

# Port of Anchorage Consolidation and Distribution Concept Feasibility Study

**Final**

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## Abbreviations

ADCCED	Alaska Department of Commerce, Community, and Economic Development
ADOL&WD	Alaska Department of Labor and Workforce Development
ADOT&PF	Alaska Department of Transportation and Public Facilities
AEDC	Anchorage Economic Development Corporation
AHFC	Alaska Housing Finance Corporation
AMHS	Alaska Marine Highway System
ARRC	Alaska Railroad Corporation
BLS	Bureau of Labor Statistics
LTL	Less than truck load
POA	Port of Anchorage
PPI	Producer Price Index
TEU	Twenty-foot container equivalent unit
TOTE	Totem Ocean Trailer Express
USPS	United States Postal Service



## Executive Summary

This report presents the findings of a study to evaluate the feasibility of establishing a consolidation and distribution center at the Port of Anchorage with the intent to serve coastal and riverside communities in rural Alaska. It contains an analysis of the feasibility of the concept, as well as marketing arguments that can be used to present the concept to transportation companies.

The findings of this study include:

**The concept could result in cost savings.** While the cost of transportation may be slightly higher with this concept, the inventory holding cost savings may offset the increased cost of transportation.

**Freight rate savings on cargo shipments could require a mileage-based carrier.** At present, the price for sending cargo to western Alaska is the same or very similar whether it originates in Anchorage or Seattle. To generate savings for residents of western Alaska would require a carrier who would charge for cargo shipments based on the distance traveled, rather than the market rate.

**Incentives could be required to encourage a mileage-based carrier.** In order to attract a mileage-based carrier, incentives could be required to make up for the lost revenues that would result from charging lower prices than the industry norm.

**Anchorage has an opportunity to increase its fuel barge business.** The Port of Anchorage is the preferred location for fuel sales in Cook Inlet. Estimates vary about the percent of fuel that is sold in Anchorage versus Nikiski, but capturing additional sales from Nikiski could substantially increase the Port's market share.

**Need to work on the key issues: Attracting a mileage-based carrier.** One of the key issues that must be addressed is the identification and recruitment of a carrier that is willing to charge mileage-based rates. This would represent a break from the industry norm for the concept to work and it is vital that a carrier be identified who is willing to do this.

**Need to work on the key issues: Union vs. non-union.** Another key issue is unions. Carriers have expressed a high level of concern about union work rules and have said that they would only use a new facility if it were non-union. While the Port of Anchorage is an open port, this is nonetheless a significant issue that needs to be addressed in order to attract customers for a new facility.



# 1 Introduction

Anchorage is a major consolidation and distribution hub for goods that are shipped by air and truck to rural Alaska. However, many communities in rural Alaska depend on tug and barge sets or coastal freighters for receiving much of the goods and materials that are needed during the year. Most of these are shipped directly from ports in Puget Sound.

This report presents the findings of a study to evaluate the feasibility of establishing a consolidation and distribution center at the Port of Anchorage with the intent to serve coastal and riverside communities in rural Alaska. It contains an analysis of the feasibility of the concept, as well as marketing information that can be used to present the concept to transportation companies.

The proposed concept could reduce the cost of marine freight transport to rural communities and increase the frequency of service to many communities. For example, the distance between Anchorage and False Pass, the first entrance into the Bering Sea for tug and barges, is 688 nautical miles, while the distance between Seattle and False Pass across the Gulf of Alaska is 1,643 nautical miles. The longer voyage from Seattle to False Pass can translate into higher transportation costs. The longer distance also means less frequent service. A round-trip by tug and barge between Seattle and False Pass using an eight-knot average speed requires about 10 days more travel time than between Anchorage and False Pass. The limited shipping season in much of western Alaska north of the Aleutian Chain means that few communities can receive more than a few barge deliveries during the shipping season, resulting in higher costs for residents in those communities. The longer travel time also results in long delays between placing an order for goods and materials and receiving them, even for those communities that can receive barge deliveries on a year-round basis. Coastal freighters operated by Coastal Transportation also provide break-bulk cargo movement to selected communities on the Aleutian Peninsula and the Aleutian Chain. These vessels take seven days to travel from Seattle to False Pass with stops in Sand Point, King Cove, and Cold Bay before arriving in False Pass.

The POA has fast, frequent container ship service provided by Totem Ocean Trailer Express and Horizon Lines. Under the proposed concept, these companies would continue to transport goods and materials that are suitable for container shipment between Puget Sound and Anchorage. Other U.S. flagged ships could transport bulk freight to the POA. The bulk and container freight would be consolidated in Anchorage and reshipped to rural Alaska by short-haul barge, improving the frequency and reliability of service.

Communities in rural Alaska could benefit from:

- Lower transportation costs
- More frequent service
- Improved local economic conditions
- Additional business opportunities

Anchorage could benefit from:

- Further integrating these communities into its economic and business network
- Potential for an additional carrier serving the POA from the Lower 48 states
- Expanded tug and barge service at the POA
- Additional revenues to the POA to meet debt service of its planned expansion
- Additional jobs and economic activity in Anchorage



## **2 Current Marine Transportation System**

This section of the report describes the marine transportation system that presently exists in Western Alaska, from Kodiak to the Northwest Arctic Borough. Our initial scope of work was to examine the market in western Alaska, west of Kodiak, but in interviews with several tug and barge companies, it was suggested that service to Kodiak should be considered since oversize cargo to Kodiak has to move by barge at this time.

