03/28/13 Overview: Arctic Economic Development Opportunities In Alaska

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Alaska State Legislature

Representative Shelley Hughes, Chair

Session Address:
Alaska State Capitol, Room 409
Juneau, Alaska 99801-1182
Phone: (907) 465-3743
Fax: (907) 465-2381
House District 8

House Special Committee on Economic Development, Trade and Tourism

To: House Economic Development, Trade and Tourism Committee Members

From: Representative Shelley Hughes, Chair

Date: March 27, 2013

Re: Committee Schedule for the Weeks Beginning March 25, 2013 - REVISED

The House Special Committee on Economic Development, Trade and Tourism (EDT) meets in the Barnes Room 124, on Tuesdays and Thursdays from 11:15am to 12:45pm.

Tuesday, March 26, 2013 11:15am in Room 124

* + HCR6 Recognizing the Alaska Center for Unmanned Aircraft Systems Integration and establishing a task force
  Public testimony
* + HCR12 Support In-State Firearms Manufacturing
  Public testimony

Thursday, March 28, 2013 11:15am in Room 124

+ Arctic Economic Development Opportunities in Alaska
  Representative Bob Herron
  Bill Mowitt, Aide to Senator Begich
  Andy Varner, South West Alaska Municipal Conference
  Nils Andreassen, Institute of the North
  Roberta Graham, Deputy Commissioner DCCED
  Invited testimony only

Please feel free to contact the EDT committee aide, Ginger Blaisdell at 465-5265 with questions.

* First Hearing in First Committee of Referral
+ Teleconferenced
= Bill was Previously Heard/Scheduled

Representative.Shelley.Hughes@akleg.gov

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House Special Committee on Economic Development, Trade and Tourism

AGENDA
March 28, 2013

- **Call to Order**

~Gavel~ Welcome to House Economic Development, Trade and Tourism Committee. The meeting is called to order. The time is _____. Welcome, everyone. Thanks to LIO monitor, _____, and our recording secretary, Debbie, and to committee aide, Ginger Blaisdell.

- **Roll Call and Agenda**

For the record, in attendance are: (representative xx, representative xx,… and representative xx – and remember to include self!)

Today's presenters will each give a five minute overview of Arctic Development Activities or Possibilities for Alaska and we will reserve questions for the end of their presentations.

- Representative Bob Herron
- Bill Mowitt, Aide to Senator Begich
- Andy Varner, South West Alaska Municipal Conference
- Nils Andreassen, Institute of the North
- Roberta Graham, Deputy Commissioner DCCED

- **Calendar Review**

  Today may be the final meeting of the EDTT committee – no further presentations are scheduled but we will meet if any legislation if referred to committee.

- **EDTT committee Tour of Alaska**

  The Special Committee on Energy is interested in joining our tour so the 6th will likely include a tour of the Unmanned Aircraft Center and the energy/sustainability related efforts at Chena Hot Springs.

  - June 4-6 (Tuesday through Thursday
    - Tuesday early morning – Anchorage bus to Talkeetna
    - Talkeetna optional river raft, flight seeing, etc.
    - O/N Denali Princess hotel
    - Wednesday morning free
    - Afternoon tour of Usibelli
    - Dinner on Riverboat Discovery
    - O/N Fairbanks Princess or flight to Anchorage
    - Thursday optional tour of Fairbanks or flight to Anchorage
  - How many members, spouses and family, and committee staff?
  - Is this week impossible for most members? Is another Tu-Th week in June better?

- **Adjourn**

ACEP

Alaska Center for Energy and Power

Fostering development of innovative solutions to Alaska's energy challenges.

Research Briefing

Stranded Renewable Energy Resources of Alaska: A Preliminary Overview of Opportunities and Challenges to Development

This report was prepared by the Alaska Center for Energy and Power for the National Renewable Energy Laboratory.

Project Overview

Alaska is home to significant renewable energy resources. Geothermal, wind, tidal, wave, hydro and even solar and biomass resources have the theoretical potential to not only meet the majority of Alaska's in-state energy needs, but also provide tremendous economic and strategic opportunities for the state and the nation. Despite the many opportunities for developing these resources, there are also significant barriers. Foremost among these challenges is the fact that many of Alaska's renewable energy resources are stranded.

Pathways to Development

Typically, the primary barriers to developing stranded resources are technical, logistical and economic, including the cost of fully assessing the resource, developing the resource into usable energy, maintaining and operating a facility or technology in a remote location, and transporting the energy or product to demand centers. In Alaska, these barriers are amplified by the sheer size and diversity of the land, varying climates, extreme weather and distance from global demand centers. Political and social barriers can also play a significant role when considering the development of stranded resources in Alaska. Land use restrictions, regulatory requirements, aesthetic and environmental concerns, and other similar barriers could preclude the development of certain resources or increase the overall cost of project development.

See the full report for information on stranded renewables that are export- or commercial-scale in size. The renewable energy resources considered to be relevant for this report include geothermal, wind, river (hydroelectric) and ocean (tidal and wave). Available at www.uaf.edu/acep/publications.

The challenges and opportunities associated with developing Alaska's stranded renewables are assessed via "pathways to development," that is, those methods or mechanisms that allow for access to and development of stranded energy resources.

Transportation to Market

One pathway to developing a stranded resource is to overcome the resource's isolation by transporting the site-produced energy to market. Practically all methods of transport-

What is a stranded renewable energy resource?

Stranded renewables are those renewable energy resources located in remote, distant or otherwise isolated areas "stranded" from integration into modern energy infrastructure and supply chains to local population and industry centers. Stranded renewables can be divided into two categories: (1) isolated or remote resources that are commercial- or export-scale in size, i.e., those energy resources that provide potential energy and economic value that justify remote development and have large potential markets, and (2) resources "stranded" from utilization not by isolation or remote location, but by issues such as economies of scale or "seasonality," e.g., abundant solar or hydro availability in the summer but not in the winter.

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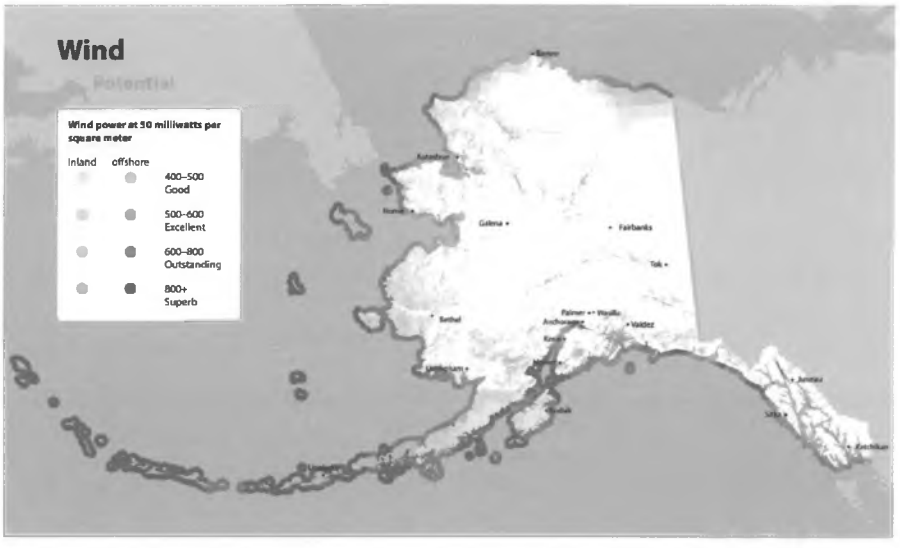
www.akenergynetwork.com

This fact sheet is produced by Alaska Center for Energy and Power in cooperation with the UAF Cooperative Extension Service.

