

# Bering Strait Comprehensive Economic Development Strategy 2013 – 2018



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## **I. Introduction**

The Bering Strait Comprehensive Economic Development Strategy (CEDS) is the result of a continuous planning process at the local and regional level in the Bering Strait region of Northwestern Alaska. The ultimate goal of this process is to provide for sustainable and responsible development that benefits the people of the Bering Strait Region and improves the quality of life through economic opportunity. The current CEDS builds on the work of previous strategy committees and provides strategic direction for organizations and stakeholders in the region for the next five years.

Since the previous CEDS was published the Census Bureau published results from the 2010 Census and a more robust data set relating to energy production and consumption has been developed. While new data is allowing the strategy committee to make more informed decisions, funding from state and federal sources is slowly dwindling. Projects have become more difficult to finance as the competition for funding has increased. At the same, the cost of energy in rural Alaska has continued to rise, presenting barriers to business viability. The current CEDS seeks to address these issues.

### **Acknowledgements**

The current document was developed with generous assistance from the Economic Development Administration and the Alaska Department of Commerce, Community, and Economic Development ARDOR program.

**Comprehensive Economic Development Strategy Committee**

The Bering Strait Development Council (BSDC) serves as the region’s Comprehensive Economic Development Strategy Committee. As stated in the BSDC bylaws, “the purpose of the Bering Strait Development Council is to serve the people, communities, and businesses of the Bering Strait Region of Alaska by Promoting economic opportunities that improve the economic, social, and environmental quality of life. The Council is composed to represent the diverse social, economic, environmental, and political interests of the region.”

The BSDC board, as of June 2013, was composed of the following individuals:

<b>Seat</b>	<b>Sector Represented</b>	<b>Organization Name</b>	<b>Member Name</b>
<b>Seat A</b>	Transportation	<i>Up for nomination</i>	<i>Up for nomination</i>
<b>Seat B</b>	Fisheries	Norton Sound Economic Development Corporation	Sterling Gologergen
<b>Seat C</b>	Mining	Independent Consultant	John Odden
<b>Seat D</b>	Banking	Wells Fargo	Scott Johnson
<b>Seat E</b>	Tourism	Nome Chamber of Commerce	<i>Up for nomination</i>
<b>Seat F</b>	Health	Norton Sound Health Corporation	Kevin Zweifel
<b>Seat G</b>	Housing	Bering Strait Regional Housing Authority	Frank Johnson
<b>Seat H</b>	City of Nome	City of Nome	Josie Bahnke
<b>Seat I</b>	Kawerak Board of Directors	Elim IRA	Robert Keith
<b>Seat J</b>	Northern Sub-Region	Wales IRA	Robert Tokeinna
<b>Seat K</b>	South Central Sub-Region	Golovin IRA	Irene Aukongak
<b>Seat L</b>	Southeast Sub-Region	Unalakleet IRA	Janice Dickens
<b>Seat M</b>	St. Lawrence Island	Savoonga IRA	Larry Kava
<b>Seat N</b>	Nome Sub-Region	Solomon IRA	Kirstin Timbers
<b>Seat O</b>	Workforce Development	Alaska Job Center	Victoria Erickson
<b>Seat P</b>	Bering Strait Native Corp.	BSNC	Kevin Bahnke
<b>Seat Q</b>	Higher Education	UAF-NW Campus	<i>Up for nomination</i>

### **Comprehensive Economic Development Strategy Process**

Community Involvement—the Bering Strait CEDS is derived from a continuous planning process that occurs at the community scale with the Bering Strait Region and guided by the CEDS strategy committee described above. Throughout this process, a neutral facilitator from outside the community convenes a series of meetings in which the community reviews their recent accomplishments, re-evaluates their goals and objectives and prioritizes projects that will assist in accomplishing their goals. The general public, as well as members of IRA/Traditional and city councils, corporate boards, and members of various organizations in town are encouraged to attend. Following the planning sessions, the facilitator compiles background research and community input into a draft plan. The draft is submitted to each of the three primary governing entities (City, IRA/Traditional Council, and Corporation) for review. Suggestions and edits are incorporated before the plan is available for public review and comment.

Private Sector Involvement—the private sector in the Bering Strait is represented through the public review process. Business owners and managers are encouraged to share their perspective on economic development needs and opportunities within the region. The private sector is represented on the BSDC board, which guides the CEDS process. Additionally, the program director of Community Planning and Development (support staff to BSDC) attends Nome Chamber of Commerce meetings and coordinates with the Chamber of Commerce Executive Director.

BSDC reviews the region's local plans when formulating the CEDS. All analysis at the regional scale is informed by information collected at the community scale. The current CEDS was formulated over the fall, winter and spring of 2012 – 2013 and was available for public review and comment between June 21, 2013 and July 21, 2013.

### **Regional Geography**

The Bering Strait Region is found in northwestern Alaska, between the latitudes of 63.5 degrees and 66.5 degrees north. The region encompasses an area of 23,000 square miles and is made up of the Seward Peninsula, St. Lawrence Island, King Island, Little Diomedede Island, and the coastal lands on the eastern and southeastern shores of Norton Sound. The region contains 570 miles of coastline along the Bering Sea, Norton Sound, and the Chukchi Sea. The region contains 16 communities, ranging in population from 100 to 3600. The region extends north to Shishmaref, east to Koyuk, south to St. Michael, and west to Gambell. The City of Nome serves as the hub community.

The landscape of the region is varied, ranging from marshy tundra plains, dotted with lakes to gentle rolling hills between 0 and 2,000 feet, to craggy mountains with steep ridges surpassing 4,000 feet in elevation. The region has no glaciers and becomes ice free for a short period each year in late summer, yet is underlain with permafrost. The region is drained by several rivers and myriad smaller creeks and streams.

The Bering Strait has a transitional climate, shifting from a maritime influence when the seas are ice-free to a continental influence over the winter and early spring months. Summer temperatures range from 30 to 50 degrees Fahrenheit. Average winter temperature is around zero, but can range from a high of 30 to low of -50 degrees Fahrenheit. Snowfall ranges between 33 and 80 inches. Accumulation depends on the prevalence of wind-caused drifting. Wind speed average 10 – 15 knots year round.



## **Land Ownership**

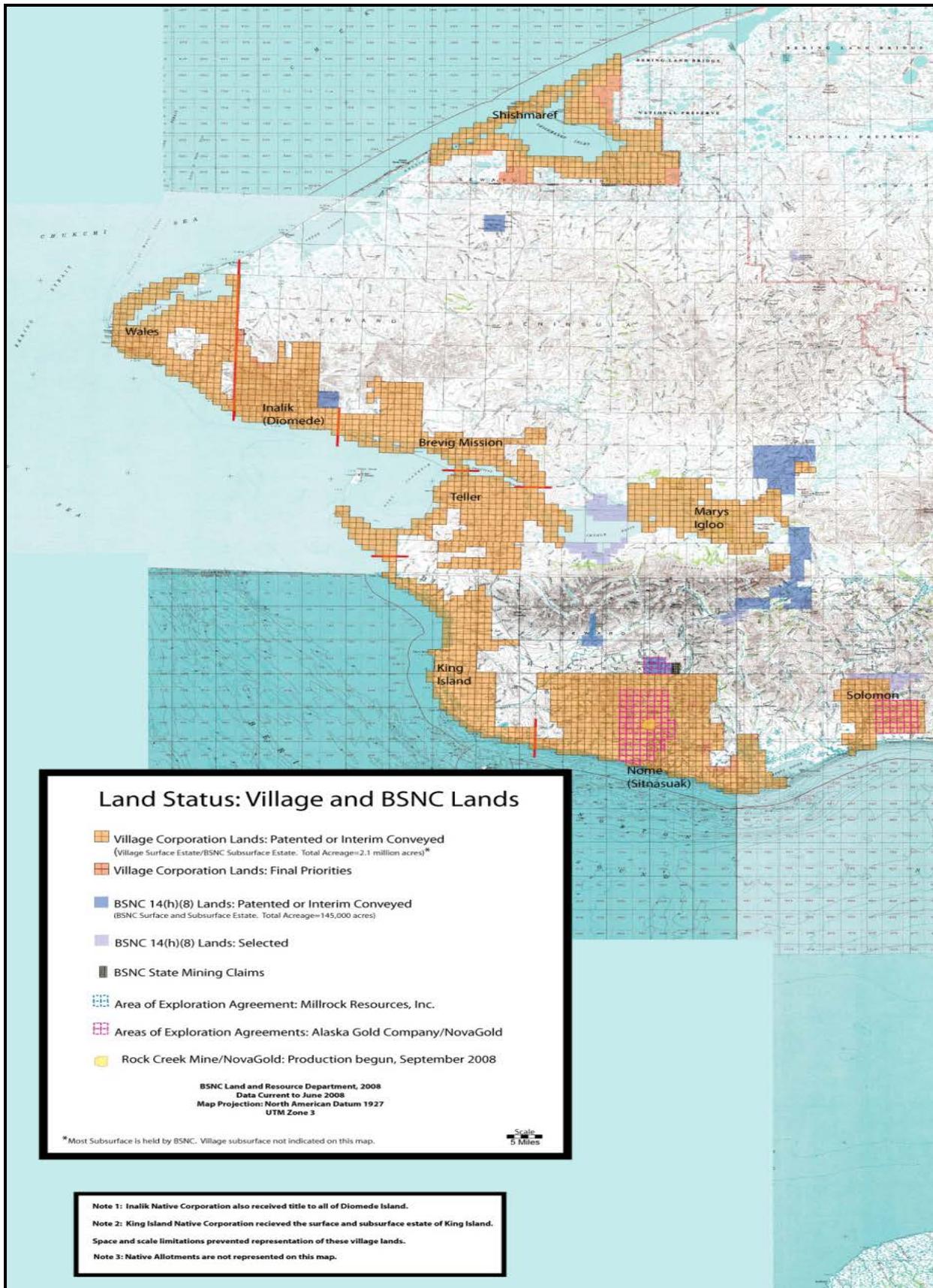
Land in the Bering Strait region is primarily owned by the federal government, the State of Alaska, Native Corporations, and private individuals.

The federal government manages some land in the region, including the Bering Land Bridge National Preserve. The Bureau of Land Management (BLM) manages federally-owned land. There is a local BLM office in Nome.

The State of Alaska is the second largest landholder in the region.

The Bering Straits Native Corporation (BSNC) is the primary private landowner in the region, with combined surface and subsurface rights equaling about two million acres. BSNC holdings include land on or near prospects in the region which include Bluff, Mount Distin, Rock Creek, Lost River, Potato Mountain, and the Council mining district.

Each village corporation from the region holds title to the surface estate of lands surrounding the village. The total number of acreage owned by each Village Corporation was determined by population size at the time the Alaska Native Claims Settlement Act passed in December of 1971, with the exception of Elim, Gambell and Savoonga. Elim Native Corporation owns the surface and sub-surface rights to 330,000 acres, while Gambell and Savoonga collectively own the entirety of St. Lawrence Island.



### **Local Governing Bodies**

All 16 communities in the Bering Strait region are located in the unorganized borough and are each governed by three entities. Each community has a municipal government, organized as a second class city, with the exception of Nome, which is a first class city. The municipal governments provide for basic services to community residents.

Each community also has at least one Indian Reorganization Act (IRA) Council or Traditional Council which acts as the federally recognized tribal government. IRAs and Traditional Councils are similar in nature; however, IRA constitutions follow stricter guidelines than do Traditional Council Constitutions.

While not necessarily a governing entity, each village also has a Native Corporation (and sometimes two or more depending on the number of tribes living in the village). In 1971, the Alaska Native Claims Settlement Act (ANCSA) passed, creating regional corporations as well as village corporations in each region as a vehicle to transfer land and money to the tribes as provided for in the act. The Village Native Corporations typically serve in a business capacity in each community, owning land surrounding the community, the local store, and fuel businesses. Regional Native Corporations are a significant part of the Alaskan economy. The 12 regional corporations are in the top 30 largest Alaskan owned companies in the state, ranked by gross revenues. The Bering Strait Native Corporation (BSNC) ranks 17 in the state.

## **II. Community Profiles**

The section discusses the unique geographies and histories of each community in the Bering Strait region. The profiles are based on the Alaska Department of Commerce, Community, and Economic Development community information web pages.

### **Brevig Mission**

#### **Location, Climate, Brief History**

Brevig Mission is located at the mouth of Shelman Creek on Port Clarence, 5 miles northwest of Teller and 65 miles northwest of Nome. The area encompasses 2.6 sq. miles of land and 0.1 sq. miles of water. Brevig Mission has a maritime climate with continental influences when the Bering Sea freezes. Port Clarence is generally ice-free between early June and mid-November.

The Kauwerak Eskimos in this area lived in migratory communities in pursuit of hunting and fishing grounds, and traded furs with Siberia, Little Diomedea and King Island. They formed alliances with Wales, Little Diomedea and others for protection. The "Teller Reindeer Station" opened near this site in 1892. The station remained in operation by the U.S. government until 1900. A Lutheran Mission was constructed at the present site in 1900, and the village became known as "Teller Mission." The mission was given 100 reindeer on a five-year loan from the Government. By 1906, the Government's role had diminished, and the mission became dominant. In 1963, the Brevig Mission post office was established. The City was incorporated in 1969. Reindeer were the economic base of this community until 1974, but the industry has since declined.

The people of Brevig Mission are predominantly Inupiat Eskimo and subsist upon fish, moose, reindeer, seal, walrus and beluga whales. The primary employers are the city and school district. Year-round jobs are scarce, unemployment is high, and seasonal jobs in mining and construction are becoming limited due to a depressed minerals market. Arts and crafts provide some cash income.

#### **Water and Sewer**

Brevig Mission's water supply comes from Shelmon Creek. It is treated and stored in a 100,000 gallon tank at the washeteria and is filled monthly. Completed in 2007, the piped sewer and water system serves most homes. Customers pay approximately \$100.00 per month. According to the Indian Health Service Sanitation Tracking and Reporting System (STARS), Brevig Mission's water storage capacity and waste water treatment capacity will not meet the community's needs given the population growth. The existing community drain field projected life is estimated to expire in 2018, 15 years past its first use in 2003. Brevig Mission's sanitation master plan (October 2010) recommends the construction of an additional 100,000 gallon storage tank, as well as the construction of an additional community drain field and replacing the lift station pump with a grinder type pump.

#### **Roads**

Kawerak Transportation Program (KTP) completed road upgrade for safety and added new road for future growth in 2009.

**Energy**

<b>Brevig Mission</b>			<b>Latitude</b>	<b>Longitude</b>	<b>Last Weatherized</b>
Population: 350			65.334720	-166.4892	2001
<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
21.50	52.29	5.24	4.88	99,222	\$484,203
<b>Community Electricity Data</b>					
<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>	
141	288	1,198,281	1,087,375	-10%	
<b>Plant Sq ft</b>					
<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>	
2,640	1025	June, 2010	1,198,281	Wind Study	0%
<b>Cost of Electricity Generation</b>					
<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>	
86,554	\$267,080	13.84	\$275,796	\$542,876	
<b>Energy Sales</b>					
<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>	
<b>Residential</b>	96	376,255	\$80,895	\$843	\$374,784
<b>Community</b>	13	249,818	\$53,711	\$4,132	
<b>School</b>	1	238,720	\$102,989	\$102,989	
<b>Commercial</b>	4	222,582	\$116,388	\$29,097	
<b>Brevig Mission</b>					
<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>	
200	Fair	14226	Detroit	Series 60	
325	Fair	5366	Detroit	Series 60	
500	Excellent	1275	Cat	3456	
Greater than 25% Load Imbalance					
Heat recovery to living quarters & plant - no additional heat available					
Designed with sufficient capacity to power Teller + Brevig via intertie					
Eight 11' x 30' modules, three generators, one control room, one lubricant storage, one living quarters, connected by enclosed center corridor. Eight 100 kVA pad mounted transformers. Located too far from community for heat recovery to be viable.					