The current marine transportation system includes scheduled service by Horizon Lines to Kodiak and Dutch Harbor, and seasonal (May through September) scheduled service by the Alaska Marine Highway System (AMHS) to Kodiak, Chignik, Sand Point, King Cove, Cold Bay, False Pass, Akutan, and Dutch Harbor. The container service offered by Horizon Lines is faster and more expensive than barge service, so barge service is used for those goods that are lower value, oversize, or for which time en route is not an issue. AMHS does not carry freight, but it is used by many contractors to move mobile equipment to and from job sites. With no scheduled barge service from western Alaska to Southcentral Alaska, without going to Seattle and back to Anchorage or Seward, the AMHS is one of the few options available to Alaska contractors to move their equipment back and forth in a timely manner. The focus of this feasibility study is on barge service from Anchorage to western Alaska so there is only limited discussion of these other modes in the report, although they are an integral part of the overall marine transportation system.

The current system has scheduled mainline barge service to the major regional hubs with feeder service to the smaller communities in each region. These two types of service are discussed separately in subsections that follow. This section also provides information on shipping rates and costs, and freight volumes to western Alaska.

### **2.1 Mainline Barge Service**

Presently, shipments to western Alaska originate in the Puget Sound area. Some shipments are offloaded in Anchorage or Seward before carriers continue west. Offloaded cargo is typically replaced locally, with an estimated 10 percent of the cargo headed west originating in Southcentral Alaska ports.

Scheduled mainline freight service is provided to Kodiak, Dutch Harbor, Naknek, Dillingham, Bethel, Nome, and Kotzebue. These sailings and most of their cargo originate in the Puget Sound area. Some shipments originate in Southcentral Alaska, but they represent a minority of the cargo volumes. One company interviewed for this study, Alaska Logistics LLC, sends shipments to western Alaska out of Seward.

The shipping season to western Alaska is shorter at more northerly latitudes. Ports in the Aleutians are accessible year-round, but northern ports like Kotzebue are ice free for only 110 days. Service to western Alaska occurs on a regular basis, within seasonal limitations.

Northland has nine scheduled voyages in 2006, all of which originate in Seattle and travel to Dillingham, Dutch Harbor, and Naknek. Other ports served depend on the particular voyage, with service extending as far north as Nome. The voyages are irregularly spaced through the summer, with the first departing Seattle on March 28 and the last departing on September 8.

Samson Tug and Barge has voyages every two weeks on Thursday during the summer of 2006, except for in March, when it has three due to a schedule shift. Samson makes calls at the ports of Sitka,

Valdez, Cordova, Seward, Kodiak, King Cove, Dutch Harbor, and Adak. It serves Fairbanks and the Interior via Valdez and Seward. Its service does not extend north of the Aleutian Islands.

Crowley (Yukon Fuels) provides fuel and some cargo service on the Yukon and Kuskokwim Rivers.

Shipments to western Alaska utilize regional hubs as an integral part of the transportation system. These hubs accept larger shipments and then function as distribution centers for cargo to reach smaller outlying communities. For example, Northland sends cargo to Dutch Harbor and then sends two barges north. One goes to Bethel and Nome, while the other goes to Naknek and Dillingham. A variety of smaller companies also provide this northern link and lighterage services.

## 2.2 Feeder Service

The two major drivers of barge cargo shipments are construction projects and the fisheries. Projects with Southcentral Alaska contractors or subcontractors rely on barges for equipment mobilization and transport of locally fabricated materials. The cargo is sent to the project community for the duration of the project and is then returned, often via Seattle or another port in Puget Sound. Barge traffic for fisheries support is primarily for the transport of cans, salt, and cardboard to the fish processors, and transport of canned and other finished seafood products from the processors. Barge traffic related to the fisheries is typically the factor that allows the barge companies to serve western Alaska. Without the fisheries, the area's population is insufficient to justify or support regular service.

## 2.3 Rates and Costs

The rates charged by the major shipping companies tend to be about the same for western Alaska regardless of whether the shipment originates in Puget Sound or Anchorage. Samson Tug and Barge is the one company identified that has slightly lower rates. While the costs involved with the longer voyage from Puget Sound to western Alaska are higher than those for voyages originating in Anchorage, the industry has maintained an equivalent pricing structure.

The Alaska Housing Finance Corporation publishes an annual construction cost survey that develops an index of the cost of building a house in various communities in the state. The survey considers a market basket of items that reflect approximately one-third of the cost of a house. In addition to looking at construction costs, the survey also provides transportation cost estimates for the market basket. Transportation costs from the most recent publication are shown in Table 1. The cost estimates assume that the shipments originate in Seattle.