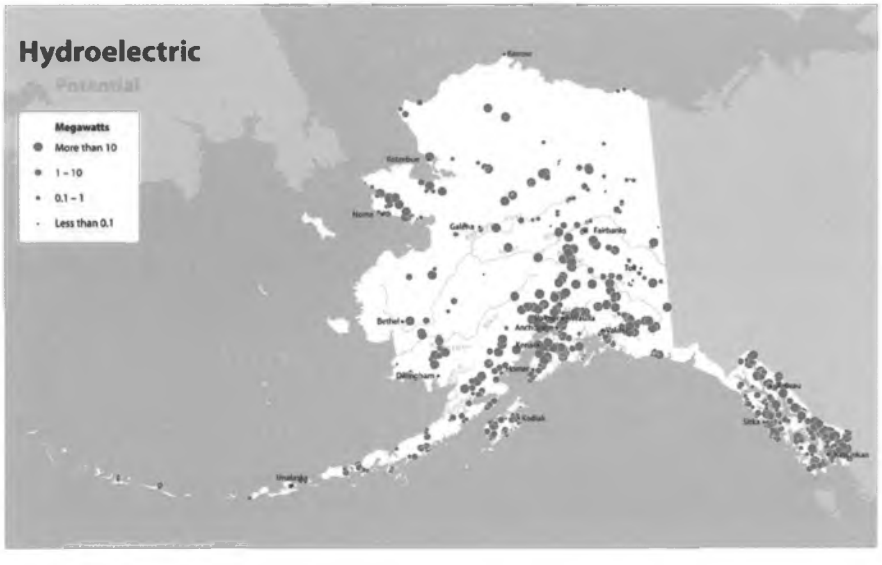
ing energy over significant distances fall into two categories: electrical energy transmission or chemical energy transport. Electrical energy transmission is perhaps the more familiar and common of these two. It consists of converting the renewable energy resource into electrical energy, and transmitting that energy to market via electrical transmission lines. Electricity markets are connected by transmission systems. Accordingly, transmission has historically been at the center of discussion when considering the barriers to and opportunities for developing stranded renewable energy resources. The cost of electrical transmission in Alaska is one of the most significant challenges to developing stranded renewable energy resources. Many factors, such as permafrost and varying soil compositions, mountain ranges, rivers, limited access and extreme seasonal weather conditions, can contribute to difficult engineering and construction challenges and, ultimately, high costs.



Alaska has an abundance of potential wind resources, hosting the largest area of class 7 wind power in the United States.

Chemical energy transport is most familiar in the context of fossil energy, primarily through the use of pipelines and marine tankers. Unlike fossil energy resources, which are harvested as a chemical energy resource, renewable energy must first be converted into a chemical energy form that is suitable for transportation. Only then can it be transported to energy markets via ship, pipeline or other transportation methods. With growing concerns over rising oil prices and increasing greenhouse gases, the production of alternative fuels has gained interest in order to reduce fossil fuel consumption, potentially stabilize energy prices, enhance energy security and offset carbon and other emissions. Some countries, especially in Asia and Europe, have begun to invest in alternative fuels such as hydrogen, ammonia and dimethyl ether (DME) to move toward a sustainable, clean energy economy.

Hydroelectric power is the most abundantly developed renewable resource in the state and provides 24 percent of the electricity consumed in Alaska.

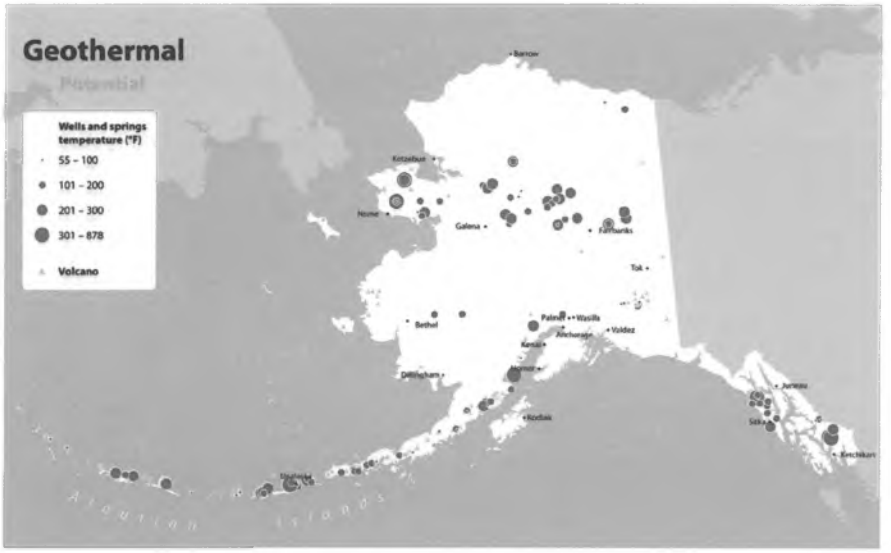


Place-Based Industry

An alternative approach to transporting produced energy to market is place-based industry, i.e., the development of stranded renewable energy resources for local use. A specific form of industry, energy-intensive industry, is a primary candidate for place-based industry. Energy-intensive industry is a general term for those industries that use large amounts of heat and/or other forms of energy to physically or chemically transform materials. These industries include, but are not limited to, aluminum smelting, mining, petroleum refinement, metal casting, the production of chemicals, steel and glass, and forest products.

Technology Development

A final pathway to developing Alaska's stranded renewables is through technol-



In 2008, the United States Geological Survey (USGS) estimated the capacity of all known geothermal resources in Alaska at a mean of 677 MW over the next 30 years, with a low range of 236 MW and a high of 1,359 MW. Unidentified geothermal resources for Alaska are estimated to add an average of 1,788 MW, with a low of 537 MW and a high of 4,256 MW.