<b>Brevig Mission</b>		<b>Water &amp; Sewer Details</b>			
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
100	180	4416	Circ	Gravity	\$138,672
<b>kWh</b>	<b>Cost</b>	<b>Gallons</b>	<b>Cost</b>	<b>Energy \$ Total</b>	<b>% of Revenue</b>
110,897	\$57,999	4,518	\$43,282	\$101,281	73%
<b>Residential Customers</b>	<b>Monthly Residential \$</b>	<b>Commercial Customers</b>	<b>Monthly Commercial \$</b>	<b>Monthly School \$</b>	<b>Total Monthly Revenue</b>
66	\$6,600	3	\$540	\$4,416	\$11,556.00
<b>Brevig Mission</b>		<b>Bulk Fuel Storage Details</b>			
<b>Year Installed</b>	<b>AVEC Gallons</b>	<b>Diesel Fuel</b>		<b>Gasoline</b>	
		<b>School</b>	<b>Native Corp</b>	<b>Native Corp</b>	
2008	112,400	101,000	111,800	26,800	
<b>Location</b>		<b>Gallons Capacity</b>	<b>Tank Quantity</b>	<b>Fuel Type</b>	
<b>Close to airport</b>		112,400	13 Vertical	Diesel	
<b>Next to school maintenance shop</b>		101,000	14 Vertical	Diesel	
<b>Next to Native Store</b>		111,800	9	Diesel / Gasoline	
<b>Ferris Native Store</b>		26,800	4 Horizontal	Gasoline	
<b>Next to Armory</b>		3,000		Diesel	

### Priority Projects

- |   |                                |
|---|--------------------------------|
| 1. Bigger Headstart                         | 6. Elder Care/Day Care Center  |
| 2. Housing/Apartments                       | 7. Youth & Elder Get-Togethers |
| 3. Water & Sewer Upgrade/Landfill           | 8. Bigger School               |
| 4. Teen Center/Cafe                         | 9. Shelter Cabins              |
| 5. Tannery/Build & Operational by Community | 10. Roads                      |

### Community Contacts

**City of Brevig Mission**  
 PO Box 100  
 Brevig Mission, AK 99785  
 Phone: 907-642-3038  
 Fax: 907-642-2060

**Brevig Mission Native Corporation**  
 PO Box 85024  
 Brevig Mission, AK 99785  
 Phone: 907-642-4091

**Brevig Mission Traditional Council**  
 PO Box 85039  
 Brevig Mission, AK 99785  
 Phone: 907-642-4301

## **Council**

### **Location, Climate, Brief History**

Council is located at the terminus of the Nome/Council road, 72 miles northeast of Nome. It lies on the left bank of the Niukluk River. The area encompasses 21.8 sq. miles of land and 0.3 sq. miles of water. Council has a continental climate with maritime influences when Norton Sound is ice-free. Its inland location gives greater daily variation in temperatures than nearby coastal communities.

Historically, this was a fish camp for the Fish River Tribe, who originally lived 12 miles downriver. Gold was first discovered here in 1897. During the summers of 1897-99, the population of "Council City" was estimated at 15,000. The discovery of more gold at Nome in 1900 caused many of the boomers to leave, however, the population during 1910 was still fairly large at 686 residents. The depletion of gold, the flu epidemic of 1918, the depression, and World War II all contributed to the decline of the population. By 1950, only nine people remained. There was postal service until 1978. Today, the community is not occupied year-round. Council is a seasonal fish camp. A number of Nome residents have homes in Council, used for summer subsistence food-gathering activities and recreation.

### **Water and Sewer**

Households haul their own water from locations outside Council. A well exists at the townsite, however it will need to be restored for public use. Most households use septic systems or outhouses. A few homes have indoor plumbing.

### **Energy**

There is no power distribution system located in Council. Local residents use either generators or other sources of energy. Remnants of an old electrical system exist, but will need investment before supplying power to the community. Residents haul their own heating fuel from Nome and store it in private tanks.

### **Priority Projects**

- |   |   |
|---|---|
| 1. Land Planning  | 7. Road improvements                            |
| 2. Environmental Protection                               | 8. Fire safety and training/creating firebreaks |
| 3. Education, business training, and economic development | 9. Community cooperation                        |
| 4. Energy programs  | 10. Cemetery renovations                        |
| 5. Elders, youth, and cultural activities                 | 11. Equipment storage building                  |
| 6. Dumpsite improvements                                  |   |

### **Community Contacts**

#### **Council Native Corporation**

PO Box 1183  
Nome, AK 99762  
Phone: 907-443-6513

#### **Council Traditional Council**

PO Box 2050  
Nome, AK 99762  
Phone: 907-443-7649

## **Diomede**

### **Location, Climate, Brief History**

Little Diomede is located on the west coast of Little Diomede Island in the Bering Strait, 135 miles northwest of Nome. It is only 2.5 miles from Big Diomede Island, Russia, and the international boundary lies between the two islands. The area encompasses 2.8 sq. miles of land and 0.0 sq. miles of water. The Bering Strait is generally frozen between mid-December and mid-June.

Early Inupiat Eskimos on the islands were fearless men of the ice and sea, with an advanced culture practicing elaborate whale hunting ceremonies. They traded with both continents. The 1880 Census counted 40 people, all Ingalikmiut Eskimos, in the village of "Inalet." When the Iron Curtain was formed, Big Diomede became a Soviet military base and all Native residents were moved to mainland Russia. During World War II, Little Diomede residents who strayed into soviet waters were taken captive. The City was incorporated in 1970. Residents continue to debate whether to relocate the village, due to the rocky slopes and harsh storms, lack of useable land for housing construction, and inability to construct a water/sewer system, landfill or airport.

Little Diomede is a traditional Ingalikmiut Eskimo village. Seal, polar bear, crab and whale meat are the preferred foods. Mainland Natives come to Diomede to hunt polar bears. Seal and walrus hides are used to make individual clothing items, parkas, hats, mukluks, and furs and skins for trade. Little Diomede villagers depend almost entirely upon a subsistence economy for their livelihood. Employment is limited to the City and school. Seasonal mining, construction and commercial fishing positions have been on the decline. The Diomede people are excellent ivory carvers; the City serves as a wholesale agent for the ivory. Villagers travel to Wales by boat for supplies. Mail is delivered once per week by helicopter in the summer, and small plane in the winter, which land on a runway made of ice.

### **Water and Sewer**

The City of Diomede and Diomede Joint Utilities are responsible for the management of a seasonal washeteria serviced by a septic system and seepage pit, water treatment plant and 434,000-gallon steel water storage tank/watering point. The water tank is fed by water drawn from a mountain spring that is then filtered and chlorinated at the water treatment plant prior to being stored in the tank. Community residents use a watering point to self-haul water during the winter months. There is a distribution system that allows residents to access hydrants throughout the community rather than going to the centralized watering point. The tank capacity is usually insufficient in the spring each year and residents are forced to melt snow and ice for drinking water. All homes use honey buckets, the waste of which is dumped on the beach in the summer and on pack ice in the winter. The local clinic is connected to the washeteria septic system. The current plant does not meet drinking water regulations. Proposed improvements will upgrade the water treatment plant and complete the construction of a new water storage tank next to the school.

**Energy**

<b>Diomede</b>			<b>Latitude</b>	<b>Longitude</b>	<b>Last Weatherized</b>
128			65.758611	-168.953056	2003-04
<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
14.12	60.00	8.63	8.65	53,267	\$460,760
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	49	109	495,744	446,857	-11%
<b>Plant Sqft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
1,600	480	Jun-09	495,744		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	50,857	\$234,594	9.75	\$123,740	\$358,334
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	49	140,749	\$19,874	\$406	\$339,080
<b>Community</b>	5	41,438	\$5,851	\$1,170	
<b>School</b>	2	163,321	\$105,041	\$52,521	
<b>Commercial</b>	3	101,349	\$60,809	\$20,270	
<b>Diomede</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>			<b>Model</b>
<b>Power Plant Details</b>	100				
	180				
	180				
	Recovered heat to water treatment plant, washateria, clinic & elementary school				
	Total capacity 480 kW - auto load sensing switchgear, used oil blending, Installed in existing structure close to water plant and school.				

Diomedé		Water & Sewer Details			
Residential	Commercial	School	Water Type	Sewer Type	Total Revenue
No water & sewer service to residences in Diomedé					
Diomedé		Bulk Fuel Storage Details			
	Diesel Fuel		Gasoline		Total Installed
Year Installed	Diomedé Power	School	Diomedé City	Diomedé City	Capacity
September 2005			160,900	7,900	168,800
Ownership and location of tanks not clear in Denali Closeout Report. Overall capacity accurate for all users in Diomedé					

### Priority Projects

- |   |                               |
|---|-------------------------------|
| 1. Transportation Improvements                        | 4. Public Safety              |
| 2. Water and Sewer                                    | 5. Elder Care Programs        |
| 3. New Housing and Improvement of Existing Structures | 6. Local Disaster Plan        |
|   | 7. Revive Tradition & Culture |

### Community Contacts

**City of Diomedé**  
 PO Box 7037  
 Diomedé, AK 99762  
 Phone: 907-686-3071  
 Fax: 907-686-2192

**Inalik/Diomedé Native Corporation**  
 PO Box 7040  
 Diomedé, AK 99762  
 Phone: 907-686-3221  
 Fax: 907-686-3222

**Native Village of Diomedé**  
 PO Box 7079  
 Diomedé, AK 99762  
 Phone: 907-686-2175  
 Fax: 907-686-2203

## Elim

### Location, Climate, Brief History

Elim is located on the northwest shore of Norton Bay on the Seward Peninsula, 96 miles east of Nome. It lies 460 miles northwest of Anchorage. The area encompasses 2.4 sq. miles of land and 0.0 sq. miles of water. Elim has a sub-arctic climate with maritime influences. Norton Sound is ice-free generally between mid-June and mid-November.

This settlement was formerly the Unaligmiut Inupiat Eskimo village of Nuviakchak. The Native culture was well developed and well adapted to the environment. Each tribe possessed a well-defined subsistence harvest territory. The area became a federal reindeer reserve in 1911. In 1914 a mission and school were established. The City was incorporated in 1970. When the Alaska Native Claims Settlement Act (ANCSA) was passed in 1971, Elim decided not to participate, and instead opted for title to the 298,000 acres of land in the former Elim Reserve. The Iditarod Sled Dog Race passes through Elim each year.

Elim is an Inupiat Eskimo village. The economy is based on subsistence harvests. Cash employment is limited to fishing, the city and school. Unemployment, like many villages in the region, is high. Thirty-nine residents hold commercial fishing permits. The village wants to develop a fish processing plant. Residents rely on fish, seal, walrus, beluga whale, reindeer, moose and home gardens.

### Water and Sewer

Water comes from a well and is treated. Systems, built by PHS in 1974, provide residents with piped water and sewer, indoor water heaters, and in-home washers and dryers. Water and sewer service costs residents \$70 per month. Wastes flow to a sewage treatment plant with ocean outfall.

A new water source is needed. Residents must conserve water and shortages occur. Cracked PVC pipes need replacement and other repairs are needed. Storms have flooded septic tanks causing them to overflow. Leaked sewage creates a public health hazard.

### Energy

Elim			Latitude	Longitude	Last Weatherized
297			64.6175	-162.26056	1999
PCE/kWh	Non-PCE	Gas \$/Gal	Diesel \$/gal	Annual Diesel Gallons	Annual Diesel Cost
21.60	54.29	5.99	5.47	100,266	\$548,455
Community Electricity Data	Average Load	Peak Load	kWh Generated	kWh Sold	System Loss
	227	236	1,145,419	1,037,276	-10%

Plant Sq ft	Capacity kWh	Upgraded	Annual kWh from Diesel	Annual kWh from Alternatives	Alternative % of Total
		Jun-03	1,145,419		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	84,273	\$272,084	13.59	\$263,089	\$535,173
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	100	384,226	\$82,993	\$830	\$437,600
<b>Community</b>	13	163,169	\$35,245	\$2,711	
<b>School</b>	1	128,627	\$75,292	\$75,292	
<b>Commercial</b>	18	361,254	\$196,125	\$10,896	
<b>Elim</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>			<b>Model</b>
<b>Power Plant Details</b>	200	Fair	38822	Detroit	Series 60
	350	Fair	38849	Detroit	Series 60
	500	Fair	4945	Detroit-MTU	SV2000
	Heat recovery Plant/Living Quarters/Storage Operational - no additional capacity				
Six structures total: 3 each generators, 1 control room, 2 living quarters					
<b>Elim</b>		<b>Water &amp; Sewer Details</b>			
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
75	75	3450	Circ	Gravity	\$105,300
<b>kWh</b>	<b>Cost</b>	<b>Gallons</b>	<b>Cost</b>	<b>Energy \$ Total</b>	<b>% of Revenue</b>
52,960	\$28,757	4,568	\$20,558	\$49,315	47%
<b>Residential Customers</b>	<b>Monthly Residential \$</b>	<b>Commercial Customers</b>	<b>Monthly Commercial \$</b>	<b>Monthly School \$</b>	<b>Total Monthly Revenue</b>
71	\$5,325		-	\$3,450	\$8,775.00

Elim		Bulk Fuel Storage Details			
Diesel Fuel			Gasoline	Total Installed	
Year Installed	AVEC Gallons	School	City	Native Corp	Capacity
2002	135,000	57,410	87,000	12,000	291,410
Location		Gallons Capacity	Tank Condition	Fuel Type	School did not participate in bulk storage upgrade in 2002. AVEC and City partnered on project
AVEC		135,000	New 2002	Diesel	
Elim City		87,000	New 2002	Diesel	
Elim City		12,000	New 2002	Gasoline	
School		57,410	Inspected 1996	Diesel	

### Priority Projects

- |   |                                      |
|---|--------------------------------------|
| 1. New Water Source                     | 7. Economic Development -            |
| 2. Develop Rock Quarry.                 | Mineral, Geothermal, Hydrothermal    |
| 3. Water & Sewer to 4 New Homes         | 8. Teen Center                       |
| 4. Community Building (Old High School) | 9. NSEDC Community Energy Fund (CEF) |
| 5. Utilize our timber.                  | 10. Replace Old Bridge.              |
| 6. Build Small Boat Harbor.             |                                      |

### Community Contacts

**City of Elim**  
 PO Box 39009  
 Elim, AK 99739  
 Phone: 907-890-3441  
 Fax: 907-890-3811

**Elim Native Corporation**  
 PO Box 39010  
 Elim, AK 99739  
 Phone: 907-890-3741  
 Fax: 907-890-3091

**Native Village of Elim**  
 PO Box 39070  
 Elim, AK 99739  
 Phone: 907-890-3737  
 Fax: 907-890-3738

## **Gambell**

### **Location, Climate, Brief History**

Gambell is located on the northwest cape of St. Lawrence Island, 200 miles southwest of Nome, in the Bering Sea. The City is 36 miles from the Chukotka Peninsula, Siberia. The area encompasses 10.9 sq. miles of land and 19.5 sq. miles of water. Gambell has a maritime climate with continental influences in the winter. The Bering Sea freezes during mid-November, with break-up at the end of May.

