

Alaska Regional Ports

Planning for Alaska's Regional Ports and Harbors *Final Report*

Prepared for the
U.S. Army Corps of Engineers
and
Alaska Department of Transportation
and Public Facilities

January 2011



Northern
Economics

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Under Contract to
URS Corporation

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The Call to Action

In 2008 the first Alaska Regional Ports Conference convened to discuss issues faced by Alaska's ports and harbors. Local, state, and federal government officials discussed infrastructure and service needs with statewide port and harbor managers, staff, and users.

The overwhelming mandate from this group was the need for ongoing collaboration, comprehensive planning, and leadership to meet Alaska's future needs.

To achieve this goal, the U.S. Army Corps of Engineers (USACE) and Alaska Department of Transportation and Public Facilities (ADOT&PF) championed a multi-staged research effort to lay the groundwork for developing a statewide port and harbor plan. This report is the summary of that independent research and analysis, and incorporates feedback from the 2010 Regional Ports Conference attendees and conceptual revisions and suggestions made by USACE, ADOT&PF, and the Denali Commission.

Challenges Facing Alaska's Marine and Riverine Infrastructure

Port and harbor maintenance and development are impeded by several challenges, among them:

- High construction costs and intense competition for limited statewide funding
- Pressure from global trends in shipping and maritime transportation
- Rural population centers with a lack of existing infrastructure due largely to geographic and seasonal constraints and small populations and financial bases
- Poor communication among stakeholders; poor alignment of agency policies and priorities
- The absence of a long-term marine and riverine transportation plan

Addressing these challenges requires an understanding of both the existing transportation network and of the policies that influence the agencies within the port and harbor realm. The following synopsis and the analyses attached provide this understanding and outline the steps toward development of a statewide port and harbor plan.

Document Organization

The following sections collectively paint a picture of Alaska's current and anticipated port and harbor needs. The summary concludes with a suggested path forward for leadership in USACE, ADOT&PF, and other maritime stakeholders to face the challenges outlined above.

Section 1: Global trends and the Alaskan transportation network

Section 2: Baseline assessment of Alaskan ports and harbors

Section 3: Regional and subregional hubs: the marine and riverine infrastructure most influential in supporting outlying communities

Section 4: Proposed policies, strategies and actions: stakeholders overcoming obstacles

Section 5: Project prioritization: the project list and criteria

An appendix contains four reports that were prepared as interim deliverables for the project.

1 Global Trends and the Alaska Transportation Network

Alaska's unique characteristics include a resource-based economy, geographic remoteness, limited transportation infrastructure, and harsh weather conditions. Given these characteristics, transportation infrastructure has the crucial role of supporting resource development in the state and of safely transporting people, resources, and goods to markets. In the following subsections we discuss the future demands on Alaska ports and harbors that result from the intersection between the state's distinctive characteristics and the trends taking place worldwide. The results of this analysis should be considered in the development of a long-range ports and harbors plan.

Port Privatization and Global Terminal Operators: Privatization and public/private partnerships are on the rise around the world. Similar trends may emerge in Alaska. For example, leasing part or all of a facility to a major terminal operator could be one alternative for completing a project.

Shipping Routes and Transshipment Hubs: Alaska sits astride the North Pacific great circle route, which is the most economic pathway for commerce between northern ports of the west coast of North America to ports in eastern Asia. In the future, one or more ports in western Alaska could become transshipment points for vessels transiting the North Pacific great circle route with cargo destined for potential new Arctic Ocean routes. Examples include the Northern Sea Route and Northwest Passage, which could become useable navigation routes in the next 40 to 50 years due to Arctic sea ice melt.

Alaska Resupply Cargo: Resupply cargo consists of freight and goods shipped into Alaska to supply the needs of in-state businesses and population. Since Alaska has a very small manufacturing sector, virtually all producer and consumer goods must be imported. Though the Port of Anchorage is unlikely to become a major transshipment container terminal for non-Alaska bound cargo, it will likely see an increase in inbound containers to meet the needs of a growing population and increased economic activity.

Intermodal Transportation: Levels of intermodal connectivity vary widely in Alaska. In many communities, the absence of one or more types of connectivity can be offset by the remaining modes providing enhanced service and facilities. Recognizing this situation is vital when developing comprehensive transportation planning documents.