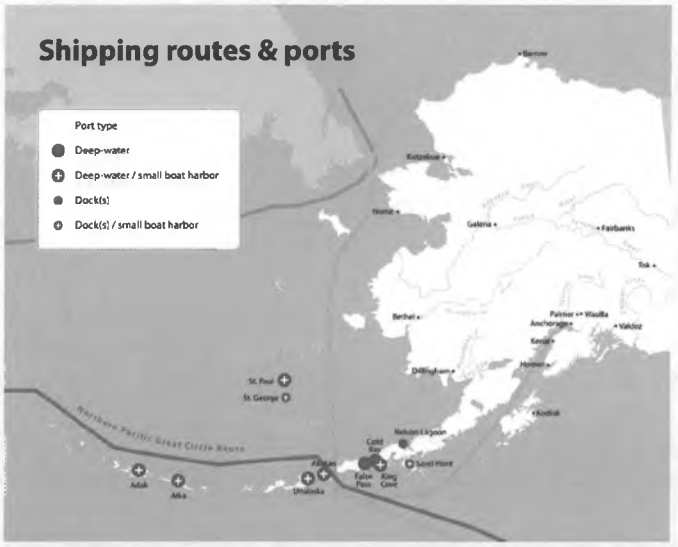
Smelting is the process of reducing mineral ores and concentrates to metal. Most methods involve heating the ore and concentrates with carbon to reduce the other ore compounds and, with additional refining, produce metal in a high state of purity ready for sale. Smelting is an extremely energy-intensive process. To produce a ton of aluminum it takes from 14.5 MWh to over 15 MWh. In addition to high-energy demand, smelting operations require a large infrastructure (the plant itself, access roads, and shipping and dock facilities) and an optimized location. Proximity to global shipping routes, distance to raw material, distance to market and ease of access, including the presence of a deep water port, are all critical elements to the overall feasibility of a smelting operation.

Total wave energy potential in Alaska is estimated to be 1,250 TWh/yr, more than 50 percent of the total potential found in the U.S. In addition to wave energy, Alaska is estimated to possess 90 percent of the tidal power in the U.S., or 109 TWh/yr.

ogy development. Technology designed to harness and utilize renewable energy resources has been used for centuries and is always evolving in response to new technological breakthroughs. Traditional technology for generating and transmitting power from renewable energy is being challenged by the remoteness of Alaska's energy resources. As interest in developing renewable energy in Alaska increases, new technological advances could expand opportunities for the development of stranded renewable resource projects in rural regions of the state.

Findings

One transportation opportunity of particular relevance to Alaska is high voltage, direct current (HVDC) transmission. HVDC transmission has often been discussed as an economical means of transporting produced power to large, distant markets such as British Columbia and the Pacific Northwest. There are substantial hurdles to consider, however, when considering HVDC as a means of transporting large-scale stranded energy sources. While HVDC lines are usually more efficient than comparable AC lines, the power conversion equipment used to convert AC to HVDC and back is generally less efficient and more expensive than AC transformers. This makes AC more cost-effective for short interties, with HVDC more favorable for longer-distance transmission applications. The high cost of an HVDC power converter also forms an economic barrier that keeps energy resources or loads located along an HVDC transmission line from easily accessing the line.



Shipping in the Arctic Ocean is mostly limited to a short summer season, typically between July and September. During the ice-free season the Bering Sea averages around 120 vessels. This number is expected to increase as the extent of sea ice cover decreases.

Preliminary metrics such as access to a large base-load renewable energy source, proximity to global shipping routes, presence of a deep water port and supporting infrastructure requirements indicate that several sites throughout the Aleutian Islands, most notably Unalaska, could theoretically have the capacity to host smelting operations. Other energy-intensive industries such as mining and fish processing have theoretical applicability at various locations around the state, given suitable demand and the availability of a resource. Overall, there are substantial hurdles to consider when discussing developing stranded renewable energy resources through place-based industry. Many of these hurdles deal with the remoteness of these potential sites and typical challenges such as harsh climates. Others, including the high capital cost of such applications and need for competitive business environment, speak more to the ability of developing a business model to move forward with these prospects.

As interest in developing renewable energy in Alaska increases, finding innovative and emerging technology could encourage the advancement of stranded renewable resource projects in rural regions of the state. An example of this is Alaska's Emerging Energy Technology Fund (EETF), implemented by the legislature in 2010, which seeks to "promote the expansion of energy sources available to Alaskans." There is much activity globally in pursuing such relevant technologies such as floating offshore wind turbines, wave energy conversion devices, and tidal hydrokinetic generation technology. In addition, transmission and distribution technologies, control systems, and energy storage devices are all the focus of development, and could be relevant to developing stranded renewables in Alaska.

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For further information on this report, please visit www.uaf.edu/acep or contact:

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A full report, *Stranded Renewable Energy Resources of Alaska: A Preliminary Overview of Opportunities and Challenges to Development*, can be found online at www.uaf.edu/acep/publications.

CASE STUDY: Demand Analysis for Underserved Markets of North Pacific and Arctic
Prepared by Southwest Alaska Municipal Conference (SWAMC)

The Southwest Alaska Municipal Conference (SWAMC) is conducting broadband analysis for Southwest Alaska, and works in coordination with the State and the Broadband Task Force on Internet adoption and access. The lack of high-speed Internet in Southwest Alaska is due to poor economics, not technological difficulties. According to HughesNet and ViaSat, the stand-alone cost of a next-generation satellite is in the range of $250 to $400 million. Bridging the commercial gap will likely require a public investment, though offsetting the total cost will not be necessary, due to growing industrial activity, reliant on modern communication. Much of the industrial activity in the area requires a link from a mobile vessel, such as a plane or boat. Multiple telecommunications providers claim they now offer this technology. In addition to residential needs and industrial demand, an opportunity exists to share costs with large population Asian markets as well.

There is an inherent supply and demand dichotomy between broadband access and adoption. Due to costs associated with building broadband, providers are reticent to deploy infrastructure, which further surpasses demand. Adoption in Alaska's western coastal communities, and especially offshore areas of the North Pacific and Arctic Ocean, represents stranded demand, and does not accurately encompass the potential penetration for high-speed broadband Internet. Meeting demand with terrestrial fiber backbone networks for part of this market will be difficult, if not impossible. Shore-based facilities using legacy satellite systems provide lower data transfer speeds at very high costs, and most ocean-going vessels are not connecting to the Internet. Private companies (in addition to school districts) may pay as much as $10,000 per month for a 1.5 Mbps connection in Southwest Alaska. Next-generation satellites currently provide much faster data transfer speeds at a fraction of the cost.

The technology company ViaSat advertises data rates of 12 Mbps at a monthly cost of $50 (though mostly geared toward the Continental US market); HughesNet advertises a similar plan. ViaSat will launch their newest *Ka Band* satellite in 2015, but Western and Arctic Alaska will not be included in their coverage plans due to a lack of perceived market demand by the private sector. Public investment in next-generation satellite technology may be necessary to provide basic information needs to residents in the area; however, with the industrial capacity growing fast in Western & Arctic Alaska, Public - Private Partnership are likely viable options for sharing costs and increasing service.