In the 18th and 19th centuries, over 4,000 people inhabited the island in 35 villages. Sivuuq is the St. Lawrence Island Yupik name for the village and for the Island. The City was renamed for Mr. and Mrs. Vene C. Gambell. A tragic disease decimated the population between 1878 and 1880. In 1900, reindeer were introduced to the island for local use, and in 1903, President Roosevelt established a reindeer reservation. During the 1930s, some residents moved to Savoonga to establish a permanent settlement there. The City was incorporated in 1963. When the Alaska Native Claims Settlement Act (ANCSA) was passed in 1971, Gambell and Savoonga decided not to participate, and instead opted for title to the 1.136 million acres of land in the former St. Lawrence Island Reserve. Savoonga and Gambell jointly own the island.

The isolation of Gambell has helped to maintain their traditional Siberian Yupik Eskimo culture, and their language. Residents are almost completely bilingual. Walrus-hide boats are still used to hunt. The economy in Gambell is largely based upon subsistence harvests from the sea: seal, walrus, fish, and bowhead and gray whales. Some reindeer roam free on the island, but most harvesting occurs out of Savoonga. Ivory carving is a popular source of income. The abundant number of seabird colonies provides an opportunity for limited tourism by bird-watchers.

### **Water and Sewer**

Monthly water and sewer service has a fee of \$97 per month. Public washer and dryer facilities cost \$2-4.50 per load. Public showers cost \$1 for every 10 minutes.

40% of the village still needs piped water and sewer service. 5% of those with service are cut off due to non-payment or poor plumbing due to burst pipes. There are no more community-wide water shortage issues due to new water tank. The community has suffered many sewer problems and freeze ups. Maintenance costs have caused the user rates to go up drastically. Many people in town self-haul water from various places near the village. Residents self-haul their own honey-buckets.

### **Road Improvements**

Kawerak constructed over three miles of new roads with the community for safer mobility in 2010. In 2012, the State of Alaska constructed an evacuation road for safety. These roads also open up birding opportunities!

**Energy**

<b>Gambell</b>			<b>Latitude</b>	<b>Longitude</b>	<b>Last Weatherized</b>
673			63.77972	-171.74111	1995-96
<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
21.43	50.79	7.81	7.22	181,733	\$1,312,112
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	228	365	1,883,105	1,830,692	-3%
<b>Plant Sqft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
2,640	1526	Q1 - 2008	1,736,438	146,667	8%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	128,963	\$394,278	14.60	\$464,327	\$858,605
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	178	598,424	\$128,242	\$720	\$1,028,128
<b>Community</b>	13	261,098	\$55,953	\$4,304	
<b>School</b>	1	289,067	\$120,730	\$120,730	
<b>Commercial</b>	1	682,103	\$346,440	\$346,440	
<b>Gambell</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>			<b>Model</b>
	<b>Power Plant Details</b>				
	Modular plant - 8 modules - 3 contain generators, 1 control room, 3 storage, 1 living				
	Total 1,526 installed name-plate capacity.				
<b>Gambell</b>			<b>Water &amp; Sewer Details</b>		
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
117	215	7367	Circ	Gravity	\$250,356

kWh	Cost	Gallons	Cost	Energy \$ Total	% of Revenue
169,392	\$86,051	5,858	\$32,570	\$118,621	47%
Residential Customers	Monthly Residential \$	Commercial Customers	Monthly Commercial \$	Monthly School \$	Total Monthly Revenue
108	\$12,636	4	\$860	\$7,367	\$20,863.00
Gambell		Bulk Fuel Storage Details			
Diesel Fuel				Gasoline	Total Storage Capacity
Year Installed	AVEC Gallons	School	Gambell IRA	IRA	
2006	240,900	44,600	332,400	55,300	673,200
Location		Gallons Capacity	Tank Condition	Fuel Type	Bulk fuel storage in Gambell was either newly constructed or brought up to code in 2006
School		44,600	New 2006	Diesel	
AVEC		240,900	New 2006	Diesel	
Gambell IRA		332,400	1998	Diesel	
Gambell City		55,300	1998	Gasoline	

### Priority Projects

- |                               |                                 |
|-------------------------------|---------------------------------|
| 1. Housing & Renewable Energy | 7. Education                    |
| 2. Public Safety              | 8. Economy                      |
| 3. Health Care                | 9. Processing Plant             |
| 4. Transportation             | 10. Cultural Center             |
| 5. Waste Management           | 11. Storage & Workshop Facility |
| 6. Multi-purpose Building     |                                 |

### Community Contacts

**City of Gambell**  
 PO Box 189  
 Gambell, AK 99742  
 Phone: 907-985-5112  
 Fax: 907-985-5927

**Sivuqaq, Inc.**  
 PO Box 101  
 Gambell, AK 99742  
 Phone: 907-985-5826  
 Fax: 907-985-5426

**Native Village of Gambell**  
 PO Box 90  
 Gambell, AK 99742  
 Phone: 907-985-5535  
 Or 907-985-5346  
 Fax: 907-985-5014

## Golovin

### Location, Climate, Brief History

Golovin is located on a point of land between Golovnin Bay and Golovnin Lagoon on the Seward Peninsula. It is 70 miles east of Nome. The area encompasses 3.7 sq. miles of land and 0.0 sq. miles of water. Marine climatic influences prevail during the summer when the sea is ice-free. Golovin Bay is frozen from early November to mid-May.

Kauweramiut Eskimos originally settled the Eskimo village of "Chinik", which later became Golovin. The Kauweramiut eventually mixed with the Unaligmiut Eskimos. Golovin was named for Captain Vasili Golovnin of the Russian Navy. In 1887, a church and school was established. Around 1890, a trading post became the center for prospecting information for the entire Seward Peninsula. When gold was discovered in 1898 at Council, Golovin became a supply point for the gold fields. Supplies were shipped from Golovin to Council. A post office was opened in 1899. Reindeer herding was an integral part of the missions in the area in the 1900s. The City was incorporated in 1971.

Golovin is an Inupiat Eskimo village. Their economy is based on subsistence activities, reindeer herding, fish processing and commercial fishing. Fourteen residents hold commercial fishing permits. The salmon fishery and reindeer herding offer some potential for cash income to augment subsistence food harvests. Fish, beluga whale, seal, moose and reindeer are the main sources of meat.

### Water and Sewer

The City is beginning development of a community-wide piped water and sewer system. Water is pumped from Chinik Creek, treated, and stored in three large tanks. Approximately 50% of homes have plumbing. 28 homes currently have water delivered by truck. 27 haul their own water. 13 collect rain water during the summer. 10 homes with septic tanks have experienced drain-field failures. 25 households use honey-buckets and 21 homes use pit privies. A new 1.2 million gallon water tank and washeteria have been funded. A new water source is needed. A few residents haul water and ice from a nearby creek.

Monthly water and sewer service costs \$161 per month. Washing clothes costs \$12 per load. Showers cost \$4. Drinking water costs \$0.15 per gallon delivered by truck.

### Energy

Golovin			Latitude	Longitude	Last Weatherized
160			64.544008	-163.02829	1999
PCE/kWh	Non-PCE	Gas \$/Gal	Diesel \$/gal	Annual Diesel Gallons	Annual Diesel Cost
26.71	57.00	5.00	5.00	57,444	\$287,220

<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	64	141	678,300	560,747	-21%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
	580		678,300		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	60,042	\$189,591	11.30	\$134,228	\$323,819
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	55	184,481	\$49,275	\$896	\$220,000
<b>Community</b>	8	43,953	\$11,740	\$1,467	
<b>School</b>	1	183,040	\$114,120	\$114,120	
<b>Commercial</b>	1	149,273	\$85,086	\$85,086	
<b>Golovin</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	115	Fair	9356	Deere	6068TF250
	115	Fair	9885	Deere	6068TF250
	150	Fair	38856	Deere	6081AFM75
	200	Fair	14910	Deere	6081T
	Heat recovery to water plant / safety building - no added capacity available				
Powerhouse threatened by seasonal flooding - needs to move to higher ground					
<b>Golovin</b>		<b>Water &amp; Sewer Details</b>			
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
150	200	6293	Circ	Gravity	\$160,116
<b>kWh</b>	<b>Cost</b>	<b>Gallons</b>	<b>Cost</b>	<b>Energy \$ Total</b>	<b>% of Revenue</b>
35,621	\$20,304	16,314	\$77,144	\$97,448	61%
<b>Residential Customers</b>	<b>Monthly Residential \$</b>	<b>Commercial Customers</b>	<b>Monthly Commercial \$</b>	<b>Monthly School \$</b>	<b>Total Monthly Revenue</b>
43	\$6,450	3	\$600	\$6,293	\$13,343.00

Golovin		Bulk Fuel Storage Details			
Year Installed	City / Utility	School		Golovin City	Capacity
2003	123,500	51,400		28,700	203,600
Location		Gallons Capacity		Fuel Type	Golovin City owns & operates the power plant and is the retail fuel vendor in the community.
Next to Plant		12,000	Pipe links to City Bulk Storage		
Golovin City		123,500	New 2003	Diesel	
Golovin City		28,700	New 2003	Gasoline	
Golovin School		51,400	New 2003	Diesel	

### Priority Projects

1. Water & sewer/year-round water source
2. Relocation of generator building/alternative energy.
3. Rock quarry/heavy equipment
4. Erosion control
5. Roads, including to subsistence areas
6. New store building
7. Small boat harbor
8. Own zip code/new post office
9. Recreational building/daycare
10. Crosswind runway

### Community Contacts

**City of Golovin**  
 PO Box 62059  
 Golovin, AK 99762  
 Phone: 907-779-3211  
 Fax: 907-779-2239

**Golovin Native Corporation**  
 PO Box 62099  
 Golovin, AK 99762  
 Phone: 907-779-3251  
 Fax: 907-779-3261

**Chinik Eskimo Community**  
 PO Box 62020  
 Golovin, AK 99762  
 Phone: 907-779-2214  
 Fax: 907-779-2829

## Koyuk

### Location, Climate, Brief History

Koyuk is located at the mouth of the Koyuk River, at the northeastern end of Norton Bay on the Seward Peninsula, 90 air miles northeast of Nome. The area encompasses 4.7 sq. miles of land and 0.0 sq. miles of water. Koyuk has a sub-arctic climate with a maritime influence.

The site of "Eyeteeth" on Cape Denbigh to the south has traces of early man that are 6,000 to 8,000 years old. The villagers were historically nomadic. Around 1900, the present town site began to be populated, where supplies could easily be lightered to shore. Two boomtowns grew up in the Koyuk region around 1914: Dime Landing and Haycock. The "Norton Bay Station," 40 miles upriver, was established to supply miners and residents in 1915. In addition to gold, coal was mined a mile upriver to supply steam ships and for export to Nome. The first school began in the church in 1915; the U.S. government built a school in Koyuk in 1928. The City was incorporated in 1970.

Koyuk is a traditional Unalit and Malemute Eskimo village that speaks a dialect of Inupiat Eskimo. The Koyuk economy is based on subsistence, supplemented by limited part-time jobs. Unemployment is high. There is a small amount of commercial fishing, primarily for herring, and some income is derived from reindeer herding. Thirteen residents hold commercial fishing permits. The main sources of meat are fish, reindeer, seal, beluga whale and moose.

### Water and Sewer

A piped water and sewer system was recently completed for the west side of town, serving 51 households. A washeteria and central watering point also exist. The east loop system is under construction. The school has requested funding to connect to the new sewer system, since its septic effluent is posing a health hazard. Less than 10 homes still need water and sewer service. Soft ground in some areas still causes problems with pipes and freeze ups. Funds have been requested to construct a new water plant and small washeteria.

Monthly water and sewer service costs \$71 per month. Laundry costs \$4 per load. Showers cost \$1.50 for every 15 minutes.

### Energy

Koyuk			Latitude	Longitude	Last Weatherized
333			64.93194	-161.15694	2000
PCE/kWh	Non-PCE	Gas \$/Gal	Diesel \$/gal	Annual Diesel Gallons	Annual Diesel Cost
21.57	53.66	5.93	6.31	98,178	\$619,503
Community Electricity Data	Average Load	Peak Load	kWh Generated	kWh Sold	System Loss
	297	147	1,324,557	1,262,464	-5%

<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
2,640	1098	Feb-04	1,324,557		0%
<b>Cost of Electricity Generation</b>					
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	94,802	\$305,537	13.97	\$320,205	\$625,742
<b>Energy Sales</b>					
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	95	394,019	\$84,990	\$895	\$479,560
<b>Community</b>	12	198,193	\$42,750	\$3,563	
<b>School</b>	1	236,251	\$107,659	\$107,659	
<b>Commercial</b>	10	434,001	\$232,885	\$23,288	
<b>Koyuk Power Plant Details</b>					
<b>Koyuk</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	325	Fair	24549	Detroit	Series 60
	325	Fair	27593	Detroit	Series 60
	500	Excellent	5940	Cummins	QSX15-09
	Ten to 25% load imbalance				
3,100 feet of new 12,470 VAC 3 phase distribution line and 5 power poles in Feb 2004					
<b>Koyuk</b>		<b>Water &amp; Sewer Details</b>			
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
70	150	3700	Circ	Gravity	\$122,263
<b>kWh Cost Gallons Cost Energy \$ Total % of Revenue</b>					
79,081	\$42,466	\$16,000	\$82,400	\$124,866	102%
<b>Residential Customers Monthly Residential \$ Commercial Customers Monthly Commercial \$ Monthly School \$ Total Monthly Revenue</b>					
76	\$5,320	8	\$1,200	\$3,700	\$10,220.00

Koyuk		Bulk Fuel Storage Details			
Year Installed	AVEC Gallons	School	Native Corp	Native Corp	Capacity
	135,000	93,000	120,000	93,000	441,000
Location	Gallons Capacity	Tank Condition	Fuel Type	Note: Tank and electrical infrastructure size / condition verified during site visit 2013	
All tanks located next to AVEC	135,000	Excellent	Diesel		
Separate section of main tank farm	93,000	Excellent	Diesel		
Separate section of main tank farm	120,000	Excellent	Diesel		
Gasoline for retail next to AVEC	93,000	Excellent	Gasoline		
Tanks connected by pipeline to water plant and school. Fuel transferred by metered pump. Pump at tank farm for retail sales operated remotely from Native Corp office.					

### Priority Projects

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| 1) Housing                           | 6) Roads                         |
| 2) Sanitation Facilities Improvement | 7) Search and Rescue             |
| 3) Ambulance for the Clinic          | 8) Tribal Court                  |
| 4) Build a New Head Start School.    | 9) Law Enforcement (VPSO)        |
| 5) Youth/Cultural Center             | 10) Developing Natural Resources |

### Community Contacts

**City of Koyuk**  
 PO Box 53029  
 Koyuk, AK 99753  
 Phone: 907-963-3441  
 Fax: 907-963-3442

**Koyuk Native Corporation**  
 PO Box 53050  
 Koyuk, AK 99753  
 Phone: 907-963-2424  
 Fax: 907-963-3552

**Native Village of Koyuk**  
 PO Box 30  
 Koyuk, AK 99753  
 Phone: 907-963-3651  
 Fax: 907-963-2353

## Nome

### **Location, Climate, Brief History**

Nome was built along the Bering Sea, on the south coast of the Seward Peninsula, facing Norton Sound. It lies 539 air miles northwest of Anchorage, a 75-minute flight. It lies 102 miles south of the Arctic Circle, and 161 miles east of Russia. The area encompasses 12.5 sq. miles of land and 9.1 sq. miles of water.