Fuel Efficiency: Shipping lines worldwide struggled as crude oil prices reached unprecedented highs in 2008. Fuel costs represent as much as 50 to 60 percent of a ship's total operating costs. The prospect of rising fuel costs and fuel shortages has underscored the importance of using the most fuel efficient modes of transport. Maritime transportation is generally considered the most energy efficient of all transport modes in terms of distance traveled per unit of energy consumed.

Shipping companies can undertake several actions to reduce fuel cost and maintain their margins, including reducing speed, seeking shorter routes and limiting the number of tug and barge trips to small remote villages to one per year rather than two per year. In Alaska communities, this last step could require provision or construction of additional fuel storage.

Port and Harbor Infrastructure and Increasing Vessel Size: Containerization, transshipment, and larger vessels have placed new demands on port facilities and services. New demand for improvements in Alaskan port facilities may involve a variety of infrastructure investments, such as increasing the depth

of water in entrance channels and alongside berths, extending and supporting existing harbors, providing breakwaters, and better cargo handling equipment and storage facilities, among others.

One issue with funding port infrastructure improvements will be ensuring that benefits from investing public dollars are not captured solely by private industry but are shared with residents of the region.

Facility Expansion and Dredging: Dredging is critical to a number of ports in Alaska, needed on a regular basis to maintain access to existing facilities that would otherwise be impeded by shallow water or build-up of sediment.

Dredging needs will increase as shipping companies employ larger ships that require deeper water or a larger space for maneuvering or docking. Proper port and harbor design can help minimize the amount of dredging. Increases in the number of recreational vessels as well as changes in the size of commercial fishing fleets may require new or expanded harbors. Modular design concepts that could be used in multiple locations around the state might be developed to reduce engineering and construction costs. Expansion plans should be tempered with a realistic assessment of infrastructure needs in each region to avoid under-utilization of maritime infrastructure.

Industry Development: More than any other mode, maritime transportation is linked to the primary industries that are the foundation of Alaska's economy, including oil and gas, commercial fishing, mining, and cruise ship/tourism industries. The main advantage of maritime transportation is its economies of scale, making it the cheapest per unit of all transportation modes for long distances, and a good fit for Alaska's heavy industrial activities.

If commercial discoveries of oil and gas occur in the Chukchi or Beaufort Seas, vessel traffic in these waters and in the Bering Sea will increase significantly. Supply vessels for offshore platforms will need to be built with ice-breaking capabilities so they can operate year-round.

Harbors of Refuge and Emergency Response: Ports and harbors play an important role in maritime safety and pollution prevention. The lack of places of refuge and emergency response resources on Alaska's North Slope and northwest regions may become a particular area of concern if the anticipated increase in the number of freighters, cruise ships, oil and gas tankers, dry bulk cargo vessels, and resupply barges passing through the Bering Strait and plying the waters of the Arctic Ocean occurs.

In coming years, the provision of Arctic port facilities or harbors suitable for refuge for medium to deep draft vessels may become both a national and international imperative. National defense and emergency response needs may result in ports being developed even though the benefits may be limited due to small resident populations, seasonality, and modest levels of vessel traffic.

2 Baseline Assessment of Alaska's Ports and Harbors

In order to understand how the aforementioned trends will affect Alaska's individual ports and harbors, we needed to assess the current status of infrastructure in the state's various regions and communities. This section summarizes the major regional themes that resulted from this work. These points were chosen both to take a snapshot of Alaska ports and harbors and to highlight the differences in the regional characteristics of the state.

Ports are areas where ships are brought alongside land to load and discharge cargo. Harbors are natural or manmade places in which vessels may find shelter, load or unload passengers or goods, or obtain fuel, water, or supplies. There are significant differences between ports and harbors in terms of

scale, users, financing, and administration. Ports often have a broader, statewide significance and require economic capital and strategic investment, while state support for harbors traditionally means empowering local governments with the tools needed to take care of their own local needs, along with financial and administrative support. Whereas ports form logistical networks, harbors are less connected and are traditionally located in proximity to either population or seafood resource bases.

