DCED).

The Bureau of Mines has estimated production costs for 50 to 60 mines in Alaska. By evaluating economic assumptions and updating costs, more will be known regarding the economic viability of proposed mines and requirements for providing State and local government services. Roads, railroads, ports and energy facilities have generally been assumed to exist in these resource inventories. Therefore, further evaluation is required on a site- and region-specific basis: often these transport and production facilities are crucial to the economics of a proposed mine.

In sum, Alaska's historical emphasis on gold production is likely to be supplemented by development of other minerals such as silver, lead, zinc, and copper. The schedule for development of known deposits will be determined by worldwide supply and demand conditions, both for economies in general and for individual metals.

¹Alaska Division of Geological and Geophysical Surveys produces this report which is published by the Office of Mineral Development in DCED.

ALASKA'S COAL INDUSTRY

This overview summarizes coal resources, markets and the status of coal production in Alaska. Although there is only one producing mine, the Usibelli mine at Healy, the potential for coal development in Alaska appears considerable due to the existence of huge proven reserves.

Resources

There are at least eight major coal fields that have significant reserves: the Northern, Nenana, Jarvis Creek, Susitna, Matanuska, Bering River, Cook Inlet, and Beluga fields. These principal fields are located in diverse environments from the Northern fields above Pt. Hope and Kotzebue to the concentration of fields starting at Unga Island in the Alaska Range and ending at the Nenana near Fairbanks.,

Alaska has well over two billion tons of proven coal reserves and indicated reserves of 58 to 136 billion tons. There may be as much as 15 to 20 billion tons of recoverable subbituminous coal in Alaska. These resources are estimated to "equal those of the Lower 48," according to the Division of Geological and Geophysical Surveys. As with petroleum, a distinction is made between proven and potential reserves --and in this case further economic analysis is useful in understanding markets and Alaska's production costs.

Markets

Besides small local markets for bituminous coal, there is an in-state market for steam coal in Fairbanks. The coal is used for generation of electricity -- 829,000 tons of Usibelli coal supplied Fairbanks and military bases in the interior in 1982. The potential exists for expanding this use of coal in the Railbelt: a 500 megawatt coal-fired power plant at Beluga or Nenana would consume about 1 million tons of coal per year.

Large-scale development or expansion of coal mining in Alaska depends on the state of export markets and improving production costs. The export market for Alaskan coal is the Pacific Rim, in which coal is subject to stiff price competition from other fuel sources. Alaska's ability to tap this market is extremely sensitive to the world price of oil, high transportation costs and the inaccessibility of much of Alaska's coal resource base.

Status

Usibelli's coal mine at Healy, adjacent to the Alaska Railroad, is an exception to the disadvantages of inaccessibility, high moisture content, and low Btu heat content of other Alaskan coals. A contract was recently negotiated for the export of 300,000 tons per year of Usibelli coal: the Suneel Company will sell this coal to Korean Electric Power Company (KEPCO). The coal will be transported through Seward and the Alaska Railroad will be upgraded to service the mine.

The stiff price competition noted above was evident in the negotiations as Usibelli faced over 60 international bidders. Australia recently reduced its coal export prices 20 percent; this is another example of the level of competition affecting export market prices.

It appears that exports to Korea and Japan hold the most promise for expansion of the Alaska coal industry. Native corporations own considerable coal reserves and are investigating joint ventures to enter this export market. In-state demand for steam coal is limited, particularly with present oil prices. The cost penalties imposed by inaccessibility indicate that fields developed to meet export demand will likely be located at or near tidewater and will be able to take advantage of existing transportation and energy facilities.

ENTERPRISE

Overview

There are 50,000 active businesses licensed in Alaska, proof that small businesses play a major role. Since 4 out of 5 businesses fail in their first five years of operation, activity which improves the success ratio is likely to display a good economic return.

Of Alaska's 194,000 employees, 88,000 or 45% of the labor force are employed in the service industry. This definition of service workers excludes government and utility workers, thereby understating the significance of these jobs. There are also indications that population and income growth has outpaced the service sector growth. This service gap plus scale economies associated with growth that make service import substitution practical, both suggest excellent enterprise opportunities.

Of the 108,000 jobs in the seven categories detailed below, 60,000 or 56% are located in Anchorage. This disproportionate concentration of jobs in the dominant community is not unusual since service industries have hierarchies with the variety of services declining in a direct relationship with community size. All communities supply basic needs, regional centers have banks, department stores, etc., while only largest communities have concentrations of corporate headquarters, medical centers and major financial and cultural services. Concentration by location or community size differs depending on the type of service activity.