Malemiut, Kauweramiut and Unalikmiut Eskimos have occupied the Seward Peninsula historically, with a well-developed culture adapted to the environment. Around 1870 to 1880, the caribou declined on the Peninsula and the Eskimos changed their diets. Gold discoveries in the Nome area had been reported as far back as 1865. But it was a \$1500-to-the-pan gold strike on tiny Anvil Creek in 1898 by three Scandinavians that brought thousands of miners to the "Eldorado." Almost overnight an isolated stretch of tundra fronting the beach was transformed into a tent-and-log cabin city of 20,000 prospectors, gamblers, claim jumpers, saloonkeepers, and prostitutes. The gold-bearing creeks had been almost completely staked, when some entrepreneur discovered the "golden sands of Nome." With nothing more than shovels, buckets, rockers and wheelbarrows, thousands of idle miners descended upon the beaches. Two months later the golden sands had yielded one million dollars in gold (at \$16 an ounce). A narrow-gauge railroad and telephone line from Nome to Anvil Creek was built in 1900. The City of Nome was formed in 1901. By 1902 the more easily reached claims were exhausted and large mining companies with better equipment took over the mining operations. Since the first strike on tiny Anvil Creek, Nome's gold fields have yielded \$136 million. The gradual depletion of gold, a major influenza epidemic in 1918, the depression, and finally World War II, each influenced Nome's population. A disastrous fire in 1934 destroyed most of the City.

The population of Nome is a mixture of mostly Inupiat Eskimos and non-Natives. Although many employment opportunities are available, subsistence activities are prevalent in the community. Residents of King Island relocated to Nome in the 1960's. Nome is the finish line for the 1,100-mile Iditarod Sled Dog Race from Anchorage, held each March. Nome is the supply, service and transportation center of the Bering Strait region. Government services provide the majority of employment. 60 residents hold commercial fishing permits. Retail services, transportation, mining, medical and other businesses provide year-round income. Several small gold mines continue to provide some employment.

### **Water and Sewer**

Water source is the Moonlight Springs aquifer which is classified as a ground water source. Water to the community is provided by three artesian wells located north of the Nome-Beltz High School at the base of Anvil Mountain. These wells are capable of adequately supplying Nome's year-round water needs. The infiltration gallery previously used is no longer connected to our distribution system. It could be reactivated in the event of an emergency and is available to provide an additional source of fire fighting water to the facilities in the vicinity of the high school.

**Roads**

Nome Eskimo Community (NEC) has improved streets in Nome to lessen dust and improve mobility.

**Energy**

Nome			Latitude	Longitude	Last Weatherized
3570			64.50111	-165.40639	
<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
18.67	35.66	6.15	6.29	1,768,241	\$11,122,236
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	4,200	5787	22,850,508	22,442,093	-2%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
			22,486,291	364,217	1.59%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	1,511,109	\$4,799,154	15.12	\$4,194,131	\$8,993,285
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	1690	3,717,712	\$694,097	\$411	\$8,504,080
<b>Community</b>	79	1,238,395	\$231,208	\$2,927	
<b>School</b>	3				
<b>Commercial</b>		17,485,986	\$6,235,503		
<b>Nome</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	5211	Fair	18356	Warsilla	12V32
	5211	Fair	24868	Warsilla	12V32
	3660	Fair	130545	Cat	3616
	1875	Fair	16157	Cat	3516B
	400	Fair	247	Cat	3456
Heat recovery to multiple buildings near plant - no additional heat available					

## Priority Projects

(Nome Eskimo Community)

1. Address high housing energy/fuel costs.
2. Research and/or collaborate to develop alternative energy resources.
3. Help with renewable energy for office buildings and homes.
4. Provide housing opportunities to all members.
5. Research and/or collaborate to provide a homeless shelter.
6. Research and/or collaborate to provide an inpatient substance abuse treatment center.
7. Acquire a new tribal office building/hall/tribal court.
8. Research feasibility to provide internship opportunities.
9. Expand ANCSA curriculum at NPS. Include the difference between tribes, villages, and regional corporations.
10. Develop the 2 Eskimo Boys Project

(King Island Native Community)

1. Extend the meeting hall in the new community building.
2. Increase housing in Nome by 20 new homes for the tribal members.
3. Increase educational opportunities and incentives for King Island students.
4. Obtain a boat for tribal access to King Island.
5. Maintain road and obtain a van to access to Cape Woolley.
6. Build a drug and alcohol rehabilitation center and/or homeless shelter.
7. Increase cultural activities.
8. Relocate Cape Woolley camp sites that are in danger of erosion.
9. Build new homes at King Island.

## Community Contacts

### **City of Nome**

PO Box 281  
102 Division Street  
Nome, Alaska 99762  
Phone: 907-443-6663  
Fax: 907-443-5349

### **King Island Native Community**

PO Box 682  
Nome, Alaska 99762  
Phone: 907-443-2209  
Fax: 907-443-8049  
Website: [www.KINC.org](http://www.KINC.org)

### **Nome Eskimo Community**

PO Box 1090  
Nome, AK 99762  
Phone: 907-443-2246  
Fax: 907-443-3539

### **Sitnasuak Native Corporation**

PO Box 905  
Nome, AK 99762  
Phone: 907-443-387-1200  
Fax: 907-443-0496  
Website: [www.snc.org](http://www.snc.org)

### **King Island Native Corporation**

PO Box 992  
Phone: 907-443-5494  
Fax: 907-443-5400

## Savoonga

### Location, Climate, Brief History

Savoonga is located on the northern coast of St. Lawrence Island in the Bering Sea, 164 miles west of Nome. The area encompasses 6.1 sq. miles of land and 0.0 sq. miles of water. Savoonga has a sub-arctic maritime climate with some continental influences during the winter. Freeze-up on the Bering Sea occurs in mid-November, with break-up in late May.

The island had numerous villages with a total population of around 4,000 by the 19th century. A tragic famine occurred on the island in 1878-80, severely reducing the population. In 1900 a herd of reindeer was moved to the island and by 1917, the herd had grown to over 10,000 animals. A reindeer camp was established in 1916 at the present village site, where grazing lands were better, and the herd tended to remain. Good hunting and trapping in the area attracted more residents. A post office was established in 1934. The City was incorporated in 1969. When the Alaska Native Claims Settlement Act (ANCSA) was passed in 1971, Gambell and Savoonga decided not to participate, and instead opted for title to the 1.136 million acres of land in the former St. Lawrence Island Reserve. The villages of Savoonga and Gambell jointly own the island.

It is a traditional St. Lawrence Island Yupik Eskimo village. Savoonga is hailed as the "Walrus Capital of the World." Whale, seal, walrus and reindeer comprise 80% of the local diet. Due to the island's isolation, most residents are bilingual. Siberian Yupik is still the first language. Residents have successfully mixed the past with the present. The economy of Savoonga is largely based upon subsistence hunting of walrus, seal, fish and bowhead and gray whale, with some cash income. Eight residents hold commercial fishing permits, and Norton Sound Seafood Products operates in Savoonga. Reindeer harvests occur, but the herd is not managed. locals are known for their quality ivory carvings. Some birding tourism activities occur in Savoonga.

### Water and Sewer

Utilities are operated by Savoonga Joint Utilities, a non-profit arm of the City, and run by a Utility Board. Well water is treated and stored in a 100,000-gallon tank at the washeteria. A new circulating water and sewer utilidor system, including household plumbing, came on-line in January 1999. 45 residents are served; the remaining 32 homes currently haul water and honey-buckets. In 2004, the washeteria was closed, as revenues were unable to cover operating expenditures. 20 new HUD housing units on the west side are plumbed, but need to be connected to the system. The clinic and school have independent wells and septic systems.

Most residents have service. They must conserve water at certain times of year. Water and sewer service costs \$150 per month. Some residents haul water from a local spring.

### Energy

Savoonga	Latitude	Longitude	Last Weatherized
722	63.69417	-170.47889	1992

<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
21.04	43.15	7.32	6.77	174,422	\$1,180,837
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	248	407	2,184,840	2,106,345	-4%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
2,640	1673	May-10	1,915,418	269,422	12%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	129,926	\$431,498	16.82	\$534,242	\$965,740
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	170	671,230	\$141,227	\$831	\$920,720
<b>Community</b>	16	287,089	\$60,404	\$3,775	
<b>School</b>	1	315,320	\$124,193	\$124,193	
<b>Commercial</b>	1	832,706	\$359,313	\$359,313	
<b>Savoonga</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	363	Fair	15178	Detroit	Series 60
	500	Fair	16718	Detroit	QSX15-G9
	600	Excellent	5613	Cummins	QSK23-G1
	Heat recovery to living quarters and storage - no additional heat available				
Partial outages due to transformer corrosion					
No Denali Close-Out report found in database.					
<b>Savoonga</b>		<b>Water &amp; Sewer Details</b>			
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
85	260	5300	Circ	Vac	\$211,860
<b>kWh</b>	<b>Cost</b>	<b>Gallons</b>	<b>Cost</b>	<b>Energy \$ Total</b>	<b>% of Revenue</b>
163,987	\$70,842	7,637	\$49,641	\$120,483	57%

Residential Customers	Monthly Residential \$	Commercial Customers	Monthly Commercial \$	Monthly School \$	Total Monthly Revenue
127	\$10,795	6	\$1,560	\$5,300	\$17,655.00
<b>Savoonga</b>		<b>Bulk Fuel Storage Details</b>			
		<b>Diesel Fuel</b>		<b>Gasoline</b>	<b>Total</b>
<b>Year Installed</b>	<b>AVEC Gallons</b>	<b>School</b>	<b>Native Corp</b>	<b>Native Corp</b>	<b>Capacity</b>
Most 2008	216,000	81,000	306,000	Unknown Part	751,501
<b>Location</b>		<b>Gallons Capacity</b>	<b>Tank Condition</b>	<b>Fuel Type</b>	Storage tanks, power plant, wind energy systems all modern and operational
<b>School</b>		81,000	New 2008	Diesel	
<b>AVEC</b>		216,000	New 2008		
<b>Savoonga IRA / NC</b>		306,000	1 New 2008		
<b>City Water Plant</b>		148,501	1 New 2008		

### Priority Projects

- |                                      |                             |
|--------------------------------------|-----------------------------|
| 1. Clinic / 4-Plex Building          | 7. Breakwater/Barge Mooring |
| 2. Safe & Reliable Water and Sewer   | 8. Meat Processing Plant    |
| 3. Economic Job Training for any age | 9. Airport relocation       |
| 4. Housing                           | 10. Museum/Tourism          |
| 5. Youth/Elder Community Center      | 11. Recycling Center        |
| 6. By-pass Storage Facility          |                             |

### Community Contacts

**City of Savoonga**  
 PO Box 40  
 Savoonga, AK 99769  
 Phone: 907-984-6614  
 Fax: 907-984-6301

**Savoonga Native Corporation**  
 PO Box 160  
 Savoonga, AK 99769  
 Phone: 907-984-6184  
 Fax: 907-984-6184

**Native Village of Savoonga**  
 PO Box 120  
 Savoonga, AK 99769  
 Phone: 907-984-6414  
 Or 907-984-6027  
 Fax: 907-984-6301

## Shaktoolik

### Location, Climate, Brief History

Shaktoolik is located on the east shore of Norton Sound. The area encompasses 1.1 sq. miles of land and 0.0 sq. miles of water. Shaktoolik has a sub-arctic climate with maritime influences when Norton Sound is ice-free.

Shaktoolik was the first and southernmost Malemiut settlement on Norton Sound, occupied as early as 1839. Twelve miles northeast, on Cape Denbigh, is "Iyatayet," a site that is 6,000 to 8,000 years old. Reindeer herds were managed in the Shaktoolik area around 1905. The village was originally located six miles up the Shaktoolik River, and moved to the mouth of the River in 1933. This site was prone to severe storms and winds, however, and the village relocated to its present, more sheltered location in 1967. The City was incorporated in 1969. It is a Malemiut Eskimo village. The Shaktoolik economy is based on subsistence, supplemented by part-time wage earnings. Thirty-three residents hold commercial fishing permits. Development of a new fish processing facility is a village priority. Reindeer herding also provides income and meat. Fish, crab, moose, beluga whale, caribou, seal, rabbit, geese, cranes, ducks, ptarmigan, berries, greens and roots are also primary food sources.

### Water and Sewer

Most residents have water and sewer service and pay \$60 per month. Laundry costs \$5-7 per load. Showers are available for \$2. Some residents haul water directly from the river.

Water is pumped three miles from the Togoomenik River to the pumphouse, where it is treated and stored in an 848,000 gallon insulated tank adjacent to the washeteria. The location of the dump is a concern because it could harm the water source. A piped water and sewage collection system serves most homes. 75% of homes have complete plumbing and kitchen facilities. The school is connected to City water and has received funding to develop a sewage treatment system to serve the entire community.

### Energy

Shaktoolik			Latitude	Longitude	Last Weatherized
223			64.33389	-161.15389	2012-13
PCE/kWh	Non-PCE	Gas \$/Gal	Diesel \$/gal	Annual Diesel Gallons	Annual Diesel Cost
21.60	54.19	6.35	5.82	69,933	\$407,010
Community Electricity Data	Average Load	Peak Load	kWh Generated	kWh Sold	System Loss
	117	307	836,251	755,722	-11%

<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
		May-10	836,251		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	61,668	\$201,550	13.56	\$191,677	\$393,227
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	64	270,272	\$58,379	\$912	\$297,984
<b>Community</b>	6	89,325	\$19,294	\$3,216	
<b>School</b>	1	65,377	\$55,452	\$55,452	
<b>Commercial</b>	1	330,748	\$179,232	\$179,232	
<b>Shaktoolik</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	260	Fair	7039	Detroit	Series 60
	470	Fair	7717	Detroit	Series 60
	268	Fair	54402	Cummins	LTA-10
	Heat recovery to plant / living quarters. Additional heat available for thaw-protection for waterline from pump house. Greater than 25% load imbalance				
<b>Shaktoolik</b>		<b>Water &amp; Sewer Details</b>			
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
60	70	70	Circ	Gravity	\$49,560
<b>kWh</b>	<b>Cost</b>	<b>Gallons</b>	<b>Cost</b>	<b>Energy \$ Total</b>	<b>% of Revenue</b>
40,092	\$21,730	4,494	\$25,256	\$46,986	95%
<b>Residential Customers</b>	<b>Monthly Residential \$</b>	<b>Commercial Customers</b>	<b>Monthly Commercial \$</b>	<b>Monthly School \$</b>	<b>Total Monthly Revenue</b>
56	\$3,360	10	\$700	\$70	\$4,130.00

Shaktoolik		Bulk Fuel Storage Details			
		Diesel Fuel		Gasoline	Total Storage
Year Inspected	AVEC Gallons	School	Native Corp	Unknown Share	Capacity
1998	79,720	64,200	196,200		340,120
					See: Pre Conceptual Design Report by NANA Pacific for AVEC May 2007
Location		Gallons Capacity	Tank Condition	Fuel Type	
AVEC		79,270	Old	Diesel	
School		64,200	Old	Diesel	
Shaktoolik NC		196,200	Old	Diesel / Gasoline	
Shaktoolik threatened by global warming - tank farm upgrades on hold					

### Priority Projects

1. Emergency Road
2. Bulk Fuel Storage Facility/Power Plant
3. New Water Storage Tank
4. Multi-purpose Facility
5. Heavy Equipment Garage
6. Dust Control & Snow Fencing
7. New Clinic
8. Shaktoolik Boat Harbor
9. Fish Processing Plant/Buying Station
10. Early Childhood Education (ECE)

### Community Contacts

**City of Shaktoolik**  
 PO Box 10  
 Shaktoolik, AK 99771  
 Phone: 955-3441  
 Fax: 907-955-3221

**Shaktoolik Native Corporation**  
 PO Box 46  
 Shaktoolik, AK 99771  
 Phone: 907-955-3241  
 Fax: 907-955-3243

**Native Village of Shaktoolik**  
 PO Box 100  
 Shaktoolik, AK 99771  
 Phone: 907-955-3701  
 Fax: 907-955-2352

## **Shishmaref**

### **Location, Climate, Brief History**

Shishmaref is located on Sarichef Island, in the Chukchi Sea, just north of the Bering Strait. Shishmaref is five miles from the mainland, 126 miles north of Nome and 100 miles southwest of Kotzebue. The village is surrounded by the 2.6 million-acre Bering Land Bridge National Reserve. It is part of the Beringian National Heritage Park, endorsed by Presidents Bush and Gorbachev in 1990. The area encompasses 2.8 sq. miles of land and 4.5 sq. miles of water. The area experiences a transitional climate between the frozen arctic and the continental Interior. The Chukchi Sea is frozen from mid-November through mid-June.