Regional Analysis Findings

- In remote areas, one port facility often serves as a regional hub for distribution to several smaller communities.
- Many Alaskan communities with publicly owned port and harbor infrastructure run their facilities as enterprise funds. Enterprise funds are business-like entities expected to support their operations through charges levied for services. The majority of enterprise funds reviewed in this study included their depreciation expense as part of their operating costs; in almost all cases, the burden of depreciation outweighed revenues, resulting in operational losses for port and harbor facilities.
- Though individual ports and harbors show operating losses after depreciation, they may provide substantial financial gains in the form of employment, tax revenue, and other income for their communities.
- Waterways are vitally important to the state. Most communities depend heavily on water transportation for the movement of general cargo, building materials, and petroleum. These regions also see high volumes of outgoing commodities. Seafood (Southeast and Southwest), crude oil (Prince William Sound), ore (Northwest), and ore and timber (Southeast) are exported both abroad and to the Lower 48 via barge and vessel.
- In the Southeast and Southwest regions, most communities are on islands, limiting road access to outside communities. The story is similar in the Arctic; the geography of the region and the high cost of building roads to small communities limit road construction.
- Almost half of the communities in the Northwest, the Yukon-Kuskokwim, and the Interior regions lack a road connection to another community, reflecting the fact that these regions have a limited amount of road and rail infrastructure.
- The Alaska Marine Highway System provides service to the Southeast, Prince William Sound, Southcentral, and Southwest regions. Residents depend on the state ferry system for both personal and cargo transportation.
- Communities in the Northwest, Yukon-Kuskokwim, and Interior have a smaller percentage of port and harbor facilities than other regions. Many communities in these areas rely on summer barge service and tend to have small populations. The brief operating period during ice-free months, small number of residents, and high construction costs hinder the development of ports and harbors.

In addition to contributing to the baseline assessment of the state's port and harbor infrastructure, the survey results also provided the foundation for a first draft of the statewide ports and harbors project list, discussed further in Section 5.

3 Identification of Regional Port Hubs

This section summarizes criteria for identifying regional and subregional hubs, and presents a preliminary list of hubs in each of the eight regions used in the Alaska Regional Ports project.

Hub Criteria

The primary criterion for hub status is the maritime industry's use of the port as a hub. We developed other criteria as well, including whether a port handles fuel and cargo for the region (rather than just the local community), the presence of major cargo generating industries, the degree of infrastructure development, and the presence of an administrative structure for port operations. While the distinction between regional and subregional hubs is relative to the region under consideration, these criteria can be used to identify where each port falls on a spectrum.

For this study, we have defined two tiers of hubs: regional and subregional. Regional hubs represent the primary ports of entry for goods moving into or out of the state and region. Shipments into regional hubs tend to include a significant quantity of goods that are to be distributed elsewhere within the region or state, and shipments from regional hubs tend to be consolidated from multiple locations. Each region has at least one regional hub and some have more than one, based on the networks used for transportation of different types of goods.

Subregional hubs represent smaller ports of entry that tend to receive shipments from the regional hubs and distribute goods elsewhere in the region. Generally, subregional hubs do not directly send or receive goods from outside the state, though they can be used as staging areas for consolidation of intra-regional shipments.

3.1 Preliminary List of Regional and Subregional Hubs

We divided the selection of regional and subregional hubs into eight regions: Arctic, Interior, Northwest Arctic, Prince William Sound, Southcentral, Southeast, Southwest, and Yukon-Kuskokwim Delta. Table 1 provides the resulting list of regional and subregional hubs by region. This is a preliminary list and will be defined through the planning process.

Table 1. Regional and Subregional Hubs

Community	Type of Hub	Community	Type of Hub
Arctic		Southeast	
Barrow	Regional	Haines	Subregional
Prudhoe Bay	Regional	Juneau	Regional
Interior		Ketchikan	Regional
Koyukuk	Subregional	Petersburg	Regional
Nenana	Regional	Sitka	Subregional
Tanana	Subregional	Skagway	Subregional
Northwest Arctic		Southwest	
Kotzebue	Regional	Adak	Subregional
Nome	Regional	Dillingham	Subregional
Port Clarence	Subregional	Kodiak	Regional, container
Prince William Sound		Naknek	Subregional
Seward	Regional	Unalaska/Dutch Harbor	Regional, container
Valdez	Regional	Yukon-Kuskokwim	
Whittier	Regional	Emmonak/Alakanuk	Regional
Southcentral		Bethel	Regional
Anchorage	Regional, container		
Homer	Subregional		
Port MacKenzie	Subregional		

4 Recommended Policies, Strategies, and Actions

In the fourth stage of the study, we identified multiple impediments to efficient port and harbor development and made recommendations to improve the way federal, state, and local governments work together on marine and riverine infrastructure improvements. Some of these recommendations come from stakeholder interviews, some from the literature we reviewed for this project, and others from our experience in the marine and riverine infrastructure development process.