Our analysis has identified the following potential customers in Western and Arctic Alaska:

- Communities - Anchor Institutions, Business & Residential
  Appendix A provides an overview of many SWAMC region communities that are in the underserved area. Note that Kodiak City and the Bristol Bay regions are connected to a fiber backbone. The underserved region contains between 15-20 communities, from Kodiak Island to the Alaska Peninsula and Aleutians that have very little chance of being physically connected through a fiber backbone in the intermediate- to medium-term future. Thus, next generation satellite represents their best hope for high-speed broadband. In addition to the residents deserving of cost effective and reliable Internet, anchor institutions such as schools, libraries, governments and health facilities are under a federal mandate to meet a minimum level of service, which is currently neither cost effective nor reliable. Other industries in this region include hunting & fishing lodges that rely on satellite for their business and client needs. Businesses and residents living in these communities require broadband services if they are to remain competitive in the global marketplace, and will be further restricted from services (and entertainment) that migrate to digital mediums.

- Ocean Shipping and Arctic Activity
  Appendixes B & C display information on vessel activity, provided by the Marine Exchange of Alaska, in the Bering Gateway to the Arctic and Unimak Pass in Alaska's Aleutian Peninsula. This ocean highway links America to Asia on the Great Circle Route, where 3,178 Westbound sailings and 1,255 Eastbound sailings through Unimak Pass were recorded in 2011. Each of the past five years has led to more and more Arctic activity and development, which trickles down to the Western and Southwestern regions of Alaska. Icebreakers, tankers, researchers, escort vessels, and more are ramping up activity. The US Coast Guard has documented total Arctic vessel activity increasing over 100% from 123 in 2008 to 247 in 2012, and total Bering Sea activity expanding 123% from 217 in 2008 to 484 in 2012. Most of the ships passing through these regions are large sophisticated vessels that require modern communication, and spend most of their time at sea, much of it in the North Pacific and Arctic. This represents a large and untapped market for real-time data, advanced vessel tracking and modern communication. Russia, China, Japan, Norway, America, and many other nations are all vying for increased access in the region as the Arctic warms up. The Marine Exchange of Alaska is responsible for reporting and tracking vessels operating in Alaskan waters; through their network, vessels upload trip data when they reach port or upload information through VHF radio network to the shore-based satellite uplinks.

- Science and Environmental Research
  Appendixes B & C provide information on science and research vessels in the Bering Gate and Unimak Pass. The region has seen increased research and science activity in recent years due to climate change, fisheries and other information gaps necessary to understand a fragile Arctic environment. NOAA has several offices in the region which constantly monitor and model weather patterns and climate activity. The National Marine Fishery Service does regular survey work of fisheries and marine mammals. Alaska Department of Fish and Game's goal is to move toward real-time data collection and reporting, especially important for managing millions of pounds of harvest data. With the vast data requirements involved in creating a comprehensive understanding of environmental science, there is a great need to enhance existing networks.

- Fishing Industry
  Appendix D identifies fishing vessels by community, as reported by Alaska Department of Fish and Game, Commercial Fisheries Entry Commission, and a more detailed analysis of vessels reporting to the community of Kodiak in 2010, provided by the Port of Kodiak. The North Pacific and Bering Sea, though sparsely populated, have some of the world's most productive commercial fishing grounds, making for year-round activity. This industry consists of many factory trawlers, at-sea processors, large and small boats, service vessels, and more; in total 9,857 vessels participated in Alaska's commercial fishing harvests in 2010. A snapshot from Alaska largest fishing and marine sector community, Kodiak, reported 3,225 vessels calls on her port in 2010. On-shore facilities include many processors, usually at least one in each community, in addition to boat harbors and other marine businesses. Three of the nation's Top 5 seafood ports by volume reside in Dutch Harbor (#1), Akutan (#3), and Kodiak (#5), and the world's largest crab production facility is in St. Paul Island in the Pribilofs. This activity produces lots of jobs and industrial processes that require reliable communications. Even most of the smallest commercial vessels use satellite based phone systems; new technology now available offers similar hardware for Internet capable connections. The importance of reliable and real-time information to the fishing industry will require that all vessels become Internet capable. Early adopters of internet enabled fishing vessels in Italy are maximizing harvest value and opening up new markets by finding buyers from sea, at the moment the fish is landed, so that buyers are waiting for them when fishers return to the docks.

- Oil & Gas Industry

The oil & gas and logistics industry is developing fast as the value of hydrocarbons rises and the Arctic ice recedes. Shell, Statoil, ConocoPhillips and others are now starting their exploration activity in Alaska's Outer Continental Shelf. The staging community for Arctic activity is in the Aleutians, due to the region's ice-free, deep draft ports. Communications, vital to global energy companies, has proven to be expensive, rumored to cost $10,000 per month for a dedicated T-1 (1.5 Mbps) connection. Public officials in Unalaska are considering constructing another hotel to house the expected increased traffic due to energy exploration; each of these companies will have the same, vast communication needs. Due to the data intensive needs of these companies, demand for Internet speed and capacity will increase.

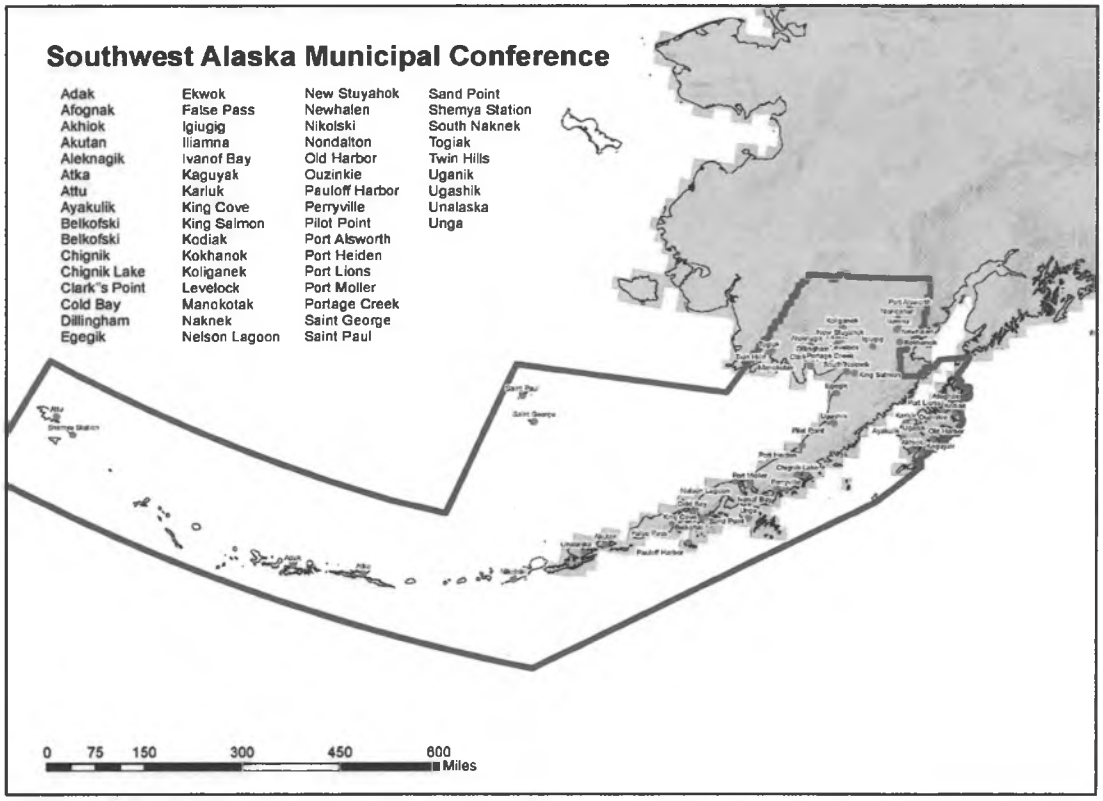
- Military
  The region has a large military presence due to its strategic geographic position, bordering the Arctic, Asia, and the North Pacific. The largest Coast Guard base in the country is on Kodiak Island, tasked with protecting a coverage area that extends to the tip of the Aleutians and up to Barrow on the North Slope, a distance of several thousand miles. There is additional limited presence in many communities in the region, with plans for new large bases to accommodate anticipated Arctic activity. Eareckson Air Force Base on Shemya Island, at the tip of the Aleutian Chain, houses a missile defense system and weather station. The COBRA DANE is an operational, ground based, L-band large phased array radar, which fulfills three concurrent missions: intelligence data collection of strategic missile systems; treaty verification; and early warning to North American Aerospace Defense Command (NORAD). Military contractors Boeing and Raytheon are present on the island. Dedicated T-1 connections likely cost several thousand dollars per month. With the Nation's new geo-political focus on the Asian continent, this will mean maintaining advanced telecommunications networks to meet growing national security needs.