The original Eskimo name for the island is "Kigiktaq." In 1816, Lt. Otto Von Kotzebue named the inlet "Shishmarev," after a member of his crew. Excavations at "Keekiktuk" by archaeologists around 1821 provided evidence of Eskimo habitation from several centuries ago. Shishmaref has an excellent harbor, and around 1900 it became a supply center for gold mining activities to the south. The village was named after the Inlet and a post office was established in 1901. The City government was incorporated in 1969.

Shishmaref is a traditional Inupiat Eskimo village. The economy is based on subsistence supplemented by part-time wage earnings. Two residents hold a commercial fishing permit. Year-round jobs are limited. Residents rely on fish, walrus, seal, polar bear, rabbit, and other subsistence foods. Two reindeer herds are managed from here. Reindeer skins are tanned locally, and meat is available at the village store. The Friendship Center, a cultural center and carving facility, is in the process of being remodeled for local artisans.

During October 1997, a severe storm eroded over 30 feet of the north shore, requiring 14 homes and the National Guard Armory to be relocated. Five additional homes were relocated in 2002. Other storms have continued to erode the shoreline, an average of 3 to 5 feet per year on the north shoreline. In July 2002, residents voted to relocate the community.

### **Water and Sewer**

Water is derived from a surface source and is treated and stored in a new tank. Residents must conserve water at certain times of year. Only the school, clinic, washeteria, and teacher housing have service. Most residents haul water. There are City honey-bucket bins available around town. Shishmaref is undergoing major improvements, with the construction of a flush/haul system and household plumbing. 19 HUD homes have been completed and 71 homes remain to be served. The new system provides water delivery. Honey-buckets and the new flush tanks are hauled by the City. The school, clinic, Friendship Center, City Hall and fire hall are connected to a sewage lagoon.

Laundry costs \$7-10 per load. Showers are available for \$3.50. Drinking water costs \$1.00 for 15 gallons. The honey-bucket haul fee is \$40 per month.

### **Seawalls**

The USACE, Kawerak, and the State have invested in a gabion seawall where erosion is prevalent.

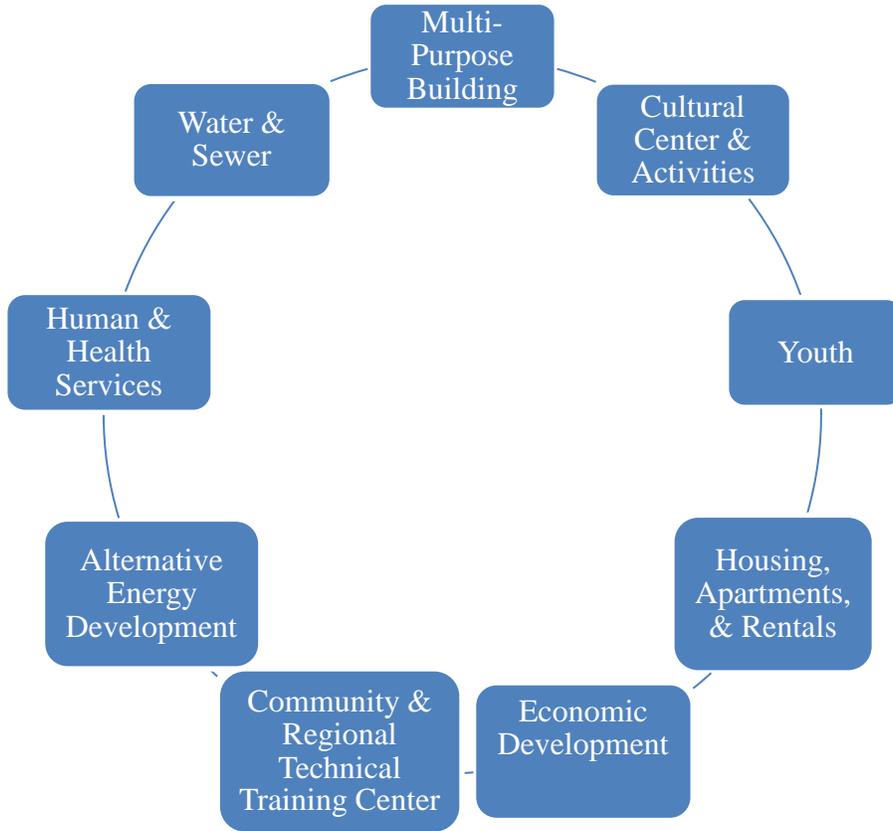
**Energy**

<b>Shishmaref</b>			<b>Latitude</b>	<b>Longitude</b>	<b>Last Weatherized</b>
587			66.25667	-166.07194	1997
<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
21.60	56.29	7.13	6.58	155,622	\$1,023,993
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	187	524	1,646,878	1,619,873	-2%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
			1,646,878		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	122,635	\$451,331	13.43	\$410,856	\$862,187
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	149	583,185	\$125,968	\$845	\$784,336
<b>Community</b>	10	162,498	\$35,100	\$3,510	
<b>School</b>	1	240,572	\$118,388	\$118,388	
<b>Commercial</b>	1	633,618	\$356,664	\$356,664	
<b>Shishmaref</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	376	Fair	Unk	Detroit	Series 60
	300	Poor	8383	Cat	D353E
	400	Poor	11593	Cummins	KTA-19-G2
	500	Fair	23615	Cummins	QSX15-G9
Heat recovery to living quarters / storage. Additional heat available for City Hall & Fire Station. Numerous outages from weather & generator shutdowns.					

Shishmaref		Water & Sewer Details			
Residential	Commercial	School	Water Type	Sewer Type	Total Revenue
N/A	N/A	N/A	Haul	Haul	
kWh	Cost	Gallons	Cost	Energy \$ Total	% of Revenue
27,990	\$15,758	568	\$1,970	\$17,728	
Residential Customers	Monthly Residential \$	Commercial Customers	Monthly Commercial \$	Monthly School \$	Total Monthly Revenue
N/A		N/A		N/A	
Shishmaref		Bulk Fuel Storage Details			
Diesel Fuel					Total Storage Capacity
Year Installed	AVEC Gallons	School	Retail Diesel	Retail Gasoline	
Various (Old)	168,290	54,200	209,700	82,800	514,990
See "Emergency Avoidance Analysis, Shishmaref Bulk Fuel Facilities" AEA 2011					Average Annual Fuel Consumption 61,500 Gasoline, 264,500 Diesel from 2011 AEA Report
Location		Gallons Capacity	Tank Condition	Fuel Type	
City of Shishmaref		87,500	Poor	Diesel	
Shish Native Store		55,800	Ok	Gasoline	
Shish Native Store		68,200	Ok	Diesel	
Nayokpuk General Store		27,000	Good	Gasoline	
Nayokpuk General Store		54,000	New 2003	Diesel	

**Priority Projects**

The Shishmaref planning participants chose not to rank their Top Priority Projects. They see their Priorities as being interdependent without one being more important than another. Participants agreed that a circular chart of their Priorities is in line with their cultural perspective. This chart represents what is required for Shishmaref’s well-being as a whole, consisting of interrelated parts.



**Community Contacts**

**City of Shishmaref**  
 PO Box 83  
 Shishmaref, AK 99772  
 Phone: 907-649-3781  
 Fax: 907-649-2131

**Shishmaref Native Corporation**  
 PO Box 72151  
 Shishmaref, AK 99772  
 Phone: 907-649-3751  
 Fax: 907-649-3731

**Native Village of Shishmaref**  
 PO Box 72110  
 Shishmaref, AK 99772  
 Phone: 907-649-3821  
 Fax: 907-649-2104

## Solomon

### Location, Climate, Brief History

Solomon is located on the west bank of the Solomon River, 30 miles east of Nome. The area encompasses 15.6 sq. miles of land and 0.1 sq. miles of water. The climate is both continental and maritime.

The village was originally settled by Eskimos of the Fish River tribe, and was noted on a map as "Erok" in 1900. The original site for Solomon was in the delta of the Solomon River; it became a mining camp. The gold rush during the summers of 1899 and 1900 brought thousands of people to the Solomon area. Three enormous dredges worked the Solomon River. By 1904, Solomon had seven saloons, a post office, a ferry dock, and was the southern terminus of a narrow gauge railroad that ran to the Kuzitrin River. In 1913, the railroad was washed out by storms, and in 1918, the flu epidemic struck. This site is known as Dickson today, and remains of structures and railroad equipment exist. In 1939, the community relocated to the present site, which was formerly known as Jerusalem. The BIA constructed a large school in 1940. During World War II, a number of families moved away from Solomon. The post office and BIA school were discontinued in 1956. The Solomon Roadhouse operated until the 1970s.

Solomon is a subsistence and recreational use area for Nome residents. Fishing and hunting for waterfowl and ptarmigan are prevalent. Solomon is also a prime bird watching area and scenic area.

### Water and Sewer

There are no public facilities in Solomon. Residents haul water from Manilla Creek, Jerusalem Creek, or Solomon River, and use honey-buckets

### Priority Projects

1. Community Power/Electricity (wind, solar and diesel backup)
2. More Solomon Gatherings and Involvement
3. Waste Management
4. Emergency Communication
5. Salmon Enhancement
6. Full Operation of B&B/Community Center
7. Driveway Improvements to Camp
8. Community Potable Water
9. Boat Harbor
10. Airstrip Improvement
11. Assess Effects of Climate Change

### Community Contacts

#### **Solomon Native Corporation**

2841 Madigan Circle  
Anchorage, AK 99503  
Phone: 907-222-6668

#### **Solomon Traditional Council**

PO Box 2053  
Nome, AK 99762  
Phone: 907-443-4985  
Fax: 907-443-5189

## Stebbins

### Location, Climate, Brief History

Stebbins is located on the northwest coast of St. Michael Island, on Norton Sound. It lies 8 miles north of St. Michael and 120 miles southeast of Nome. The area encompasses 35.2 sq. miles of land and 1.7 sq. miles of water. They have a sub-arctic climate with a maritime influence during the summer. Norton Sound is ice-free from June to November, but clouds and fog are common.

The Russian-American Company built Redoubt St. Michael nearby the village of St. Michael in 1833. The U.S. Coast and Geodetic Survey recorded the Eskimo village of “Atroik” or “Atowak” north of St. Michael in 1898. The Yup'ik name for the village is "Tapraq". The name Stebbins was first recorded in 1900. The first U.S. Census occurred in 1950, indicating 80 Yup'ik Eskimos lived in Stebbins. The City government was incorporated in 1969.

Stebbins is a Yup'ik Eskimo village. The economy is based on subsistence harvests supplemented by part-time wage earnings. The City and schools provide the only full-time positions. The commercial herring fishery has become increasingly important, including fishing on the lower Yukon. Eighteen residents hold commercial fishing permits. Residents subsist upon fish, seal, walrus, reindeer and beluga whale. Gardens provide vegetables during the summer months. The Stebbins/St. Michael Reindeer Corral Project was completed in 1993 for a herd on Stuart Island. These reindeer have no established reindeer management or husbandry program. The owners of the herd are part of the Kawerak Reindeer Herders Association.

### Water and Sewer

Only the school, clinic, washeteria, and teacher housing have service. Most residents self haul water and must conserve at certain times of year. When water levels are low the water is yellow. A few residents haul their own water & ice from a nearby lake.

Major improvements are under construction to enable a piped water and vacuum sewer system, with household plumbing. Residents currently haul water and deposit honey-buckets in bunkers. Water is derived during the summer from Big Clear Creek. It is treated and stored in a 1,000,000 gallon steel water tank. In the summer there are several watering points in the village, distributed from the tank via plastic pipelines. A reservoir at Clear Lake and a new water storage tank are under construction to alleviate winter water shortages.

Laundry facilities are available for \$2-4 per load. Showers cost \$2 each. Drinking water costs \$0.05 per gallon. The honey-bucket haul fee is \$8 per month.

### Energy

Stebbins			Latitude	Longitude	Last Weatherized
577			63.52222	-162.28806	2010-11
PCE/kWh	Non-PCE	Gas \$/Gal	Diesel \$/gal	Annual Diesel Gallons	Annual Diesel Cost
21.58	53.94	7.47	7.22	145,178	\$1,048,185

<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	165	299	1,575,878	1,357,676	-16%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
			1,575,878		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	111,965	\$350,669	14.07	\$344,354	\$695,023
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	135	451,067	\$97,340	\$721	\$779,760
<b>Community</b>	12	174,297	\$37,613	\$3,134	
<b>School</b>	1	287,513	\$133,177	\$133,177	
<b>Commercial</b>	1	444,799	\$239,925	\$239,925	
<b>Stebbins</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	500	Excellent	9734	Cummins	QSX15
	350	Poor	23009	Cummins	KTA-19
	250	Fair	40414	Cummins	LTA-10
New plant to be installed summer 2013 to supply power to Stebbins and Saint Michael Via Intertie. Wind study underway to determine feasibility of wind power for both communities.					
<b>Stebbins</b>		<b>Water &amp; Sewer Details</b>			
<b>Water Type</b>			<b>Sewer Type</b>		
Piped water & sewer in planning stages			Wash	Honey Bucket	
<b>kWh</b>	<b>Cost</b>	<b>Gallons</b>	<b>Cost</b>	<b>Energy \$ Total</b>	
46,764	\$25,206	2,438	\$13,314	\$38,520	
<b>Residential Customers</b>	<b>Monthly Residential \$</b>	<b>Commercial Customers</b>	<b>Monthly Commercial \$</b>	<b>Monthly School \$</b>	
N/A	N/A	N/A	N/A	N/A	

Stebbins		Bulk Fuel Storage Details			
Diesel Fuel			Gasoline	Total Design	
Year Installed	AVEC	School	Tapraq	City	Capacity
Q4 2012	320,500	200,000	109,600	41,900	663,200
Location		Gallons Capacity	Tank Condition	Fuel Type	AVEC Storage for power to Stebbins and St. Michael via planned intertie.
AVEC		320,500	New	Diesel	
School		200,000	New	Diesel	
Tapraq Native Corp		109,600	New	Diesel	
City Gasoline ?		41,900	New	Gas	

### Priority Projects

1. Water and sewer
2. More housing
3. Dumpsite improvements/recycling
4. New Post Office building
5. Yup'ik language program
6. Teach and record traditional skills
7. Job training
8. Build a tannery
9. Culture center/museum
10. "Future Teachers" program

### Community Contacts

**City of Stebbins**  
 PO Box 71022  
 Stebbins, AK 99671  
 Phone: 907-934-3451  
 Fax: 907-934-3452

**Stebbins Native Corporation**  
 PO Box 71110  
 Stebbins, AK 99671  
 Phone: 907-934-3281  
 Fax: 907-934-3560

**Stebbins Community Association**  
 PO Box 71002  
 Stebbins, AK 99671  
 Phone: 907-934-3561  
 Fax: 907-934-3560

## St. Michael

### Location, Climate, Brief History

St. Michael is located on the east coast of St. Michael Island in Norton Sound. It lies 125 miles southeast of Nome and 48 miles southwest of Unalakleet. The area encompasses 21.8 sq. miles of land and 6.3 sq. miles of water. St. Michael has a sub-arctic climate with maritime influences during the summer.