Interagency Coordination: Multiple state and federal agencies are involved in port and harbor development in Alaska. Given the differences in their policies and priorities and the need to enhance coordination, both an interagency task force¹ and an interagency working group should be formed. The task force would focus on policies and larger issues surrounding marine and riverine infrastructure development, such as how best to quantify social or subsistence effects, and the working group would facilitate communication and coordination at the project work level.

USACE Benefit-Cost Ratio: A potential issue identified for the aforementioned interagency task force is to evaluate modifying the USACE’s policies so that the benefit-cost ratio, which favors large population areas, is not the primary mechanism used to allocate federal funding. We recommend that

¹ Member groups could include USACE, ADOT&PF, Denali Commission, USCG, AIDEA, U.S. Economic Development Administration (EDA), U.S. Department of Agriculture (USDA), and other parties that participate in marine infrastructure development. The task force might also include representatives of Alaska Native organizations, Community Development Quota (CDQ) groups, environmental organizations, and others.

such issues be brought forward by the Alaska District office, with support from the congressional delegation, for discussion at the national level.

Funding for ADOT&PF Planning and Creation of a Transportation Infrastructure Development Program:

ADOT&PF should pursue authorization of a regular state-funded, multi-year transportation program—separate from federal highways, transit, and aviation programs—that includes marine and riverine infrastructure projects. Inclusion of marine and riverine infrastructure projects in the multi-year program will result in a systematic approach to identifying, selecting, coordinating, and funding such infrastructure, and potentially improve the likelihood of project funding .

The current regional planning studies and the Long-range Transportation Plan (LRTP) focus on state-owned facilities and vessels. The next update of these reports should provide a comprehensive description of the marine and riverine transportation system and a baseline assessment of marine and riverine infrastructure owned by the state and other entities that provide such infrastructure.

Interagency Project List and Project Integration: To improve the value of ADOT&PF planning documents, other parties involved with marine and riverine infrastructure development will need to communicate their planned or potential projects to ADOT&PF to ensure that these projects are included in the regional planning studies and the LRTP.

Stakeholder Coordination: Improved communications with project communities could allay some of the frustration that is often felt with USACE's lengthy process.

Regional Prioritization: Communities should prioritize projects on a regional basis. Regional port and harbor development groups could follow the model used by Alaska Regional Development Organizations. Whether created formally by the Alaska Legislature or informally through regional efforts, these groups could provide single points of contact for communicating regionally supported, prioritized, and coordinated lists of needed port and harbor projects. This approach would benefit both individual communities and the funding agencies through greater efficiencies in project nomination, selection, and funding. We recommend that projects subjected to such evaluation be given additional weight in funding organizations' project ranking.

Coordinated Planning and Creative Solutions for Communities: This report focuses on marine and riverine infrastructure, but good planning should recognize that there may be other, more cost-effective means of achieving a goal rather than development or improvement of marine and riverine infrastructure. In some cases, another mode of transportation may provide the most cost-effective solution and best meet local, regional, and state needs.

A statewide transportation plan should address all elements of the transportation system, including the private sector's role in providing facilities or equipment for the system. Having knowledge of all available infrastructure, including private sector investments, could facilitate coordination among stakeholders, reducing the cost of moving from one mode to another, or between communities, and revealing where the state may not need to build facilities or supply equipment.

Funding or Financing: Part of the stimulus for undertaking the Alaska Regional Ports study was the recognition that there are not enough funds available to meet the needs that have already been identified for marine and riverine infrastructure projects. The project decision-making process must explore the possibility of funding projects through other parties or with several organizations as partners.