**Table 1. Shipping Costs, AHFC Construction Market Basket, 2005**

<b>Destination</b>	<b>Cost to Ship the Market Basket (\$)</b>
Ketchikan	1,792
Anchorage	5,411
Kodiak	6,650
Bethel	11,617
Nome	12,402

Source: Alaska Housing Finance Corporation, 2005

The primary competitor to barge shipments to western Alaska is the United States Postal Service's (USPS) bypass mail program. Bypass mail is mail that is shipped on private carriers with minimal USPS

supervision. Therefore, the system creates cost savings by bypassing many of the USPS's handling and administrative activities. The rates for bypass mail are the same as the fourth-class intra-Alaska rate and are based on two zones in the state. At present, a 70-pound item costs \$12.15 to ship in zones 1 and 2 (zip codes 995 and 996) and \$13.87 in zone 3 (zip code 997). Rate information is available in the USPS's Notice 123, *Ratefold*.

Despite the bypass mail system's dominance of cargo shipments to western Alaska, barges are often preferred or required for certain types of shipments. Low value-to-weight, non-perishable items are suitable for barge traffic, including soft drinks, beer, and paint. Hazardous materials and anything that exceeds the allowable dimensions for air transport must go by barge.

## 2.4 Freight Volumes

Northern Economics evaluated three sources of information about freight volumes being shipped to Western Alaska: the Southwest Alaska Transportation Plan's Freight Impact Analysis, the United States Army Corps of Engineers Waterborne Commerce report, and inbound freight to Kodiak Island. The per capita freight volumes from each of these are shown in the table below.

**Table 2. Per Capita Freight Estimates**

Source of Information	Tons of Cargo and Fuel Per Capita		
	Petroleum	Food	Other
Southwest Alaska Transportation Plan	2.7		4.05
Waterborne Commerce, Sitka and Juneau	1.8-2.1	0.72	2.3-2.6
Port of Kodiak		From 2002 to 2005: 3.0, 3.2, 3.4, 4.5	

Source: ADOT&PF, 2000; U.S. Army Corps of Engineers, 1999–2000; Port of Kodiak, 2006

The populations of various portions of Western Alaska are shown in Table 3, along with an estimate of the total cargo. Kodiak was added to the study area because barges traveling from Anchorage to western Alaska would pass by Kodiak Island and barge service is provided by Samson.

**Table 3. Population, Annual Cargo Shipments, and Barge Loads of Western Alaska and Subregions, 2005**

Region	Population, 2005	Estimated Annual Cargo Shipments (tons)	Estimated Annual Number of 100×400 Barge Loads
Western Alaska	70,392	212,584 – 285,088	24 – 33
Western Alaska, excluding Kodiak	56,754	171,397 – 229,854	20 – 26
Western Alaska, accessible year-round	21,546	65,069 – 87,261	7 – 10
Western Alaska, accessible year-round, excluding Kodiak	7,908	23,882 – 32,027	3 – 4

Source: ADOT&PF, 2000; U.S. Army Corps of Engineers, 1999–2000; Port of Kodiak, 2006; Alaska Department of Labor and Workforce Development, 2006

While the region has a population of more than 70,400, only 8,000 to 21,500 people are accessible year-round. Excluding Kodiak, only 24,000 to 32,000 tons of cargo are required to support the communities that are accessible by barge year-round. Assuming that a 100×400-foot barge carried 17.5 million pounds of cargo, only 3 or 4 barge loads would be required annually to serve the region.

Barge traffic handles approximately 25 percent of the volumes shown in the table above. Bypass mail handles the remaining amount. Of the volume sent by barge, only about 10 percent originates in Southcentral Alaska. The remaining 90 percent of the barge volume comes from Puget Sound.

The small population base in western Alaska and the seasonal nature of the ports makes it challenging to sustain a barge operation. A small population means that a small volume of cargo is needed annually. In order to support monthly barge service, the Port of Anchorage’s proposed facility would need to capture 50 percent of the total barge traffic to the western ports. It is unlikely that the facility could achieve a 50 percent market share, given that much of the freight destined to these ports is related to fisheries and processing plant requirements and is not produced or manufactured in Alaska.

The Port of Anchorage may be successful with a dedicated fuel facility that competes with other sources of fuel. Since approximately 1.8 to 2.7 tons of petroleum is needed per person in western Alaska, the region requires 127,000 to 190,000 tons annually, as shown in Table 4. Based on an estimate that, at present, 50 percent of fuel comes from Anchorage and 40 percent of fuel comes from Nikiski, taking the fuel business from Nikiski could potentially grow the Port of Anchorage’s fuel market share to upwards of 90 percent. The Port of Anchorage is the preferred location for fuel, making this market share target within reach.

**Table 4. Population and Estimated Annual Petroleum Requirements of Western Alaska and Subregions, 2005**

<b>Region</b>	<b>Population, 2005</b>	<b>Estimated Annual Petroleum Requirement (tons)</b>
Western Alaska	70,392	126,706 – 190,058
Western Alaska, excluding Kodiak	56,754	102,157 – 153,236
Western Alaska, accessible year-round	21,546	38,783 – 58,174
Western Alaska, accessible year-round, excluding Kodiak	7,908	14,234 – 21,352

Source: ADOT&PF, 2000; U.S. Army Corps of Engineers, 1999–2000; Port of Kodiak, 2006; Alaska Department of Labor and Workforce Development, 2006

### 3 Freight Sourcing

The discussion in this section is on the factors that influence the buying decision, and subsequently the purchase location. As mentioned in Section 2, factors such as the frequency of service, the timing of freight arrivals (early and late in the season), and price are factors for contractors, businesses, and residents of western Alaska.