- Airline Industry
  Appendix E (part of correspondence with HughesNet) identifies current airline coverage as they transit the Pacific between Asian and American markets. Technology linking passenger airline traffic to the Internet is now commonplace, although without a reliable link to a satellite, this service will not be purchased. This gap provides a great business opportunity for the thousands of flights linking Asia, America and Europe daily, over the North Pacific and Arctic. In addition to passenger traffic, Anchorage is the nation's second largest airfreight hub.

- Asian Markets
  The largest opportunity to offset costs in the sparsely populated North Pacific and Arctic regions may be the densely populated Asian economies. 1.5 billion people live in this region, which is located not far from Alaska's remote communities. Even if only a small percentage of the Asian population requires satellite service, the absolute customer base is huge.

This document and the empirical data in the Appendices outline potential and overlooked demand for high-speed Internet in the North Pacific and Arctic, independent of the basic infrastructure needs in today's modern, interconnected economy. With the predominant geography being ocean and becoming highly industrialized with mobile vessels, terrestrial fiber backbone networks will not be capable of delivering high-speed Internet to those customers. While a fiber backbone is feasible to deliver networks to the communities of the North Pacific and Arctic, high marginal costs may prevent the establishment of needed upgrades for many years. This case study defends a need and demand for modern communication in the aforementioned regions, with the understanding that some public investment may be required. Much of this investment can be shared by leveraging Public-Private Partnerships with the industrial base in the region.

Appendix A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Clark"s Point
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Pilot Point
Port Alsworth
Port Heiden
Port Lions
Port Moller
Portage Creek
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Saint Paul
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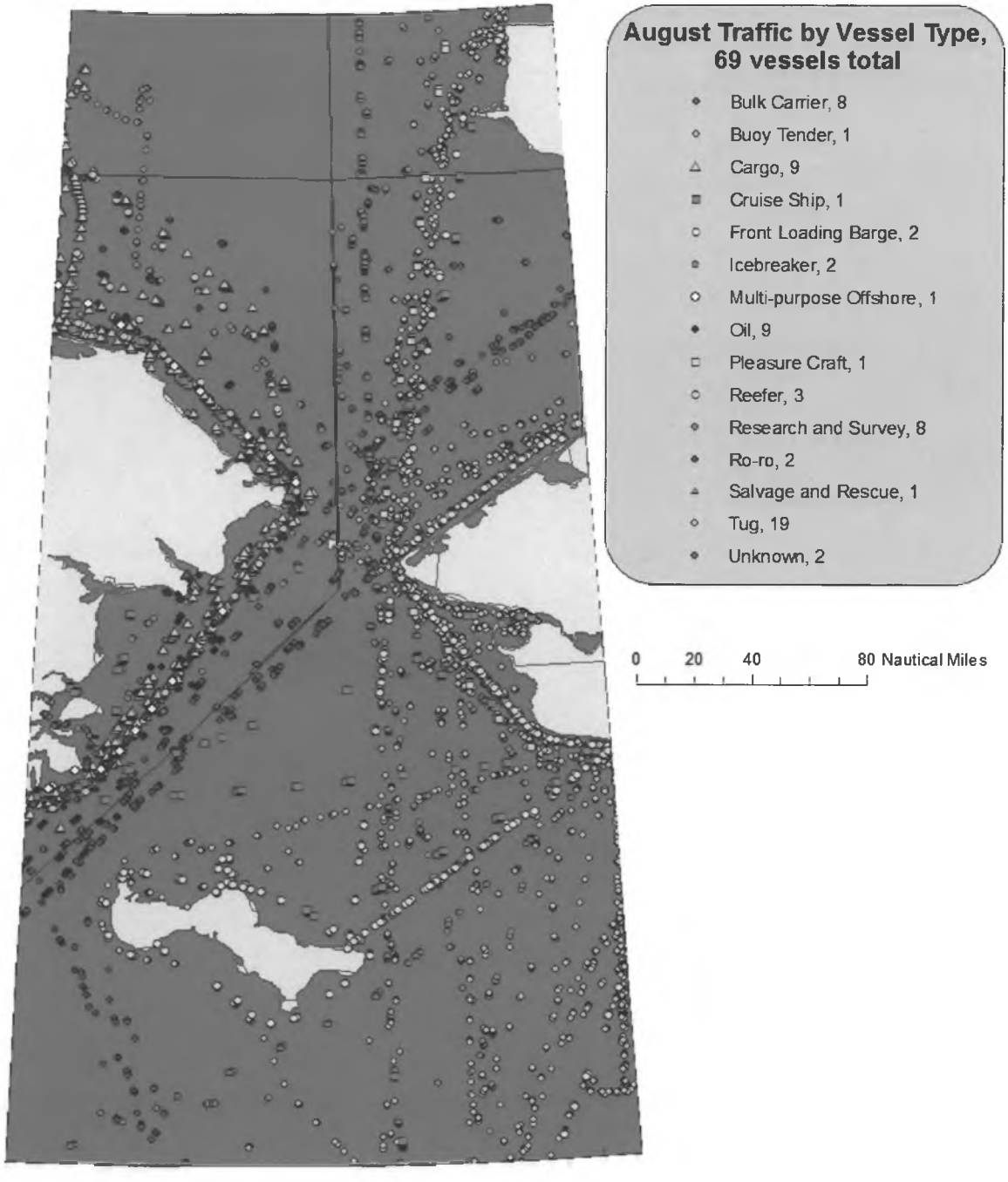
Appendix B

August 2011 AIS Vessel Traffic



Source: US Coast Guard- Juneau Station

Appendix C

Summary traffic information from the previous years' data collection efforts and from calendar year 2011 is shown in the table below. Data provided on the following pages is provided by the Marine Exchange of Alaska.