Public Private Partnerships: The role of PPPs in infrastructure development is increasing on a global scale and in certain situations may be suitable for Alaska port and harbor development projects. Port development is a logical application for PPPs since ports are commercial facilities typically driven by economic demand and usually associated with sustainable economics and funding. Barge landings, like ports, are also good candidates for PPPs since they are driven by an economic demand for goods and services. Planning for marine and riverine project development should involve CDQ groups, Alaska Native regional and village corporations, shipping companies, and others. While such entities may not wish to participate in funding all aspects of a port or harbor facility, they could establish or finance upland development to enhance the economic returns from the port or harbor investment, or invest in private facilities within a port or harbor. In smaller rural communities, the private sector could be a source of local matching funds.

Project Evaluation: In cases where a port or harbor project is necessary for community economic development or safety, but does not achieve a positive benefit-cost ratio and gain federal interest, we recommend an analysis be conducted to identify the most cost-effective alternative that meets the objectives.

Local Government Participation: While some communities are too small to have significant financial capacity, those with large fishing or recreational vessel fleets or significant commercial marine and riverine traffic can provide some or all of the revenues to build many facilities or provide local matching funds.

The sustainability requirements of ADOT&PF's Municipal Harbor Grant Program could provide a mechanism to establish replacement funds for facilities. We encourage changes in the program to require dedicated replacement reserves within port and harbor enterprise funds. These reserves could be funded using the depreciation expense (a non-cash expense) on port and harbor assets.

Tiered Grant Application Requirements: Organizations should consider different grant application requirements for projects with different threshold costs. In some cases, the most important need is fairly modest in cost but because the application requirements are so extensive, the project of greatest need is incorporated with a larger project of lesser need to justify the costs in preparing the grant application. Funding organizations should consider and set the appropriate administrative burden for various project cost thresholds.

Marine and Riverine Industrial Development and the Alaska Industrial Development and Export Authority: In addition to community economic development, industrial development often requires marine and riverine infrastructure projects. AIDEA's mission is to promote, develop, and advance economic growth and diversification in Alaska by providing various means of financing and investment. Interviewees suggested that, as a champion of economic development, AIDEA could play a larger role in port development for regional and possibly subregional hubs where the economic activity level is high enough to repay its investments over time.

New Legislation: Port Authorities: State statutes permit the formation of port authorities, which can be catalysts for social and economic development, but the statute is crippled since it does not permit such authorities to levy taxes. We propose the statute be amended to permit port authorities to levy taxes, with the specific type of tax varying based on the fiscal system that is presently levied by the local government. The tax could be restricted to a certain mill rate for property taxes or a fixed percent of sales tax.

5 Project Prioritization: New Criteria

Based on the project list created as part of this study, the study team went on to create a master project list with input from other agencies. This section describes the process used in its creation and suggests steps for its maintenance and prioritization.

The list began with a survey instrument distributed by the USACE. The survey asked statewide marine and riverine facility owners and representatives to list projects that were 'planned or underway, but not yet completed' as well as projects 'not yet planned but needed.' These responses were summarized and distributed from USACE to ADOT&PF and the Denali Commission. The latter two agencies responded by sharing their existing lists of needed projects. ADOT&PF also submitted their Municipal Harbor Grant Program applicants, their deferred maintenance inventory, and their running list of port and harbor needs. The Denali Commission provided the results of Phase I and Phase II of the Alaska Barge Landing System study, as well as projects submitted by grant applicants. The various project lists were combined to form a master list of statewide port and harbor needs. Projects on this list are candidates for regional and agency prioritization.

The project list was distributed to attendees at the 2010 Alaska Regional Ports Conference. The following is a summary of our suggestions for maintaining the list and includes valuable input and suggestions received from conference attendees.