Employment breakdowns for seven enterprise sectors are as follows:

<u>SIC*</u>	<u>CATEGORY</u>	<u>TOTAL EMPLOYED</u>	<u>EMPLOYED IN ANCHORAGE</u>
15-17	Construction	15,000	9,000
40-45	Transportation	13,000	7,000
48	Communication	5,000	2,000
50-51	Wholesale	6,000	5,000
52-59	Retail	28,000	15,000
60-67	Fin./Ins./R. Est.	8,000	5,000
70-89	Services	33,000	17,000
	Total	<u>108,000</u>	<u>60,000</u>

*Standard Industrial Classification

INTERNATIONAL TRADE

This overview describes areas in which Alaska has the resources to develop for export and the markets for Alaska's production. The status of efforts to increase Alaska's share of international trade are also profiled. In the next two decades, it is expected that Alaska may be able to increase its share of exports to countries such as Japan, Korea, Taiwan, China, Australia, New Zealand, and Canada.

Past experience shows that Alaska is most competitive in exporting its natural resources; this emphasis on harvest and some processing of renewable resources is expected to continue through the next 20 years. There are also significant exports of liquified natural gas to Tokyo Electric and Cook Inlet natural gas is used as a feedstock for producing ammonia and urea for worldwide export. For a variety of reasons, including production costs and distance from domestic markets, Alaska must compete in world-wide markets to increase income from its natural resources.

Resources

Resources which can be exported at competitive costs include paper manufactures, lumber and wood, fish, liquefied natural gas, and possibly other energy resources, such as coal. Thus there is a heavy emphasis on export of raw materials: this is in sharp contrast with the limited success of efforts to expand manufacturing. Many efforts to increase value-added in Alaska by manufacturing final goods (such as furniture, magazines, and clothing) are constrained primarily by high labor costs. Notable exceptions are sawmills and seafood processing plants.

Extraction and transport of crude oil is an extremely important activity from the Alaskan point of view due to the generation of state revenues. The bulk of employment and revenue are associated with production from the Prudhoe Bay field. Alaskan oil is presently destined for domestic markets due to the ban on export of Alaskan crude. The principal market is the West Coast, which receives about 750,000 barrels of North Slope crude per day: the balance of 750,000 to 850,000 barrels of crude oil is transported to Gulf Coast, East Coast and the U.S. Virgin Islands for refining. Totally lifting the export ban might result in export to Japan of up to 800,000 barrels of oil per day. This would also increase the value of Alaska's royalty oil.

Alaskan firms must overcome the disadvantages imposed by its remote location. Whereas Anchorage is 7200 to 9000 air kilometers away from markets in Europe, Scandanavia, and the U.S.S.R., it is only 5800 kilometers by air to Japan and less than 7000 km to Korea. This compares to 3540 km between Anchorage and San Francisco. By contrast, it is about 4000 km between New York and Seattle.

Markets

Japan and Korea are major markets for Alaska's exports. Countries in the Pacific Rim provide an attractive market due to the size of their populations. Japan, Korea, and China have populations of 115 million, 38 million, and of over 1 billion people, respectively.

Status

Alaska may gain Congressional approval to export oil directly to Japan -- a measure that would enhance the value of its royalty oil and increase the wellhead value of the approximate total of 1.6 million barrels per day of Prudhoe Bay production. Assuming a value of \$29.80 for Saudi medium crude oil, transportation costs through the Trans Alaska Pipeline System (TAPS) and tankers to the West Coast reduce the wellhead value of Prudhoe Bay oil to about \$18.00. If the destination for the oil is the Gulf Coast, the wellhead value drops to about \$13.75 per barrel. An extremely rough estimate of the maximum increase in wellhead value is the difference between transportation costs to the Gulf and East Coast markets (\$4 to \$5 per barrel) and the \$.50 to \$.95 it is expected to cost to transport Alaskan oil to Japan.