FISCAL YEAR	WESTBOUND	EASTBOUND
2006*	2923	568
2007*	3581	890
2008*	3274	957
2009*	2886	1088
CALENDAR YEAR		
2011**	3178	1355

*Unimak Pass Only ** Unimak Pass + South Line Traffic

Detailed breakdowns of East and West Traffic by ship type are contained in the following pages.

CALENDAR YEAR 2011 WESTBOUND SHIPS

WESTBOUND SHIPS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
BULK CARRIERS	120	93	150	140	177	169	149	110	86	107	56	152	1509
CONTAINER SHIPS	170	72	119	77	139	111	90	92	69	71	45	142	1197
GENERAL CARGO	11	6	13	5	12	12	8	9	4	8	4	10	102
RORO	2	3	1		1	1	3	1	1	4	1	2	20
TANKERS	6	5	9	7	7	9	5	6	8	5	8	4	79
VEHICLE CARRIERS	14	5	13	5	13	15	15	9	6	7	8	11	121
WOOD CHIP CARRIERS	3	2	1	2	2	2	1	3	1	3		3	23
PASSENGER SHIPS								1	1	1			3
LNG TANKERS			1	1	1	1		1	1		1		7
RESEARCH VESSELS													0
REEFER CARGO			1	1	1		2	2	1		1		9
TOTALS	326	186	308	238	353	320	273	234	178	206	124	324	3070

CALENDAR YEAR 2011 EASTBOUND SHIPS

EASTBOUND SHIPS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
BULK CARRIERS	58	40	39	42	78	67	71	75	50	51	32	44	647
CONTAINER SHIPS	68	32	40	30	47	47	47	48	38	42	31	48	518
GENERAL CARGO	5	2	2	3	5	4	2	6	1	2	1	1	34
RORO	1			1	1		3	2		1		1	10
TANKERS	2	1				1	2	2		2	1		11
VEHICLE CARRIERS	7	6	4	4	10	6	6	10	6	8	2	5	74
WOOD CHIP CARRIERS		1	1					1	1				4
PASSENGER SHIPS					2		1						3
LNG TANKERS		1	1				1	1			1		5
RESEARCH VESSELS								1					1
REEFER CARGO	1	1	1	3			4	2	1	1			14
TOTALS	142	84	88	83	143	125	137	148	97	107	68	99	1321

Appendix D

Southwest Community Vessel Count - 2010		
Community	Home Port	Resident Boats
Kodiak	549	349
Sand Point	169	119
King Cove	89	63
Dutch Harbor	37	19
Bristol Bay	612	154
Seattle	639	267
TOTAL Fishing Vessels		**9,857**

Kodiak Harbor Vessel Report 2010: By Type		
Number	**Type**	**Size Range**
411	Auxiliary	8 – 28 Foot
2	Auxiliary	114 – 165 Foot
72	Tug Barge	22 – 344 Foot
118	Charter	80-173 Foot
1610	Commercial Fishing	8 - 377 Foot
31	Landing Craft	21 - 160 Foot
91	Other	10 - 781 Foot
735	Pleasure	5 - 232 Foot
152	Sail / Yacht	14 - 220 Foot
TOTAL Kodiak Vessel Calls		**3,225**

Kodiak Harbor Vessel Report 2010: By Length	
Number	**Length Category**
9	Greater than 300 Foot
22	Between 200 – 300 Foot
254	Between 100 – 200 Foot
476	Between 58 – 100 Foot
710	Between 38 – 57 Foot
1769	Less than 38 Foot
TOTAL Kodiak Vessel Calls	**3,225**

Appendix E

Provided by HughesNet:

Solutions for Meeting Broadband Connectivity Needs of Western / Arctic Alaska

Requirements:

Providing broadband access (inter/intranet) to the community with the following applications:

1. Fixed/stationary sites covering home, offices, airports, and others where the users are in fixed buildings;
2. Marine, whereby the marine vessels get broadband access;
3. Aeronautical, whereby planes flying within coverage zone have access to broadband.

HUGHES Solutions:

HUGHES, as the world leader in Satellite Communication (SatComm), can work with Southwest Alaska Municipal Conference (SWAMC) to develop and deliver the best set of broadband access solutions connecting its constituents and communities to the Internet. HUGHES has a long history of connecting the unconnected in the underserved areas around the world and as such it can meet SWAMC's requirements both in the short term and the long term. The Western/Arctic region of Alaska is an underserved area as terrestrial carriers have traditionally not made any serious investment in infrastructure due to significant inherits cost.

As a result, SatComm offers the best and the most cost-effective alternative. However, while satellite operators have not focused their asset deployments to cover the Western/Arctic region of Alaska, they can, given the creation of a sufficient market worthy of investments. Meanwhile, HUGHES can offer the following three options:

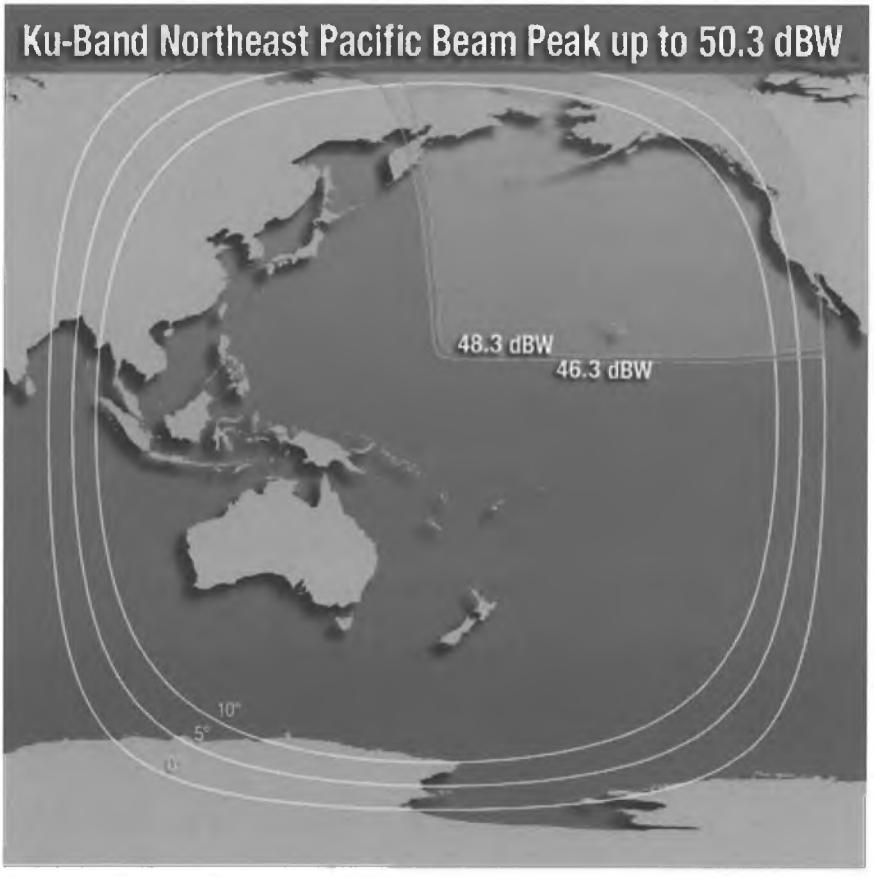
1. **Medium Term**, meaning this solution can be available within the next 12-18 months and requiring some investment by either SWAMC, the State of Alaska, or in-region clients, and
2. **Long Term**, whereby this solution may take a few years to develop and launch and may most certainly require noticeable investment by SWAMC, the State of Alaska, or in-region clients.