Maintenance of the Project List

- Attendees made clear that the projects on the list do not always reflect the current reality. The list must undergo a local review to ensure that it is correct and up to date.
- Many of the projects on the list are duplicates because multiple agencies may be involved and each nominated the project. Many projects have similar but slightly different names and there is insufficient information to differentiate between them. A lead agency should be identified to condense the list by merging comparable projects, identify all agencies involved, and provide coordination.
- A column containing the type of need addressed by the project may prove useful in allocating resources. Categories might include new or expansion projects, improvements to existing facilities, and maintenance. Maintenance projects should be the responsibility of local communities.
- The project list should be posted in a public location for a one-month comment period during which local facility owners and stakeholders will have the opportunity to comment on and correct the data that it contains. This step will also allow for survey respondents to delete duplicates and add projects which were omitted.
- Going forward, the list of marine and riverine infrastructure projects developed for this study should be updated at least annually so that it is useful to the congressional delegation, the state legislature, and others funding such projects.
- A single agency should be responsible for maintaining the list. While ADOT&PF is the most likely candidate for this task, this list maintenance needs to be appropriately funded and staffed. The viability of the project list depends on community interest generated by a reasonable expectation that worthy projects may receive state and/or federal funding support.
- A status or notes column may prove useful for tracking progress as projects move through feasibility, engineering and design, and construction.

- Projects deemed infeasible by any of the participating entities should be grouped and noted as such in an effort to avoid duplicate feasibility studies. These projects should be reevaluated only when relevant circumstances change.
- Projects listed by private entities should be restricted to only those which share a public interest and have the potential for collaborative funding.

An interagency review of policies and procedures should be conducted periodically to determine if changes could be made to eliminate apparent conflicts. This review should include an evaluation of the criteria each organization uses to rank marine and riverine infrastructure projects.

Criteria:

Though the criteria used to evaluate these projects may vary by organization and community, we suggest that all groups within the state consider the items in Table 2. These criteria are based on interview and research findings of this study, as well as input by conference attendees. Input from the conference attendees suggests the following criteria are the most important based on the number of times the criterion was nominated:

1. Public Safety
2. Economic Development
3. Regional Support / Impact to Communities
4. Existing Infrastructure Needs
5. Operations and Maintenance
6. Cost / Benefit
7. Sustainability
8. Intermodal Access / Location

Table 2. Suggested Criteria for Ranking Port and Harbor Projects

Criterion	Explanation
Health and Safety	The safety of vessels, their crews, passengers, and community residents is of the utmost importance, and should be heavily weighted in all programs.
The Arctic Priority	A port of refuge/forward operating base that can serve the Arctic should have additional weighting for project ranking due to its ability to improve vessel and mariner safety, and emergency response capability.
Hubs	If a community or location has been identified as a hub or subregional hub, the relevant project should receive additional weight because such improvements would result in the greatest benefit to the overall marine and riverine transportation system and a larger number of communities.
Community/Regional Support	Projects that have been deemed a priority through a local or regional ranking process should be given extra weight.
Regional Significance	For projects that have not been ranked on a regional level, their importance to the regional transportation network and economy should be considered.
Joint Funding	Projects that incorporate a significant portion of their resources from non-state entities are preferable to those which are solely state funded.
Alignment with Other Projects or Organizations	Savings or synergies captured by two or more projects that are timed to share mobilization, demobilization or other relevant costs are preferable.
Economic Development	Projects that will lead to economic development (jobs, new businesses, industry growth, etc.) are encouraged.
Economic Feasibility	Project benefits should outweigh project costs; this criteria ranking will be based on a calculation that compares benefits such as spending effects, job creation, industry growth to costs like materials and labor for construction.
Cost-Effectiveness	Multiple transportation alternatives (including non-marine/riverine modes) should be considered for each need, with the most cost-effective solution being the preferred approach.
Environmental Protection	The project benefits the environment directly or will increase the ability to respond to environmental crises (e.g.: oil spill response, etc.).
Sustainability	The project is sustainable over time (physically and financially).
Existing Infrastructure Needs	The project is intended to repair, maintain or upgrade existing facilities that are currently in use.
Security	The project will meet national or state security needs.
Intermodal Access/Location	The project will create an intermodal connection, thereby improving the regional and/or statewide transportation network.
Subsistence	The project will facilitate subsistence activities such as harvesting marine and riverine resources or providing access to lands for hunting and gathering
Capacity and Demand	The intended size or capacity of the new project should be evaluated as compared to existing and anticipated demand as shown by indicators such as vessel waiting lists, resource size, vessel traffic, etc.
Operations and Maintenance (O&M) Reductions	The project will minimize O&M costs going forward
Service Life	Projects with a longer expected service life are preferable.
Transportation Alternatives	Projects for which there are no other options should rank higher than those that could be reduced in importance or eliminated by other feasible options.