The Russian-American Company built a fortified trading post called "Redoubt St. Michael" at this location in 1833. When the Russians left Alaska in 1867, several of the post's traders remained. "Fort St. Michael," a U.S. military post, was established in 1897. During the gold rush of 1897, it was a major gateway to the interior via the Yukon River. It was estimated that 10,000 people were said to live in St. Michael during the gold rush. The village was also a popular trading post for Eskimos to trade their goods for Western supplies. Centralization of many Yup'ik's from the surrounding villages intensified after the measles epidemic of 1900 and the influenza epidemic of 1918. The village remained an important trans-shipment point until the Alaska Railroad was built. The City government was incorporated in 1969.

St. Michael's population is largely Yup'ik Eskimo with many residents who are descendants of Russian traders. Seal, beluga whale, moose, caribou, fish and berries are important staples. The St. Michael economy is based on subsistence food harvests supplemented by part-time wage earning. Most cash positions are found in city government, the IRA council, the village corporation, schools, and local stores. Six residents hold commercial fishing permits, primarily for the herring fishery. The Stebbins/St. Michael Reindeer Corral Project was completed in 1993 for a herd on Stuart Island. The reindeer are essentially unmanaged.

### Water and Sewer

Water comes from Clear Lake. It is treated and stored in a 1.2 million-gallon tank. A new sanitation system is under construction to provide water delivery & holding tanks for homes, a piped gravity & vacuum sewer system with septic treatment, and household plumbing. 44 homes are served by the new system. Another 37 homes are being connected. Residents without service currently haul treated water and use honey-buckets. Funds have been requested to expand the washeteria.

Most residents have access to water and sewer service, but about 30% of the residents are not hooked up because the monthly costs are so high or they owe too much. Water and sewer service costs \$160 per month. Laundry costs \$5 per load. Showers cost \$2. Drinking water costs \$0.05 per gallon. The honey-bucket haul fee is \$20 per month.

### Energy

St. Michael	Latitude	Longitude	Last Weatherized
434	63.47806	-162.03917	2008-09

<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
21.30	48.21	7.85	7.96	109,666	\$872,941
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	210	414	1,783,493	1,698,499	-5%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
		Planned Intertie	1,783,493		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	124,244	\$358,143	14.35	\$430,798	\$788,941
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	107	401,876	\$85,600	\$800	\$681,376
<b>Community</b>	10	323,227	\$68,847	\$6,885	
<b>School</b>	1	288,912	\$125,438	\$125,438	
<b>Commercial</b>	1	684,484	\$329,990	\$329,990	
<b>St. Michael</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	500	Good	2773	Cummins	QSX15
	350	Fair	16074	Detroit	Series 60
	210	Poor	18191	Detroit	Series 60
	Planned intertie will eliminate the need for this plant. Backup plant planned for near future. Plans for excess wind power to water line heat in the making.				
<b>St. Michael</b>		<b>Water &amp; Sewer Details</b>			
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
140	425	7500	Circ	Vac	\$217,881
<b>kWh</b>	<b>Cost</b>	<b>Gallons</b>	<b>Cost</b>	<b>Energy \$ Total</b>	<b>% of Revenue</b>
225,881	\$108,875	11,000	\$98,890	\$207,765	95%

Residential Customers	Monthly Residential \$	Commercial Customers	Monthly Commercial \$	Monthly School \$	Total Monthly Revenue
67	\$9,380	3	\$1,275	\$7,500	\$18,155.00
<b>St. Michael</b>		<b>Bulk Fuel Storage Details</b>			
<b>Diesel Fuel</b>				<b>Gasoline</b>	New tank farm in 2008 sized for School + Backup Generator (small). Crowley decommissioned tanks leading to gasoline storage shortage
<b>Year Installed</b>	<b>AVEC Gallons</b>	<b>School</b>	<b>Native Corp</b>	<b>Native Corp</b>	
August 2008	76,000	90,000			
<b>Location</b>		<b>Gallons Capacity</b>	<b>Tank Condition</b>	<b>Fuel Type</b>	
AVEC		76,000	Old	Diesel	
School		90,000	New	Diesel	
Crowley (no longer used?)		32,000	Old	Gasoline	
Military & VA		10,000	Old	Diesel	
DOT		3,000	Old	Diesel	

### Priority Projects

- |                                  |  |
|----------------------------------|--|
| 1. Public Safety Building        | 6. Heavy Equipment Facilities          |
| 2. Completion of the 14c Process | 7. Reindeer Facilities                 |
| 3. Local Bulk Fuel Tank Farm     | 8. New Teen Center                     |
| 4. Seawall Erosion Protection    | 9. Establish a Local Housing Authority |
| 5. Additional Water Storage Tank | 10. Another Store                      |

### Community Contacts

**City of St. Michael**  
 PO Box 59070  
 St. Michael, AK 99659  
 Phone: 907-923-3222  
 Fax: 907-923-2284

**St. Michael Native Corporation**  
 PO Box 59049  
 St. Michael, AK 99659  
 Phone: 907-923-3143  
 Fax: 907-923-3142

**Native Village of St. Michael**  
 PO Box 59050  
 St. Michael, AK 99659  
 Phone: 907-923-2304  
 Fax: 907-923-2406

## **Teller**

### **Location, Climate, Brief History**

Teller is located on a spit between Port Clarence and Grantley Harbor, 72 miles northwest of Nome, on the Seward Peninsula. The area encompasses 1.9 sq. miles of land and 0.2 sq. miles of water. The maritime climate, when the harbor is ice-free, changes to a continental climate after freezing. Grantley Harbor is generally ice-free from early June to mid-October.

Port Clarence is west of Teller on the Seward Peninsula. It was built on the northern tip of a sands-spit in Port Clarence. The area encompasses 35.5 sq. miles of land and 1.0 sq. miles of water. The 1893 U.S. Census listed a collective village at this site with a population of 485, of which 236 were native and 249 were foreign. Their descendants are the residents of nearby Brevig Mission, Teller, and Wales. Port Clarence is currently a Coast Guard LORAN station. All residents live in private rooms in a group quarter's facility.

The Eskimo fishing camp called "Nook" was reported 20 miles south of Teller in 1827. A Western Union Telegraph expedition wintered at the present site in 1866 and 1867; it was then called "Libbyville" or "Libby Station." The U.S. Government at a nearby site from 1892 to 1900 operated the Teller Reindeer Station. A mission was built in 1900 across the harbor at the current site of Brevig Mission. It was renamed Brevig Mission in 1903. Present-day Teller was also established in 1900 after the Bluestone Placer Mine discovery 15 miles to the south. During these boom years, Teller had a population of about 5,000. In May 1926, bad weather caused the dirigible "Norge" to detour to Teller on its first flight over the North Pole from Norway to Nome. A City was formed in 1963.

Teller is a traditional Kauwerak Eskimo village. Many residents today were originally from Mary's Igloo. Seals, beluga whales, fish, reindeer and other local resources are utilized. The Teller economy is based on subsistence activities supplemented by part-time wage earnings. Fish, seal, moose, beluga whale and reindeer are the primary meat sources. There is a herd of over 1,000 reindeer in the area. The annual roundup provides meat and a cash product, which is sold mainly on the Seward Peninsula. Over one-third of households produce crafts or artwork for sale, and some residents trap fox.

### **Water and Sewer**

During summer, water is hauled by the City water truck from the Gold Run River 20 miles away and delivered to home storage tanks. A few residents use their own ATVs or snow-machines to haul water. During winter, treated water is delivered from a large storage tank at the washeteria, or melt ice is used from area creeks. Preliminary work has begun on a piped water and sewer system. But a new water source must first be developed. Wells have proven unsuccessful. Water must be conserved at certain times of year.

Only the school, clinic, and teacher housing have service. The school operates its own sewer system. 42 residents use honey-buckets which are hauled by the City. A few homes and facilities have septic tanks.

**Energy**

<b>Teller</b>			<b>Latitude</b>	<b>Longitude</b>	<b>Last Weatherized</b>
260			65.26361	-166.36083	2002-03
<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
21.70	56.28	5.81	5.13	83,555	\$428,637
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	98	185	912,225	838,638	-9%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
	1989	1997	912,225		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	81,039	\$240,049	11.26	\$212,707	\$452,756
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	82	244,968	\$53,158	\$648	\$336,528
<b>Community</b>	7	70,336	\$15,263	\$2,180	
<b>School</b>	1	217,516	\$107,718	\$107,718	
<b>Commercial</b>	1	305,818	\$172,114	\$172,114	
<b>Teller</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	124	Poor	Unknown	Cat	3304
	156	Poor	Information	Cat	3208
	297	Fair	Has Been	Cat	2406 DTTA
	150	Fair	Requested	Cat	3306 PC
	87	Poor	From	Cat	3304
	236	Excellent	AVEC	Detroit	Series 60

Teller		Water & Sewer Details			
Residential Customers	Monthly Residential \$	Commercial Customers	Monthly Commercial \$	Monthly School \$	Total Monthly Revenue
N/A		N/A			
Teller		Bulk Fuel Storage Details			
Diesel Fuel			Gasoline		Information on tank capacity & location is from 1994 and has probably changed. If Teller does not top off with last barge they run out of gasoline.
Year Installed	AVEC Gallons	School	Native Corp	Native Corp	
	199,400	66,400	66,500	16,000	
Location		Gallons Capacity	Tank Condition	Fuel Type	
Privately Owned		199,400	Unk	Gas	
Gasoline for retail sales		19,500	Unk		
Teller Native Corp		66,500	Unk	Diesel	
School		71,200	Unk	Diesel	

### Priority Projects

(Teller)

- |  |                                     |
|--|-------------------------------------|
| 1. Water and Sewer                       | 6. Dump / landfill                  |
| 2. Tank Farm                             | 7. Emergency equipment              |
| 3. Housing (for PA / VPSO / residential) | 8. Weatherization of existing homes |
| 4. Evacuation road                       | 9. Multi-purpose building           |
| 5. Seawall repair / reconstruction       | 10. Crosswind runway                |

(Mary's Igloo)

- |   |   |
|---|---|
| 1. More job training to become certified in various fields.             | 5. Multipurpose building in Teller.                               |
| 2. Local job data base.   | 6. Re-establish the Tribe at Mary's Igloo.                        |
| 3. Alternative energy development projects.                             | 7. Mary's Igloo runway.   |
| 4. Code red or firefighting equipment for upper and lower Teller sites. | 8. New homes in Teller and Mary's Igloo for Mary's Igloo members. |

**Community Contacts**

(Teller)

**City of Teller**  
PO Box 548  
Teller, AK 99778  
Phone: 907-642-3401  
Fax: 907-642-2051

**Teller Native Corporation**  
PO Box 590  
Teller, AK 99778  
Phone: 907-642-6132  
Fax: 907-642-2181

**Teller Traditional Council**  
PO Box 517  
Teller, AK 99778  
Phone: 907-642-3381  
Fax: 907-642-2072

(Mary's Igloo)

**Mary's Igloo Traditional Council**  
PO Box 650  
Teller, AK 99778  
Phone: 907-642-3731  
Fax: 907-642-2189

**Mary's Igloo Native Corporation**  
PO Box 650  
Teller, Alaska 99778  
Phone: 907-642-2308  
Fax: 907-642-2309

## **Unalakleet**

### **Location, Climate, Brief History**

Unalakleet is located on Norton Sound at the mouth of the Unalakleet River, 148 miles southeast of Nome and 395 miles northwest of Anchorage. The area encompasses 2.9 sq. miles of land and 2.3 sq. miles of water. Unalakleet has a sub-arctic climate with considerable maritime influences when Norton Sound is ice-free, usually from May to October. Winters are cold and dry.

Archaeologists have dated house remnants along the beach ridge from 200 B.C. to 300 A.D. The name Unalakleet means, "place where the east wind blows." Unalakleet has long been a major trade center as the terminus for the Kaltag Portage, an important winter travel route connecting to the Yukon River. Indians on the upper river were considered "professional" traders who had a monopoly on the Indian-Eskimo trade across the Kaltag Portage. The Russian-American Company built a post here in the 1830s. In 1898, reindeer herders from Lapland were brought to Unalakleet to establish sound herding practices. In 1901, the Army Signal Corps built over 605 miles of telegraph line from St. Michael to Unalakleet, over the Portage to Kaltag and Fort Gibbon. The City was incorporated in 1974.

Unalakleet has a history of diverse cultures and trade activity. The local economy is the most active among Norton Sound villages, along with a traditional Unaligmiut Eskimo subsistence lifestyle. Fish, seal, caribou, moose and bear are utilized.

Both commercial fishing for herring, herring roe and subsistence activities are major components of Unalakleet's economy. One hundred-nine residents hold commercial fishing permits. Norton Sound Economic Development Council operates a fish processing plant here. Government and school positions are relatively numerous. Bering Strait School District is based out of Unalakleet. Unalakleet is considered to be the "southern hub" of the region. Tourism is becoming increasingly popular, as world-class silver fishing is available in the area.

### **Water and Sewer**

Water is derived from an infiltration gallery on Powers Creek, and is treated and stored in a million gallon steel tank. The water source is not sufficient during extremely cold weather, and a feasibility study is underway. Residents must conserve water in summer due to the seafood plant water usage. There is concern over the quality of Unalakleet's water and warnings have been posted. 190 households are connected to the piped water and sewer system and have complete plumbing. Monthly water and sewer service costs \$70. Only two households haul water and honey-buckets.

### **Roads**

Kawerak constructed roads for future expansion and dust control with pavement & sealant in 2011.

**Energy**

<b>Unalakleet</b>			<b>Latitude</b>	<b>Longitude</b>	<b>Last Weatherized</b>
723			63.87306	-160.78806	2013-15
<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
17.73	38.63	6.62	6.62	304,977	\$2,018,948
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
			4,269,013	4,014,894	-6%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
	1820	Dec-10	3,927,057	341,956	8.01%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	286,950	\$877,413	14.88	\$58,357	\$935,770
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	289	932,351	\$165,306	\$572	\$1,530,544
<b>Community</b>	16	392,836	\$69,650	\$4,353	
<b>School</b>	2	421,747	\$183,386	\$91,693	
<b>Commercial</b>	2	2,267,960	\$876,113	\$438,056	
<b>Unalakleet</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	455	Excellent	8400	Cat	3456
	455	Excellent	8366	Cat	3456
	455	Excellent	14176	Cat	3456
	455	Excellent	10096	Cat	3456
Heat recovery to BSSD/City Shop/Water Plant/ Trash Bailer					
<b>Unalakleet</b>		<b>Bulk Fuel Storage Details</b>			
<b>Diesel Fuel</b>			<b>Gasoline</b>		
<b>Year Installed</b>	<b>Diesel #1,#2</b>	<b>Jet A + AVGAS</b>	<b>Gasoline</b>	<b>Total</b>	
Sept 2007	787,300	508,400	141,300	1,442,500	

### **Priority Projects**

1. Erosion control – seawall funding and rock revetment, develop a hazard mitigation plan, and develop an emergency shelter out of the old school gym or other options
2. New water line construction, new water tank/source
3. Elder assisted living facility for seniors or disabled
4. Energy - waste heat installation/connection for the IRA office and Myles Gonongnan/ Aaron Paneok Memorial Hall (community hall), wind turbine construction, seek alternative energy for community, weatherization of homes and businesses.
5. Housing – continue to plan new subdivision on the hill, more housing/ apartments, and fix older homes.
6. New public safety building/jail, fill VPSO vacancy.
7. Fix old/build new snow fences, fix old and install new street lights.
8. New maintenance shop
9. More local job training, training for all city employees
10. Internet satellite acquisition for the IRA office/community hall, new furniture/ electronic equipment community hall.