Below are highlights of the above options.

1. Medium Term

HUGHES has been a service provider to Row44 since its inception. Row44 provides global broadband Internet access to airlines such as Southwest, Iceland Air, Allegiant Air, Norwegian Airline, and others. HUGHES will be expanding their coverage to include the Pacific Ocean through the use of the IS-19 satellite (166° E), which has perfect coverage covering the Western/Arctic region of Alaska as shown below.

Service on IS-19 will be available in late 2013 and will be supported out of our NOC in Napa Valley, CA. HUGHES can work with SWAMC on developing a unique service offering off of IS-19, though this will require commitment/investment by SWAMC, the State of Alaska, or other clients to acquire dedicated capacity on that satellite to deliver your specific services. IS-19 offers a much better coverage and look angle and therefore it can provide service to fixed, marine, and aeronautical sites.



2. Long Term

This is the scenario where HUGHES can work with SWAMC to develop a satellite payload-specific strategy resulting in SWAMC (or other entities) to have its own payload on an upcoming satellite. The biggest benefit of this approach would be to have the payload/transponder(s) on that satellite to be optimally configured to cover the Western /Arctic region of AK as best as possible and thereby deliver the most optimum coverage. This approach requires long term planning and engagement by the satellite operators, which will require financial commitments by SWAMC, the State of Alaska, and/or private industry. HUGHES has extensive experience in these types of deployments and can help SWAMC with the proper engagement and of course development of the payload, ground equipment (Uplink), and the required satellite terminals to be deployed at the remote fixed, marine, or aeronautical sites.

Senator Mark Begich

Arctic Deep Water Ports Enhancement Act of 2013 Section by Section Summary

Section 1: Title

Section 2: Findings

- Congress finds that with growing development in the Arctic, developing Arctic ports is in the national interest.

Section 3: Definitions

- Defines Arctic Deepwater Ports as ports along the coast from Bethel north, with at least 30 feet of water.
- Defines 'developer' as any private entity, State, municipal, or borough government, Alaska native corp or CDQ group.

Section 4: Arctic Deepwater Port Development Partnerships

- Authorizes the Army Corps to enter into partnerships with port developers to plan, survey, design, construct, maintain or operate Arctic Deepwater Ports, or to provide technical assistance to developers.
- Authorizes the Army Corps to receive federal, non-federal, or private funds for such activities

Section 5: Arctic Port Infrastructure Development Fund

- Creates an Arctic Deepwater Port Infrastructure development fund to do two things:
  1: Receive federal, non-federal, or private funds for Army Corps port development partnerships, and use those funds for such purposes

  2: Creates Federal loan guarantee program, which will:
  - Provide federal guarantee of private debt secured by port developers
  - Limit guarantees to 75% of total capital costs of any single project and to $3 Billion in aggregate for all projects.
  - Authorizes appropriations for loan guarantee

Section 6: Environmental Reviews

- Establishes Army Corps as lead federal agency for EIS process, and directs them to create an EIS with cooperation of all other agencies.
- Requires them to complete EIS within 1.5 years of complete application.

Section 7: Federal Coordinator for Arctic Ports

- Creates a politically appointed Federal Coordinator in the Ass't Sec of the Army for Civil Works office (i.e. where the Army Corps is).
- Authorizes the coordinator to coordinate other agencies activities and advise the Secretary on port partnership agreements and loan guarantees.

- Prohibits other fed agencies from imposing conditions on permits that would hinder port development (unless those conditions specifically required by law).

Section 8: Assistance to Developers of Arctic Ports

- Ensures Arctic Port Developers have access to DOT Transportation Infrastructure Funding source.
- Authorized Coast Guard to enter into long-term leases with Arctic port developers and to convey surplus real estate to developers (i.e. Pt. Clarence LORAN station to BBNC).

Section 9: Deepwater Port Act of 1974 Amendment

- Clarifies that for *offshore* port structures, DOT has authority to license them for uses other than oil and gas (current law is a bit unclear on that).

Section 10: Authorization of Appropriations

- Authorizes $3M to do all of the above (assumedly primarily to run Fed Coordinator office)

Economic Development Trade and Tourism Committee – March 28, 2013

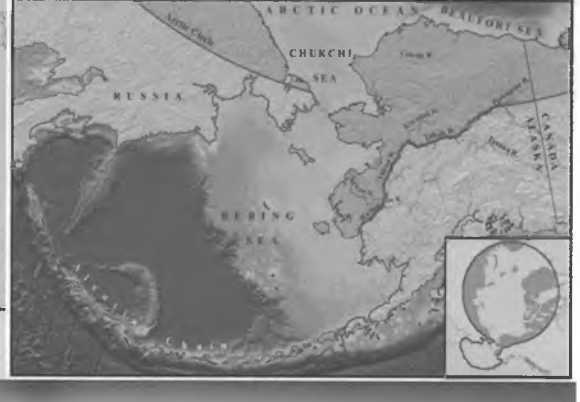
HB 165: Alaska Arctic Port & Development Authority

Alaska State Representative Bob Herron

Arctic Boundary
– as Defined by US Congress

Arctic Boundary as defined by the Arctic Research and Policy Act (ARPA)

All United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering and Chukchi Seas; and the Aleutian chain.[1]



Acknowledgement: Funding for this map was provided by the National Science Foundation through the Arctic Research Mapping Application (armap.org) and Contract #0520837 to CH2M HILL for the Interagency Arctic Research Policy Committee (IARPC).

Map author: Allison Gaylord, Nuna Technologies. May 27, 2009.

1. The Aleutian chain boundary is demarcated by the 'Contiguous zone' limit of 24-nautical miles.

Arctic Port & Development Authority

Overarching Goal:

To develop as effectively and efficiently as possible an Alaska Arctic regional system of ports and related facilities (including a deep water port) for the economic betterment of the region, Alaska as a whole, and the United States.