Western Alaska has been served by Puget Sound businesses for over 100 years and the direct barge service from Puget Sound has maintained these business relationships, even after goods and services were available elsewhere in the State of Alaska.

At the outset of this study, it was anticipated that the shorter distance between Anchorage and western Alaska might enable more frequent service to the region. However, our research indicates that the volume of freight that could move from Anchorage to western Alaska in the foreseeable future will not be sufficient to offer more frequent service than the every other week service now offered to major regional hubs in western Alaska by barge carriers from Puget Sound.

It was also believed that being closer to western Alaska would enable Anchorage suppliers to provide better service in the shoulder months at the beginning and end of the seasons. What we found is that Puget Sound barge services are leaving Puget Sound before the ice is out of the Bristol Bay rivers and arriving at those ports just after the ice moves out. Then, as the ice recedes from more northerly ports, subsequent voyages begin to call at those ports. Most of the early voyages call at Anchorage or Seward on their way to western Alaska. In a similar manner, current barge service ceases at more northerly ports in September and, the last calls in the Bristol Bay ports occur in early October. Barges traveling to western Alaska would face these same ice conditions and would not have any advantages over Puget Sound carriers.

The present barge carriers charge the same freight rate from Anchorage to western Alaska ports as they do from Puget Sound to western Alaska, even though Anchorage is 956 miles closer to Unimak Pass than Seattle. It is difficult for Anchorage businesses to compete with Puget Sound suppliers since most goods and supplies that are available in Anchorage have already incurred the transportation cost to get them to Southcentral Alaska.

However, different product pricing strategies on the part of some businesses in Anchorage can offset this transportation cost situation. For example, Costco offers the same prices in Anchorage as it does in Seattle. Costco and other retailers often use drop shipments from suppliers for many of their products and the transportation cost is then aggregated across the entire company. Other stores such as Lowes and Fred Meyer have their own warehouses and transportation costs from those warehouses to Alaska are included in the cost of the goods transported here.

Alaska Commercial Company, the largest retailer in rural Alaska, buys some goods direct from Costco in Anchorage because the price is the same as in Seattle, and they don't have to incur the transportation costs. However, those goods move from Anchorage to western Alaska via bypass mail or air freight. The products they move by barge are building materials, oversize items, hazardous materials, and other items that can't move by air.

At the beginning of the study process, it was thought that more frequent barge service from Anchorage would be able to capture some of the bypass mail and air freight movements to western Alaska. However, shippers indicated that this change would not likely happen because they need the air carriers to serve their stores and customers year-round. If the shippers took freight and bypass mail away from the air carriers in the marine shipping season, then the air carriers may not have enough business to continue serving the communities, which would be detrimental to the shippers and the

communities. In addition, the stores don't have enough space to warehouse large amounts of groceries and other goods. The larger stores are served daily by air freight or bypass mail, and the smaller stores are served two to three times a week. In addition, there is the inventory holding cost that must be considered if a store has eight to nine months between the last delivery in a year and the first delivery the following year.

The majority of goods bound to western Alaska are either building materials for state or federal government-sponsored construction projects, or supplies for the seafood industry, such as cans, cardboard, salt, food, and other items. Few, if any, of the seafood industry supplies are made in Anchorage or Southcentral Alaska, so they come from Puget Sound, and most building materials come from Puget Sound because of the barge freight rate situation described above.

However, there are some goods and equipment that are shipped from Southcentral Alaska for construction projects. Vinyl windows are manufactured by several firms in the state and are supplied for all construction projects in western Alaska because none of the manufacturers in the Puget Sound region build windows for the climatic conditions in western Alaska. Cabinets and custom millwork are also manufactured and shipped from Southcentral ports, although these suppliers do have to compete with Puget Sound suppliers. High value-added construction materials can be sourced from Anchorage because the transportation cost becomes a small part of the total cost of the item.

The State's Alaska bidder preference is one of the major reasons why Anchorage manufacturers and suppliers are competitive with Puget Sound in selling to western Alaska. Achieving Alaska-hire goals on construction projects in western Alaska requires use of Alaska subcontractors, most of which are located in Southcentral Alaska. These Anchorage subcontractors also purchase much of their material locally and fabrication of equipment is often done by the subcontractor or another local firm and then shipped out to western Alaska.

If a Southcentral Alaska contractor is the winning bidder on a construction project, trucks and construction equipment for these projects are also shipped by barge, with the Alaska Marine Highway System shipping trucks and equipment to Kodiak, and during the summer, to communities along the Alaska Peninsula and out to Dutch Harbor. However, since there is no scheduled barge service from western Alaska back to Anchorage, contractors either have to charter a barge to bring their equipment back at the end of the project, or move it south to Puget Sound and then north to a Southcentral port.

## **4 Anchorage as a Barge Service Port**

This section summarizes the comments obtained during our interviews on the Port of Anchorage and its function as a barge service port, and also provides a cost comparison between Puget Sound (Seattle) and Anchorage in serving western Alaska with barge service.

### **4.1 Facilities**

Barges presently call at the Port of Anchorage to load and offload freight and fuel, but the North Star/Northland facility near Ship Creek is the primary barge freight facility in upper Cook Inlet. The POL (petroleum and other lubricants) dock at the POA is the primary fuel barge facility in the area. The Alaska Railroad dock in Seward is the primary competitor to Anchorage in providing barge service to western Alaska. Samson currently provides year-round service to Seward from Puget Sound, and continuing out west to Dutch Harbor, and Alaska Logistics calls at Seward on its scheduled service during the summer.