### **Community Contacts**

**City of Unalakleet**  
PO Box 28  
Unalakleet, AK 99684  
Phone: 907-624-3531  
Fax: 907-624-3130

**Unalakleet Native Corporation**  
PO Box 100  
Unalakleet, AK 99684  
Phone: 907-624-3411  
Fax: 907-624-3833

**Native Village of Unalakleet**  
PO Box 270  
Unalakleet, AK 99684  
Phone: 907-624-3622  
Fax: 907-624-3402

## Wales

### Location, Climate, Brief History

Wales is located on Cape Prince of Wales, at the western tip of the Seward Peninsula, one hundred and eleven miles northwest of Nome. The area encompasses 2.8 sq. miles of land and 0.0 sq. miles of water. It has a maritime climate when the Bering Strait is ice-free, usually June to November. After the freeze, there is an abrupt change to a cold continental climate. Frequent fog, wind and blizzards limit access to Wales.

A burial mound of the "Birnik" culture (500 A.D. to 900 A.D.) was discovered near Wales and is now a national landmark. In 1827 the Russian Navy reported the Eskimo villages of "Eidamoo" near the coast and "King-a-ghe" further inland. In 1890, the American Missionary Association established a mission here, and in 1894 a reindeer station was organized. A post office was established in 1902. Wales became a major whaling center due to its location along migratory routes, and it was the region's largest and most prosperous village, with more than 500 residents. The influenza epidemic in 1918-19 claimed the lives of many of Wales' finest whalers. The City government was incorporated in 1964.

Wales has a strong traditional Kingikmiut Eskimo whaling culture. Ancient songs, dances, and customs are still practiced. During the summer months, Little Diomed residents travel between the two villages in large traditional skin boats. The economy of Wales is based on subsistence hunting and fishing, trapping, Native arts and crafts, and some mining. A private reindeer herd is managed out of Wales and local residents are employed to assist in the harvest. Whales, walrus, polar bear, moose, salmon, and other fish are utilized.

### Water and Sewer

Two new groundwater wells have been drilled. A pump house and watering point enclosure are needed. Water is derived from Gilbert Creek during the summer. Residents haul treated water from a 500,000 gallon storage tank at the washeteria. Some use untreated water from Village Creek.

Almost all residents use honey-buckets. A honey-bucket haul system is in place. A few homes have plumbing. The school, clinic and City building are served by piped water. There are two septic systems: one for the school and a second for teacher housing, the clinic, and City building. A master plan to implement a piped system has been completed.

The washeteria is crowded and doing laundry costs \$3 per load. A 15 minute shower costs \$3. Drinking water costs \$0.25 per gallon. The monthly honey-bucket haul fee is \$20.

### Energy

Wales	Latitude	Longitude	Last Weatherized
138	65.60917	-168.0875	1997

<b>PCE/kWh</b>	<b>Non-PCE</b>	<b>Gas \$/Gal</b>	<b>Diesel \$/gal</b>	<b>Annual Diesel Gallons</b>	<b>Annual Diesel Cost</b>
21.83	58.79	7.15	6.00	54,311	\$325,866
<b>Community Electricity Data</b>	<b>Average Load</b>	<b>Peak Load</b>	<b>kWh Generated</b>	<b>kWh Sold</b>	<b>System Loss</b>
	71	130	620,579	542,643	-14%
<b>Plant Sq ft</b>	<b>Capacity kWh</b>	<b>Upgraded</b>	<b>Annual kWh from Diesel</b>	<b>Annual kWh from Alternatives</b>	<b>Alternative % of Total</b>
			620,579		0%
<b>Cost of Electricity Generation</b>	<b>Diesel Gal</b>	<b>Diesel \$</b>	<b>kWh/gal</b>	<b>O&amp;M \$</b>	<b>Annual \$</b>
	48,046	\$167,121	12.92	\$137,612	\$304,733
<b>Energy Sales</b>	<b>Customer Accounts</b>	<b>kWh</b>	<b>\$</b>	<b>\$/Unit</b>	<b>Estimated Heating \$</b>
<b>Residential</b>	50	168,704	\$36,828	\$737	\$240,000
<b>Community</b>	7	79,511	\$17,357	\$2,480	
<b>School</b>	1	95,583	\$54,088	\$54,088	
<b>Commercial</b>	1	198,845	\$116,901	\$116,901	
<b>Wales</b>	<b>Generator Size kW</b>	<b>Generator Condition</b>	<b>Hours Since Overhaul</b>	<b>Make</b>	<b>Model</b>
<b>Power Plant Details</b>	105	Fair	7965	Cummins	LTA 10
	200	Fair	1591	Detroit	Series 60
	190	Fair	4056	Cummins	LTA 10
	Two AOC 50 wind turbines not running for several years.				
	Heat recovery system installed but not operational.				
	AVEC application for wind resource survey submitted but not funded round 6				
<b>Wales</b>		<b>Water &amp; Sewer Details</b>			
<b>Residential</b>	<b>Commercial</b>	<b>School</b>	<b>Water Type</b>	<b>Sewer Type</b>	<b>Total Revenue</b>
			Wash	Honey Bucket	

<b>kWh</b>	<b>Cost</b>	<b>Gallons</b>	<b>Cost</b>	<b>Energy \$ Total</b>	<b>% of Revenue</b>
10,785	\$6,341	7,265	\$29,278	\$35,619	
<b>Wales</b>		<b>Bulk Fuel Storage Details</b>			
Bulk fuel upgrade did not go to concept design or construction because Wales was in the lower 1/3 priority in the State					

### Priority Projects

- |  |                                  |
|--|----------------------------------|
| 1. Bulk Fuel                                   | 8. Public Safety                 |
| 2. Airport upgrade, crosswind runway and roads | 9. Heavy Equipment Storage       |
| 3. Build new Clinic and Washeteria             | 10. Water and Sewer / Water Line |
| 4. Honeybucket Lagoon and Dumpsite             | 11. Renovate Church, Teen Center |
| 5. Seawall, Boat Harbor, and Fishing           | 12. Long and Short-term Housing  |
| 6. Cemetery                                    | 13. New Power Plant              |
| 7. Repair Housing                              | 14. Mining                       |

### Community Contacts

#### **City of Wales**

PO Box 489  
Wales, AK 99783  
Phone: 907-664-3501  
Fax: 907-664-3501

#### **Wales Native Corporation**

PO Box 529  
Wales, AK 99783  
Phone: 907-664-3641  
Fax: 907-664-3641

#### **Native Village of Wales**

PO Box 549  
Wales, AK 99783  
Phone: 907-664-3062  
Fax: 907-664-2200

## White Mountain

### Location, Climate, Brief History

White Mountain is located on the west bank of the Fish River, near the head of Golovnin Lagoon, on the Seward Peninsula. It is 63 miles east of Nome. The area encompasses 1.8 sq. miles of land and 0.2 sq. miles of water. White Mountain has a transitional climate with less extreme seasonal and daily temperatures than Interior Alaska. Continental influences prevail in the ice-bound winter. The Fish River freezes up in November while break-up occurs in middle to late May.

The Eskimo fish camp of "Nutchirviq" was located here. The bountiful resources of both the Fish and Niukluk Rivers supported the area's Native populations. White Mountain grew after the influx of prospectors during the gold rush of 1900. It was the site of a government-subsidized orphanage, which became an industrial school in 1926. A post office was opened in 1932. The City government was incorporated in 1969.

White Mountain is a Kauwerak Eskimo village, with historical influences from the gold rush. The entire population depends on subsistence hunting and fishing, and most spend the entire summer at fish camps. Salmon, other fish, beluga whale, seal, moose, reindeer, caribou, and brown bear are utilized. The school, native store, post office, city, IRA and airline agents provide the only local employment. Construction outside of town and firefighting provide seasonal employment. Four residents hold commercial fishing permits. Ivory and bone carvings contribute some cash. One of the local residents runs a reindeer farm.

### Water and Sewer

Water is derived from a well near the Fish River and is treated. 59 households are connected to the water system, while 57 households are connected to both the piped water and sewer system. The school is also connected to the City system. 20 HUD homes have been completed and a Master Plan is underway to examine system expansion alternatives. Less than 10 homes still need service. Monthly water and sewer service costs \$105.

### Energy

White Mountain			Latitude	Longitude	Last Weatherized
191			64.68139	-163.40556	1998
PCE/kWh	Non-PCE	Gas \$/Gal	Diesel \$/gal	Annual Diesel Gallons	Annual Diesel Cost
44.14	72.00	4.90	5.71	69,978	\$399,574
Community Electricity Data	Average Load	Peak Load	kWh Generated	kWh Sold	System Loss
	79	175	758,500	689,423	-10%

Plant Sq ft	Capacity kWh	Upgraded	Annual kWh from Diesel	Annual kWh from Alternatives	Alternative % of Total
			758,500		0%
Cost of Electricity Generation	Diesel Gal	Diesel \$	kWh/gal	O&M \$	Annual \$
	86,554	\$184,413	8.76	\$139,776	\$324,189
Energy Sales	Customer Accounts	kWh	\$	\$/Unit	Estimated Heating \$
Residential	66	217,338	\$95,933	\$1,454	\$301,488
Community	10	131,656	\$58,113	\$5,811	
School	1	157,557	\$113,441	\$113,441	
Commercial	1	182,872	\$131,668	\$131,668	
White Mountain	Generator Size kW	Generator Condition	Hours Since Overhaul	Make	Model
Power Plant Details	155	Excellent	< 10k	Cat	C6.6
	155	Excellent	5384	Cat	C6.6
	275	Not Operational	53788	Deere	6101AF010
Heat recovery to power plant only. Potential heat recovery to fire station / water plant. Application submitted under round 5 for heat recovery feasibility study not funded by AEA. Generator #3 Slated for replacement summer 2013					
White Mountain		Water & Sewer Details			
Residential	Commercial	School	Water Type	Sewer Type	Energy Cost
105	105	3916	Circ	Gravity	\$55,152
kWh	Electricity Cost	Gallons	Fuel Cost	Energy \$ Total	% of Revenue
44,553	\$32,078	4,180	\$23,074	\$55,152	100%
Residential Customers	Monthly Residential \$	Commercial Customers	Monthly Commercial \$	Monthly School \$	Total Monthly Revenue
				\$3,916	\$3,916

White Mountain		Bulk Fuel Storage Details			
Year Installed	WMT Electric	School	Native Corp	Native Corp	Storage
July 2004	138,000	46,000	46,000	46,000	34,000
<b>Note:</b> Fuel is delivered direct to school and power plant via buried pipe. WMT City owns a portion of the tank farm since they operate the utility					

**Priority Projects**

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>1. New Store</li> <li>2. Firebreak Around Village</li> <li>3. Gravel Source</li> <li>4. Housing</li> <li>5. Language Preservation</li> <li>6. Environmental Program</li> </ul> | <ul style="list-style-type: none"> <li>7. New &amp; Improved Roads</li> <li>8. Elder &amp; Youth Activities</li> <li>9. Utility Upgrades</li> <li>10. Tribal Healers</li> <li>11. VPO</li> </ul> | <ul style="list-style-type: none"> <li>12. Enforce Subsistence Rights</li> <li>13. Headstart Building</li> <li>14. Enlarge Tribal Center</li> <li>15. City Building Improvements</li> <li>16. Funding Resources</li> <li>17. Cultural Services</li> </ul> |
|---|--|---|

**Community Contacts**

**City of White Mountain**  
 PO Box 130  
 White Mountain, AK  
 99784  
 Phone: 907-638-3411  
 Fax: 907-638-3421

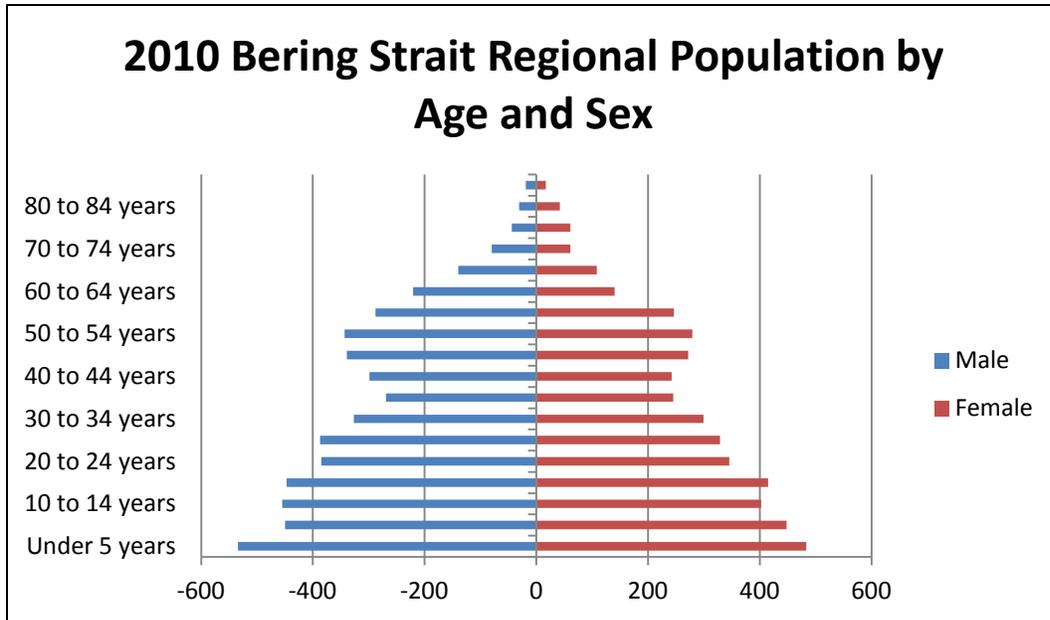
**White Mountain Native Corporation**  
 PO Box 89  
 White Mountain, AK  
 99784  
 Phone: 907-638-3651  
 Fax: 907-638-3652

**Native Village of White Mountain**  
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 Fax: 907-638-3651

### III. Regional Overview

#### **Demographics:**

Located in one of the most remote parts of the world, the Bering Strait region is home to over 9,000 people, most of who have ancestral ties to the area dating back thousands of years. The region lies at the heart of a continental crossroads that has profoundly influenced life in the northern hemisphere. Native people have lived in the region for at least 10,000 years, sustained by the area’s rich mosaic of arctic and sub-arctic animals and plants.