Arctic Port & Development Authority

Port Authority Could Depoliticize Siting of Arctic Port

- An Alaska Arctic Port and Development Authority with a Board responsible for formulating and implementing a comprehensive plan for development and operation of a regional system of ports and related facilities.
- This will provide a comprehensive approach that will maximize the efficiency of the entire port system in Alaska's Arctic and bring projects on line in an effective manner.
- This is consistent both with the recently completed Alaska Deep Draft Arctic Port Systems Study as well as the recently introduced Federal Bill.

Arctic Port & Development Authority

Legislation:

HB 165 would create the **Alaska Arctic Port & Development Authority (AAPDA)** as a public corporation within DCCED but with its own board and separate and independent legal status.

- Alternatively AAPDA could be created as a subsidiary corporation of AIDEA, to which AIDEA can transfer assets and powers.

Arctic Port & Development Authority

Purpose of the Authority:

- In coordination with the Army Corps of Engineers, USDOT and others, **formulating and implementing a plan for a regional system of ports** (including a deep water port) and related facilities along Alaska's Arctic coast

- Acquiring means of financing for ports and related facilities
- Owning and operating ports and related facilities
- The Authority should allocate resources and services throughout the Alaska Arctic coastal region in a coherent and cost-effective manner

Arctic Port & Development Authority

Boundaries:

Arctic Alaska Coast from the Canadian Border to Attu

Inland Areas

- North of the Brooks Range
- West of Barrow

Arctic Port & Development Authority

Powers of the Authority:

- To acquire an interest in a project in the Alaska Arctic coastal region as necessary or appropriate to provide financing for the project
- To acquire, operate and manage projects in Alaska Arctic coastal region
- To straighten, deepen, and improve any watercourse as necessary and proper in the development of a port or its facilities.
- To assist private lenders to make loans to finance costs of projects
- To accept gifts, grants or loans and to enter into contracts with various entities
- To charge and collect fees

Arctic Port & Development Authority

Membership of the Authority:

Authority Board consists of 9 governor-appointed members, 4 of whom must reside in the Alaska Arctic coastal region.

Arctic Port & Development Authority

Types of Possible Projects:

- Docks, Roads, Railroads, Airports, Pipelines
- Facilities for Natural Resource:
  - Processing
  - Refinement
  - Storage
  - Distribution
- Other Facilities for:
  - Vessels
  - Power Generation
  - Seafood Processing
  - Search & Rescue

Thank You!

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Adak
Akutan
Atka
Attu Station
Bethel
Chignik
Chignik Lagoon
Chignik Lake
Clark's Point
Cold Bay
Eek
Egegik
False Pass
Goodnews Bay
Ivanof Bay
King Cove
Mekoryuk
Nelson Lagoon
Nikolski
Perryville
Pilot Point
Platinum
Port Heiden
Portage Creek
Quinhagak
Sand Point
St. George
St. Paul
Togiak
Twin Hills
Ugashik
Unalaska

SECTIONAL ANALYSIS

HB 165

ALASKA ARCTIC PORT AND DEVELOPMENT AUTHORITY

Section 24.20.201 and **Section 24.20.206** (pages 1-2) Adds the Alaska Arctic Port and Development Authority (AAPDA) to the list of entities (including AHFC, AIDEA and Alaska Aerospace Corp) that Legislative Budget and Audit Committee can audit annually and must at a minimum annually provide an operational and performance evaluation of.

Section 30.09.010 (page 3) **Creation of Authority.** Creates AAPDA as a public corporation within DCCED but with separate and independent legal status.

Section 30.09.020 (page 4) **Membership of Authority.** AAPDA Board consists of 9 governor-appointed members, 4 of whom reside in Alaska Arctic coastal region.

Section 30.09.030 Chair and vice-chair. Members elect chair and vice-chair

Section 30.09.040 Meetings, compensation, officers, and employees.

Section 30.09.050 (page 5) **Alaska Arctic Port and Development Authority revolving fund.** Creates AAPDA revolving fund consisting of appropriations made to the fund by the legislature and money or other assets transferred to the fund by the Authority. Amounts from the fund may be expended for the purposes of the Authority. The Authority may also invest amounts in the fund pursuant to 37.10.071.

Section 30.09.100 Purpose of the Authority. Purpose is to develop a comprehensive plan for a deepwater port development in the Alaska Arctic coastal region and to construct, develop, and improve deepwater ports and related infrastructure in the Alaska Arctic coast region by

- Developing a plan for a regional system of ports and related facilities
- Providing means of financing of ports and related facilities
- Owning and operating ports and related facilities

Section 30.09.120 (page 6) **Powers of the Authority** include:

- To acquire an interest in a project in the Alaska Arctic coastal region as necessary or appropriate to provide financing for the project
- To purchase or insure loans to finance the costs of construction of ports and related infrastructure in the Alaska Arctic coastal region
- To sell property owned by the Authority

- To accept gifts, grants or loans and to enter into contracts with various entities
- To acquire, operate and manage projects in Alaska Arctic coastal region
- To charge and collect fees
- To make cooperative agreements with DOTPF to acquire, equip, operate maintain, construct or install ports and related facilities
- To straighten, deepen, and improve any watercourse as necessary and proper in the development of a port or its facilities.

Section 30.09.130 (page 8) **Regulations.** Authority shall adopt regulations necessary for financing of projects.

Section 30.09.200 Purchase of project and leases. Allows the Authority flexibility in leasing, including leasing for eventual purchase and engaging two or more lessees in a single project.

Section 30.09.210 (page 9) **Finance Plan.** Details what must be included in a finance plan before the Authority approves a project. Authority must give preference to projects that don't require state financial assistance. Authority submits finance plans to the Governor and legislature before incurring debt for a project.

Section 30.09.220 Annual audit. Authority must have its financial records audited annually.

Section 30.09.230 Compliance with Executive Budget Act; authority finances.

Section 30.09.240 (page 10) **Reports and Publications.**

Section 30.09.250 (page 11) **Fees charged by the Authority; prepayments.**
A commitment fee for a loan by the Authority may not exceed 2% of the principal. The Authority may not charge for prepayment of a loan after five years from inception.

Section 30.09.260 Confidentiality of records and information.

Section 30.09.270 (page 12) **Personal liability.** Authority personnel may not be held liable for actions performed in good faith while on duty.

Section 30.09.500 Definitions. 10 definitions. Alaska Arctic coastal region is defined as area of the state north of 51 degrees North latitude and west of 156 degrees West longitude, and the area of the state east of 156 West Latitude and north of the Brooks Range. This includes Barrow, the west coast of Alaska and the islands off the west coast, and the Aleutians, including most of the southern coast of the Aleutians.

Section 36.90.300 (c)(4) (page 13) Adds AAPDA to the list of agencies defined as a "public agency" in statute.
Section 39.25.110(11) (page 14) Adds officers and employees of AAPDA to the list of employees exempt from the State Personnel Act.

Section 39.50.200(b) For abbreviation purposes, adds AAPDA to the list of agencies that "state commission or board" could refer to in statute.