### **4.2 Labor Force**

The Port of Anchorage is an open port, meaning that anyone (union or non-union) can use the facilities. The overwhelming consensus expressed by the barge companies and several shippers was that the barge service would have to be non-union to be competitive. If the unions attempted to control the barge dock, the companies indicated they would use Seward or the Anderson terminal instead of the Port of Anchorage. The primary reason stated was that the union work rules would require substantially more people than is necessary for their operations, and increase the cost.

### **4.3 Tides and Ice**

The enormous tides in upper Cook Inlet make it difficult to load and offload a floating freight barge so the freight operators at North Star and Northland prefer to come into the dock at about plus 8-feet during the ebb tide and then allow the barge to rest on the soft silts of Cook Inlet during the loading and offloading operations. However, this can only be accomplished during the ice-free season since the ice floes that are present during the winter months could severely damage a barge if it were to come to rest on a large ice floe. As a result of this winter constraint, Northland Services brings its cargo into Whittier during the winter and then moves the containers and freight by rail to their yard in Anchorage.

The POA does not currently have a facility that is comparable to the North Star/Northland facility so barges using the POA are afloat at all times. This is not an issue for the fuel barges since, by federal regulations, they cannot touch bottom without undergoing inspections for leaks.

### **4.4 Fuel**

As stated earlier in this report, Anchorage and Nikiski supply almost all fuel moving to western Alaska. The POA is preferred over Nikiski because the tow boats and barges are in a more exposed location at the Nikiski dock and inclement weather can require them to move from the dock. Some fuel carriers stated that they sometimes have to use the Nikiski dock because they can't get a berth at the Anchorage POL dock.

One estimate of the amount of fuel sold is that 50 percent of fuel is sold from Anchorage and 40 percent is sold from Nikiski. Another estimate suggests that the fuel sales vary depending on pricing, with either location selling between 20 and 80 percent of fuel, while the other location sells the remainder.

## **4.5 Cost of Service Comparison**

As stated earlier, the barge freight rates to western Alaska from Anchorage are the same as from Seattle. This subsection provides a comparison of the estimated costs of barge service to western Alaska from Anchorage and from Seattle. It also evaluates the value of time savings for freight arriving in western Alaska from Anchorage as compared to Seattle.

Table 5 shows the distances between Seattle, Anchorage, Seward, and Unimak Pass. Unimak Pass is the first deep channel that can be navigated by large tow boats and barges. Smaller tow boats and barges can use False Pass, but for this evaluation we have elected to use Unimak Pass as the point of reference for western Alaska. There would be no differences in mileage for destination ports north or west of Unimak Pass from the origin ports shown in Table 5. Seattle is 956 miles more distant from Unimak Pass than the Port of Anchorage. The distance to Anchorage from Seattle is about 86 percent of the distance to Unimak Pass, and if a barge travels from Seattle to Anchorage and then to Unimak Pass, the total distance is about 29 percent greater than a direct Seattle to Unimak Pass voyage.

**Table 5. Distances between Ports and Unimak Pass**

<b>Distance between Ports</b>	<b>One-way distance (Nautical miles)</b>
Seattle to Unimak Pass	1,644
Anchorage to Unimak Pass	688
Seward to Unimak Pass	652
Seattle to Anchorage	1,428
Seattle to Seward	1,234
Seattle to Anchorage to Unimak Pass	2,116

Source: Distances Between United States Ports, 2002

The distance from Seattle to Unimak Pass requires more travel time than from Anchorage. This additional operating time results in greater costs for tow boats operating from Seattle, compared to Anchorage. Table 6 shows the estimated hourly cost for a 7,200 horsepower tow boat operating in Alaska. This estimate was derived from a tow boat model that Northern Economics developed for a study of supplying the Donlin Creek Mine for the Alaska Department of Transportation and Public Facilities. The tow boat and barge average 8 nautical miles per hour (knots). The numbers presented here were corroborated in our interviews with tow boat operators. The results are presented for three different diesel fuel prices, \$1.50, \$1.75, and \$2.00 per gallon. As the price of fuel increases, the advantage of a barge voyage beginning in Anchorage instead of Seattle also increases.

**Table 6. Tow Boat and Fuel Costs to Unimak Pass from Seattle and Anchorage**

Costs and Savings	Fuel Costs (\$/Gal.)		
	\$1.50	\$1.75	\$2.00
Hourly cost for Tow Boat (\$)	865	915	965
Seattle to Unimak Pass Roundtrip (\$)	355,515	376,065	396,615
Anchorage to Unimak Pass Roundtrip (\$)	148,780	157,380	165,980
Fuel Savings for Voyage (\$)	206,735	218,685	230,635

Fuel costs are becoming a larger part of tow boat operating costs compared to previous years. One operator mentioned that 2005 was the first year that fuel costs had exceeded all of the other operating costs (including capital costs) of a tow boat.