Since 1969 the Phillips-Marathon plant at Nikiski, near Kenai, has been producing liquefied natural gas (LNG) for export to Japan. The volume of natural gas shipped to Japan in 1979 was 55.6 million cubic feet-- about the same as the 56.9 million cubic feet shipped in 1981. Respective values of this natural gas are \$122.5 million and \$328.5 million. Decontrol of natural gas prices and renegotiation of contract terms may explain the large increase in value on a per million Btu or per million cubic feet basis. Alaska North Slope natural gas reserves are not presently being developed for export or domestic consumption. There are two major proposals for development of this resource-- the Alaska Natural Gas Transportation System (ANGST) and Trans-Alaska Gas System (TAGS). Both have encountered financing problems related to uncertainty over future oil prices and the high opportunity cost of capital for multi-billion dollar ventures.

Pacific Rim nations, primarily Japan and Korea, provide the market for Alaska's timber. Of the total 1982 harvest of 622 million board feet, Japan took 90 percent of the production, despite relatively unfavorable factors such as a strong dollar relative to the yen (making U.S. products more expensive in other countries) and depressed housing starts in Japan. It is interesting to note that the Peoples Republic of China began buying Alaskan timber in 1981 but had gotten a better price from firms in the Pacific Northwest and therefore had dropped out of the Alaska market in 1982.

In assessing potential markets for Alaska's seafood, the currency exchange rate is an important factor.

AGRICULTURE: THE GAP BETWEEN PRESENT PRODUCTION AND POTENTIAL

This overview describes the arable land resource in Alaska, present and potential markets for Alaska's production, and briefly outlines the status of agricultural development in the 49th state. Constraints and opportunities for increasing red meat and barley production are briefly reviewed.

Although many Alaskans are interested in having a viable agricultural and food and kindred product industry, there are major differences of opinion on whether the industry should concentrate on meeting in-state demand or producing grain for export. Whether policies should address price stabilization to encourage investment and eligibility for the federal payments-in-kind (PIK) program is just one aspect of choosing an export orientation rather than import substitution.

Resources

Fifteen to twenty million acres have been identified as having agricultural potential in Alaska: of this total, five million acres have the soil and weather conditions to be arable and the rest is suitable for grazing. Given a priority in the capital budget for connection to existing roads and utility systems, about two million acres are developable. These acres appear to be feasible for development in the near future -- however, increasing producing acres to 500,000 would require \$42 million for clearing and about \$80 million in state spending for roads, bridges, and electrical transmission lines. Almost 150,000 acres have been transferred to farmers. Currently, less than 40,000 acres are capable of sustaining crops -- representing two percent of the two million acres and, for comparison, one-twelfth the cultivated acreage of Delaware.

Markets

There is a substantial in-state market for meats, dairy products and vegetables with potential for producing grain for in-state livestock production. The following figures illustrate the magnitude of in-state demand for three important commodities and associated barley demand to provide a market perspective for that commodity:

<u>COMMODITY</u>	<u>IN-STATE DEMAND</u> millions of <u>pounds</u>	<u>BARLEY DEMAND</u> in 000's <u>of tons</u>	<u>NUMBER OF LIVESTOCK</u> 000 head <u>POTENTIAL</u>
Beef	43	96	66
Pork	31	76	209
Milk	78	12	12
	Subtotal	184	

additional sales in the land disposal program the AAAC notes in its task force report that an effective price for land of no more than 25 dollars per acre is "required to enhance the farmer's chance of success." As previously noted, the Delta barley project has a capacity of 30,000 tons per year. Farmers may plant 23,000 acres this year, enough to produce about 23,000 tons of barley. Actual harvests have not exceeded 7,500 tons in any year. High yields per acre are required to allow Alaskan barley to compete in displacing imported barley and to be exported -- present yields are on the order of one ton per acre or much lower under poor growing conditions.

Figures that demonstrate the competitiveness of Alaska barley in world markets are unavailable; given the low levels of actual production, it is difficult to forecast market penetration in either in-state or export markets.

The viability of the grain terminals at Seward and Valdez depends on whether Alaska barley can compete in world markets, which has not been demonstrated to date. Whether to complete the Seward facility depends on the emphasis with regard to export markets and evaluation of the economics in world markets. U.S. grain exports depend on price supports (offered through the U.S. Dept. of Agriculture Commodity Credit Corporation), meeting stiff competition from other countries, and programs such as payments-in-kind (a program that pays farmers in cash and farm goods for idling up to half of their land). Nevertheless, U.S. dominance in world grain trade appears to be declining -- the U.S. share of world grain exports has fallen from a high of 60 percent in 1980 to about 53 percent in 1983. Alaska should consider evaluating production costs and yields before committing to a strategy to emphasize competing in world grain markets.