Table 7 shows the cost per pound using the hourly operating costs shown above, and using the capacity of different barge sizes. Based on information obtained in our interviews and in previous studies, a 100' by 400' barge has a typical load of 15 million pounds to 20 million pounds, depending on the specific characteristics of the load, and a 65' by 250' barge has a typical load of about five million pounds. We do not anticipate that there would be sufficient volume moving from Anchorage to western Alaska in the foreseeable future to require the larger barge assuming bi-weekly service. An ocean-going tow boat for either barge will be about the same size, so the operating costs for a 7,200 horsepower tug are used here. A smaller tow boat for the 65' by 250' barge could be slower, which would offset any potential fuel savings. The cost per pound of freight transported from Seattle on a 100' by 400' barge is about half the cost of a 65' by 250' barge moving from Anchorage. Smaller 250' and 260' barges are sometimes used from Puget Sound for charters and dedicated shipments (e.g., construction of a high school may use one smaller barge stacked with material and equipment), and it is only with that size of a barge that the cost per pound is in favor of Anchorage.

**Table 7. Cost per pound from Seattle and Anchorage to Unimak Pass**

Tow Boat and Barge	Fuel Costs (\$/Gal.)		
	\$1.50	\$1.75	\$2.00
400' Barge from Seattle (\$/pound)	0.020	0.021	0.023
250' Barge from Seattle (\$/pound)	0.071	0.075	0.079
250' Barge from Anchorage (\$/pound)	0.030	0.031	0.033

Typically, Anchorage businesses attempting to sell goods and supplies into western Alaska will have incurred the cost of transportation from Seattle to Anchorage and then need to transport the freight to western Alaska. Table 8 presents the shipping cost for each leg of the voyage and the total shipping cost to Unimak Pass. The shipping cost to Anchorage assumes the freight moves to Anchorage via Totem Ocean Trailer Express or Horizon Lines. Representatives of one of those companies indicated that container shipping cost was about twice the cost of barge service. The information presented in the table suggests that the total transportation cost to western Alaska through Anchorage could be more than three times the cost of barge service direct to western Alaska, and only slightly less than service with a 250' barge from Seattle.

**Table 8. Shipping Costs from Seattle to Anchorage to Unimak Pass**

Ship, Tow Boat and Barge	Fuel Costs (\$/Gal.)		
	\$1.50	\$1.75	\$2.00
Ship Cost to Anchorage (\$/pound)	0.035	0.037	0.039
250' Barge from Anchorage (\$/pound)	0.030	0.031	0.033
Total Shipping Cost (\$/pound)	0.065	0.069	0.073

A new barge facility at the POA will be competing with the ARRC dock at Seward where several barge carriers currently call to unload and load containers in Southcentral Alaska. Anchorage is about 194 miles further from Seattle than Seward and, in addition, tow boats and barges traveling from Anchorage to western Alaska must travel about 67 more miles than Seward.

Northland is the primary provider of barge freight service through and from Anchorage. Samson and Alaska Logistics use the Alaska Railroad dock at Seward. Anchorage is the primary market for freight offloaded at Seward and the primary source for freight moving from Southcentral to western Alaska. Freight moving between Anchorage and Seward is moved by truck. Interviews and previous research conducted by Northern Economics indicate that trucking costs are about \$1.72 per mile<sup>1</sup> and for a 250-mile round trip between Anchorage and Seward, the total cost is about \$430 per container or other freight. If a load is available in both directions, the cost would be about \$215 per trip in each direction.

Table 9 compares the voyage costs from Seattle to Anchorage and Seward, and the additional voyage cost to reach Anchorage due to the greater distance involved. It also shows the number of truck loads that need to move between Anchorage and Seward for the trucking costs to equal the additional voyage costs to Anchorage. If a carrier has fewer truck load movements than shown in Table 9, then it is more cost-effective for them to call at Seward than Anchorage. One carrier that provides service to Seward indicated that they offload 30 to 60 containers in Seward and then try to replace them with cargo from Anchorage moving to western Alaska. This suggests that if they can arrange their trucking schedule to have loads in both directions for most of the trucks, it is more cost-effective for them to continue to use Seward.

**Table 9. Trucking Cost to Seward versus Towing Cost to Anchorage**

Voyage Cost from Seattle to Anchorage and Seward	Fuel Costs (\$/Gal.)		
	\$1.50	\$1.75	\$2.00
400' Barge from Seattle to Anchorage (\$)	161,647	170,991	180,334
400' Barge from Seattle to Seward (\$)	133,426	141,139	148,851
Additional Cost to Anchorage (\$)	28,221	29,852	31,483
Number of truck loads to break even with Anchorage cost (\$)			
Truck loads in one direction only	66	69	73
Truck loads in both directions	33	35	37

<sup>1</sup> Highway trucking costs in Alaska were estimated at \$1.45 per mile in a 1999 study entitled *Al-Can Transportation Analysis* conducted by Northern Economics for Totem Ocean Trailer Express. The Producer Price Index (PPI) for trucking transportation (trailer loads) has increased from 105.4 to 123.8 during that period. (BLS, 2006) Applying the PPI gives a 2005 trucking cost estimate of \$1.72 per mile.

A perceived benefit of shipping goods and materials from Anchorage rather than from Seattle is the potential savings in inventory cost due to the transit time saved between the date the goods and supplies leave Anchorage and arrive at the consignee in western Alaska compared to a similar shipment from Seattle. Table 10 shows the product value, per pound, that it would take for the inventory cost savings of a shipment from Anchorage, or from Seattle via ship to Anchorage, and then barge to western Alaska, to offset the lower transportation cost with a 400' barge from Seattle. This table assumes that the opportunity cost of funds for a company is 10 percent per year, and that a shipment from Anchorage will save five days travel time over a shipment from Seattle. As shown in the table, at \$1.50 per gallon fuel cost and with five days saved in transit time, a product would need a value of more than \$6.30 per pound to achieve inventory cost savings that overcome the lower transportation cost for direct service from Seattle. If the comparison is a container ship to Anchorage and then barge to western Alaska, compared to a barge shipment from Seattle, where only two days are saved in transit, the value of the product must exceed \$82.00 per pound, assuming \$1.50 per gallon fuel cost.

**Table 10. Product Value per Pound to Achieve Inventory Cost Savings**

Voyage Cost from Seattle to Anchorage and Seward	Fuel Costs (\$/Gal.)		
	\$1.50	\$1.75	\$2.00
Shipping from Anchorage only (5 days)	\$6.31	\$7.30	\$8.03
Shipping from Seattle via ship and barge from Anchorage (2 days)	\$82.13	\$85.78	\$91.25

Note: Inventory cost assumed to be 10 percent per annum or 0.027 percent per day.

This table supports the discussion presented earlier that high value-added products are the primary goods moving from Anchorage to western Alaska. A number of people interviewed for this report stated that the key to developing increased freight volumes to western Alaska from Anchorage was manufacturing more products in Anchorage. Manufactured products would have the high value added required to compete with Seattle suppliers.



## 5 Developing Additional Barge Service from Anchorage

The interviews and analysis conducted for this report have resulted in a number of recommendations and concepts that would enhance the ability of the Port of Anchorage to attract additional barge traffic to its facilities. The following subsections describe some of these ideas and concepts.

### 5.1 Facilities and Equipment

Interviews revealed that popular features of a new barge facility would include:

- Dedicated berth availability for cargo and fuel barges, with barges able to schedule berth calls;
- A large crane that would be able to pick a container from the outside row of containers on a full-width 105-foot barge. This would preclude the need for a barge to wait for a slack tide, move away from the dock face, turn 180 degrees, and move back to the dock face to finish loading/offloading from the outside row. This crane would be expensive, but would be a strong selling point for the Port of Anchorage as a quick-turnaround facility;
- Inset ladders along the dock face that would enable easy on/off access for tow boat crews;
- The fuel barges will require an all-tide dock but the freight barge carriers typically prefer a flat area at the dock face for their barges to ground which provides easier access to load and unload the barge;
- Adequate uplands near the barge facilities to accommodate container storage and movements; and
- Fuel headers at the all-tide berths could result in Anchorage becoming the preferred fuel barge facility in upper Cook Inlet and enable the Port to capture a larger market share of fuel sourced from Cook Inlet.

Several people stated that bypass mail is the primary competitor for barge service in western Alaska. While reduction or removal of the bypass mail system could increase revenues and possibly improve the profitability of western Alaska barge carriers, this potential change would have very serious economic and social impacts on rural Alaska and is not recommended as an action for the Port of Anchorage to pursue. Authors also acknowledge that the Port of Anchorage has stated that the Port does not support such changes to the bypass mail systems for the previously stated reasons.

The Port should support efforts by the Denali Commission and others to improve marine infrastructure in the regional hubs and the villages. Such improvements could include enhanced docking facilities and equipment capable of offloading heavier containers and larger freight. Such infrastructure would reduce costs in the communities, enhance the competitiveness of seafood and other products exported from the region, and improve the local economy and quality of life in the region. Such actions could help alleviate the population out-migration that occurs in western Alaska and increase the volume of freight moving to the region.

### 5.2 Open Port

As noted earlier, the Port of Anchorage is an open port where any company can use the facility. It will be important that this concept be ensured because capturing a larger share of the Southcentral Alaska

barge traffic, or increasing traffic from the Port of Anchorage, will require a non-union facility according to almost everyone interviewed for this report. Most freight barge carriers will continue to use Seward or the Anderson Terminal if union operations are required at the POA's barge facility.

The barge facility will be immediately next to union operations, and the POA should consider design features that would separate the two different elements. The proposed road access at the back of the Port will enable non-union activities to reach the barge facility without transiting through the union elements, and fencing and gate access will also be important in separating the activities.

### **5.3 Shippers and Market Power**

The freight rates from Anchorage to western Alaska are generally the same as freight rates from Seattle, although one carrier using Seward does charge slightly less (about 6 percent) for cargo moving from Seward to western Alaska, as compared to Seattle. Several reasons were identified as to why rates from Anchorage are not significantly lower than rate from Seattle, given the much shorter distances from Anchorage to western Alaska. The reasons cited were:

- Low volumes of freight moving from Southcentral ports to western Alaska
- Coming to Southcentral ports increases the cost of the voyage because it adds 472 miles
- Carriers are protecting their rates from Seattle because the majority of their business is sourced from there and generates most of their revenues

At this time, barge transportation companies have the advantage in market power over Anchorage shippers and can dictate terms for freight that must move by barge; any freight that can move via bypass mail or air freight has already gone to that mode. So how can the Port of Anchorage, the Anchorage Economic Development Corporation, and Anchorage businesses change the situation and gain the advantage in market power? The key will be to attract a barge transportation company that will offer rates from Anchorage that reflect the distance advantage that Anchorage has over Seattle. This rate will not be based solely on distance because, as noted above, the volume of freight moving from Anchorage is low, and the costs of providing the service will be spread over a smaller volume of freight.

The Port and others will need to identify companies that ship goods and materials to western Alaska and work with them to expand the volume of freight. It may be necessary for the Port or others to provide some incentives to attract this barge service. The Port could provide a preferential tariff if the carrier provided a certain number of sailings from Anchorage. Before doing so, the Port should establish the economic development basis for this tariff to be able to explain the rationale for the tariff concept to the public and other decision makers. The Port and others might combine to guarantee a certain volume of freight for the voyages from Anchorage, and then work with Anchorage businesses to meet that volume. Anchorage shippers might also begin to discuss with existing barge companies their desire for freight rates that more closely reflect the shorter distance. AEDC's internet shipping campaign might be a model to inform barge companies of the interest by Anchorage companies in lower freight rates. If barge transportation companies became aware of an alliance of Anchorage firms that would shift their business to a firm that offered mileage-based rates, they might be more willing to discuss the concept.

It is likely that a combination of incentives and programs will be necessary to develop this freight barge business from Anchorage in the first few years, but we anticipate that Anchorage businesses will respond to the opportunity afforded them with less costly service to western Alaska and expand the volume of freight shipped to the region.

## 5.4 Marketing the Port of Anchorage

The Port of Anchorage should begin to begin to engage the towboat and barge industry and major shippers in a dialogue to attract more freight barges to the Port and provide less expensive freight rates from the POA. Now is the time to begin that dialogue so that the Port can determine the needs of their future customers and the designs that would best fit their needs. Some of those needs have been identified in this report but greater specificity is needed for the facility.



## 6 References

- Adams, Michelle. Alaska Commercial Company. Personal communication with Northern Economics, Inc. February 21, 2006.
- Alaska Department of Labor and Workforce Development. Community population estimates, 1990-2005. Available at <http://www.labor.state.ak.us/research/pop/estimates/05t2-1.xls>. Accessed February 23, 2006.
- Alaska Department of Transportation and Public Facilities. *Southwest Alaska Transportation Plan, Freight Impact Analysis*. Prepared by Parsons Brinckerhoff. March 2000.
- Alaska Housing Finance Corporation. *Construction Cost Survey 2005*. Prepared by Alaska Department of Labor and Workforce Development, Research and Analysis Section. January 2005.
- Alaska Marine Highway Ferry System. Official Alaska Marine Highway System Site. Available at <http://www.dot.state.ak.us/amhs/index.html>.
- Brewster, Dan. Bering Pacific. Personal communication with Northern Economics, Inc. February 21, 2006.
- Britten, Eric. Manager of Business Planning and Development, Horizon Lines. Personal communication with Northern Economics, Inc. January 5, 2006.
- Bureau of Labor Statistics, U.S. Department of Labor. Producer Price Index Industry Data. Available at <http://www.bls.gov/data/>. Accessed February 24, 2006.
- Haugen, Dave. Vice President, Lynden, Inc. Personal communication with Northern Economics, Inc. January 6, 2006.
- Hochanadel, Sean. Sales/Customer Service, Northland Services. Personal communication with Northern Economics, Inc. January 5, 2006.
- Jansen, Jim. President and CEO, Lynden, Inc. Personal communication with Northern Economics, Inc. January 6, 2006.
- Long, Allyn. General Manager, Alaska Logistics LLC. Personal communication with Northern Economics, Inc. January 5, 2006.
- Morgan, Jerry. Director of Sales, Samson Tug and Barge. Personal communication with Northern Economics, Inc. January 11, 2006.
- Northland Services. Voyage schedule on website. Available at <http://www.northlandservicesinc.com/>. Accessed February 27, 2006.
- O'Shea, Michael. Director, Business Development, Marine Services, Crowley. Personal communication with Northern Economics, Inc. January 19, 2006.
- Parrott, John. Vice President and Alaska General Manager, Totem Ocean Trailer Express, Inc. Personal communication with Northern Economics, Inc. January 19, 2006.
- Port of Kodiak. Northbound cargo volumes , 2002 through 2005. Sent by e-mail to Northern Economics, Inc. 2006.
- Poston, Mike. VP Barge Sales, Delta Western. Personal communication with Northern Economics, Inc. February 27, 2006.

Samson Tug and Barge. Voyage schedule on website. Available at <http://www.samsontug.com/>. Accessed February 27, 2006.

Smith, Mark. Vice President Business Development, Petroleum Services, Crowley. Personal communication with Northern Economics, Inc. January 6, 2006.

United States Army Corps of Engineers. Waterborne Commerce, Part IV. 1999 and 2000 Editions. Available at <http://www.iwr.usace.army.mil/ndc/wcsc/pdf/wcuspac99.pdf> and [wcuspac00.pdf](http://www.iwr.usace.army.mil/ndc/wcsc/pdf/wcuspac00.pdf). 1999 and 2000.

United States Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service. *Distances Between United States Ports*. 2002.

United States Postal Service. Notice 123, *Ratefold*. January 8, 2006.