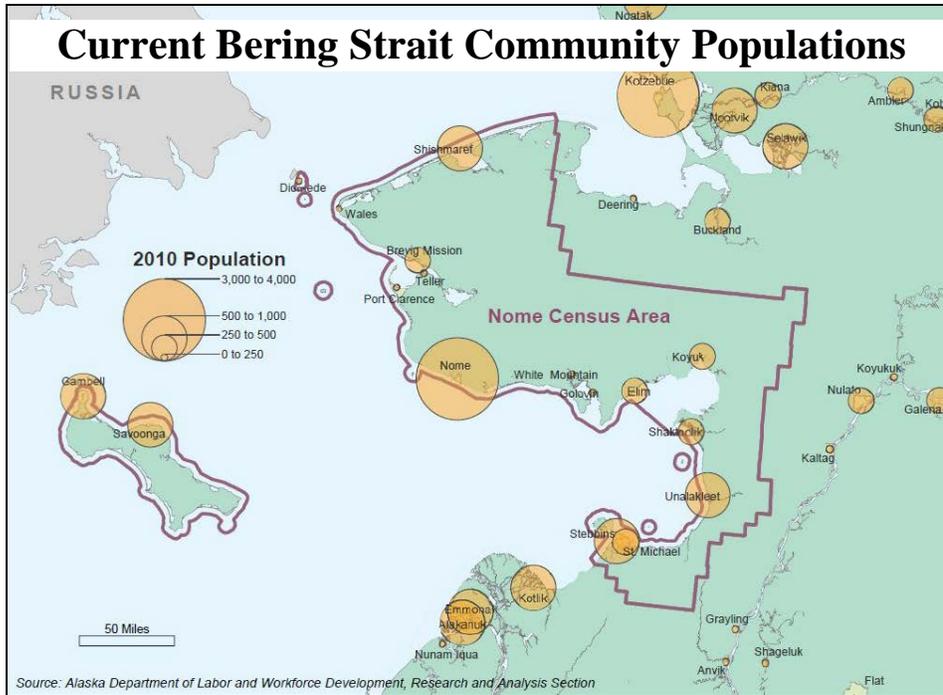


In 2010, community populations varied from approximately 3,598 in Nome (65% Alaska Native), with other communities ranging from 115 - 692 persons. The population in the Bering Strait region is about 82% Alaska Native according to the U.S. Census. Approximately 1/3 of the region’s population resides in Nome, the area’s largest community and commercial hub. The second, third and fourth largest communities are Unalakleet (688), Gambell (681), and Savoonga (671), respectively.

According to the 2010 U.S. Census,<sup>1</sup> 40% of the entire region’s population was 20 years old or younger, with a median age of 27.6. Residents over 65 made up 6.4% of the region’s population. 53% of the population was male and 47% of the population was female.

At the time of the 2000 Census, 41% of the entire region’s population was 20 years old or younger, with at a median age of 27.6. 6% of the region’s population was 65 or older. 54% of the population was male, while 46% was female.

<sup>1</sup> From <http://live.laborstats.alaska.gov/cen/dp.cfm>. Accessed December 12, 2012

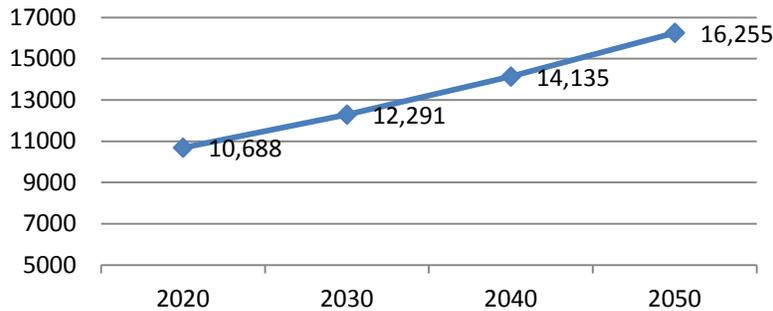


*\*Data Source: Alaska Department of Labor and Workforce Development 2012*

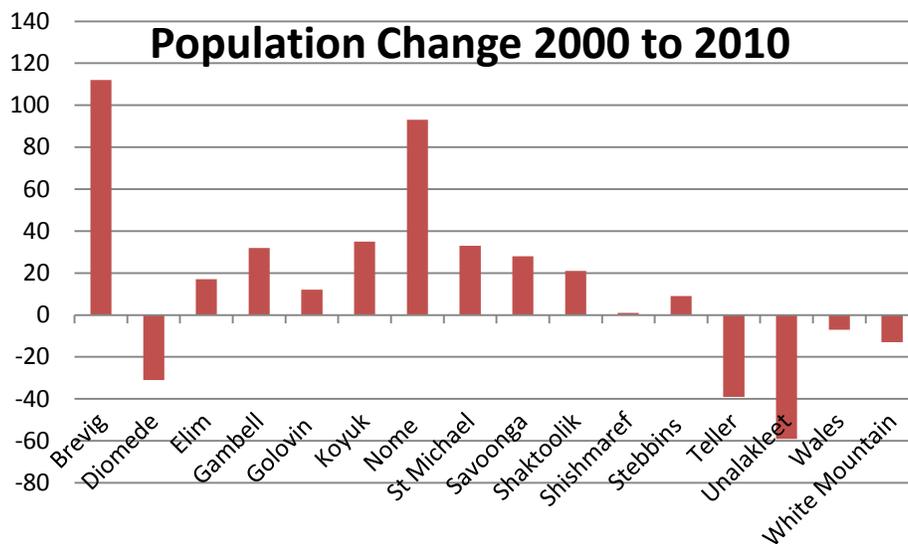
Nome-3759	Stebbins-566	Teller-250	Diomedede-121
Unalakleet-700	St. Michael-404	Shaktolik-276	Solomon-4
Savoonga-713	Elim-365	White Mountain-188	Council-7
Gambell-696	Koyuk-338	Wales-152	King Island-0
Shishmaref-580	Brevig Mission-417	Golovin-173	Mary's Igloo-0

Overall, between the 1970 Census and the 2010 Census, the regional population increased at an annual growth rate of 1.67 percent. However, between 1990 and 2010 the annual growth rate was 0.8 percent. Assuming the regional growth rate remains similar to the past 20 years, the region can expect to double in population over the next 50 years.

## Population Projection



While the regional population increased, some communities' populations decreased between the most recent Census and that of 2000. By percentage, Diomedé's population decreased the most by over 21 percent. Teller's population decreased by 14.5%. Unalakleet, one of the larger communities in the region, lost the greatest number of residents.

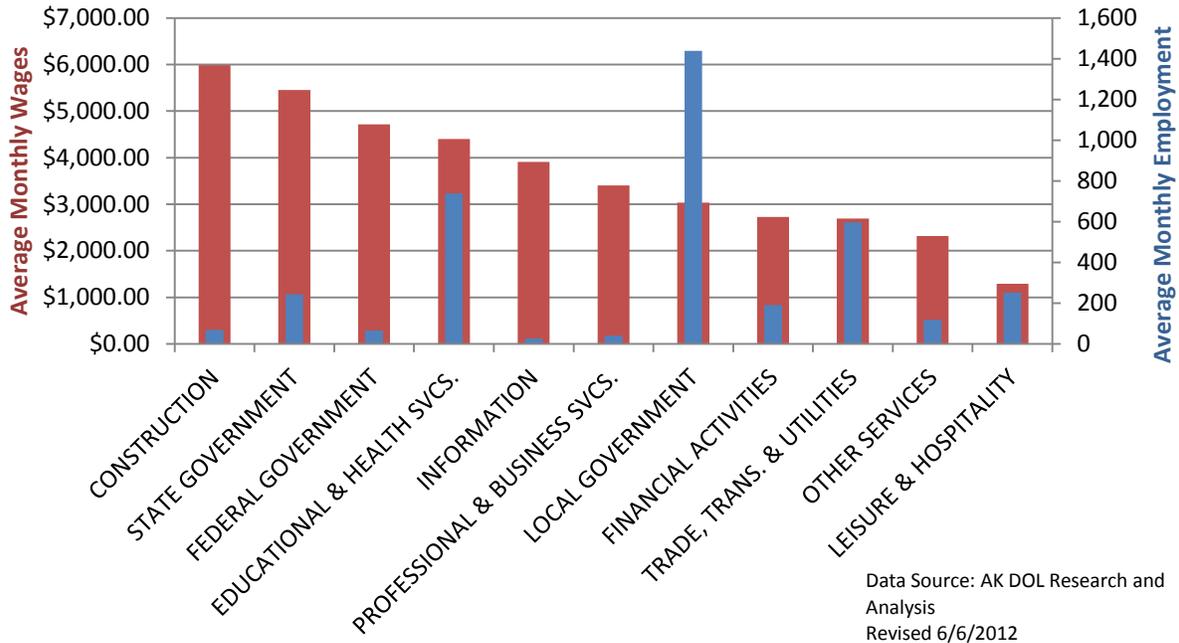


### **Economy: Employment and Income Levels**

The Bering Strait has a mixed economy, based on cash and subsistence practices. Most employment arises through government, healthcare, education, transportation and utilities. Of these local government provides the most opportunity for employment within the region. Health care and educational services provide opportunities for employment as well. Together, these two sectors account for most employment opportunities in the region's villages outside Nome.

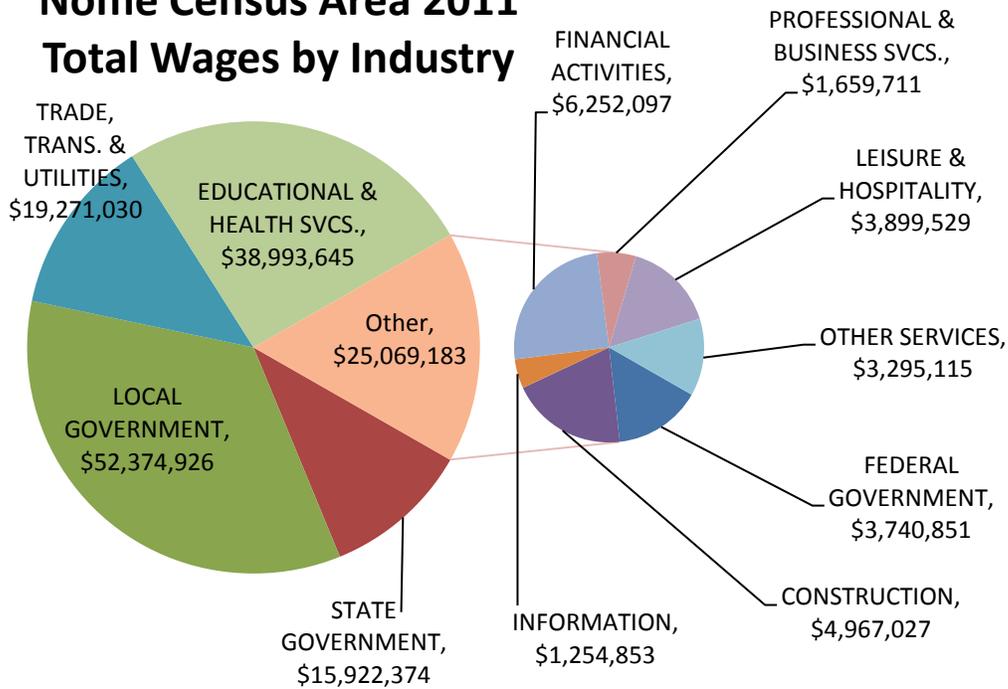
The city of Nome serves as the hub for the region, and with its larger population and workforce, offers more diverse employment opportunities. However, health care and education still provide for the largest share of Nome employment.

## 2011 Nome Census Area Monthly Wages Vs. Employment

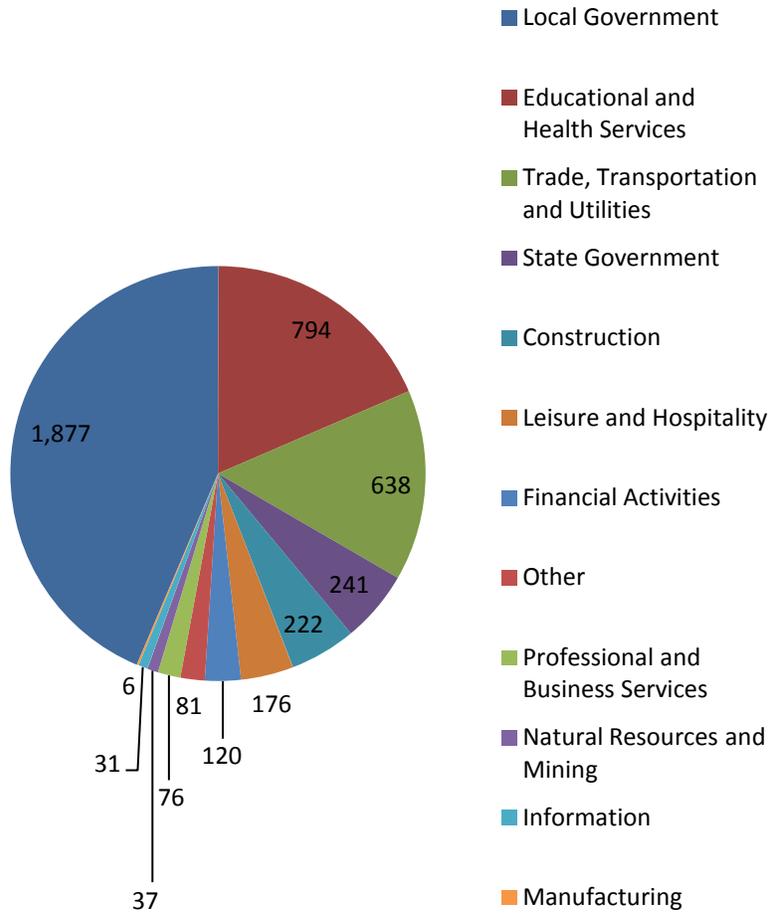


In addition to government, education, and healthcare services, the major sectors of the Bering Strait Region’s economy are construction, information, business and professional services, financial activities, trade, transportation and utilities, and leisure and hospitality. Of these, construction provides the best average wages, though has a relatively low average monthly employment (see monthly wages vs. employment chart below).

## Nome Census Area 2011 Total Wages by Industry

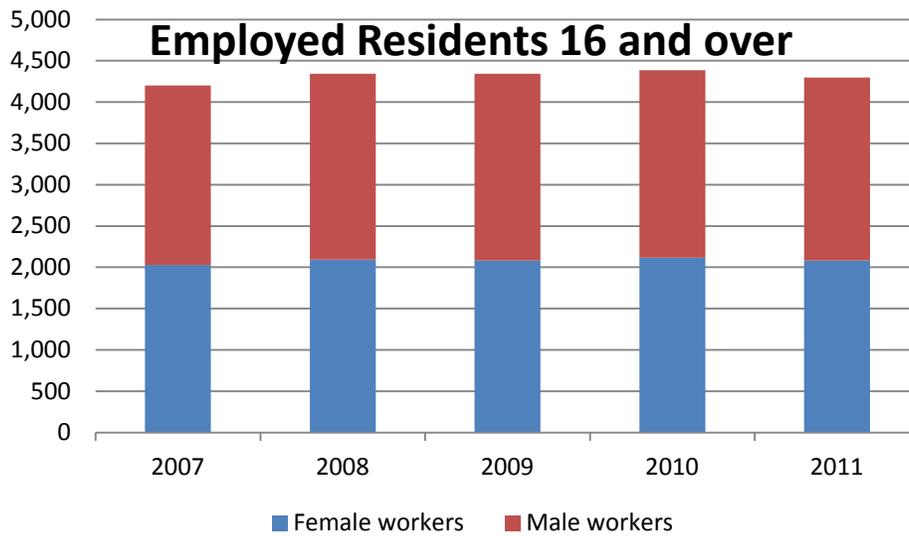


# Workers by Industry in 2011

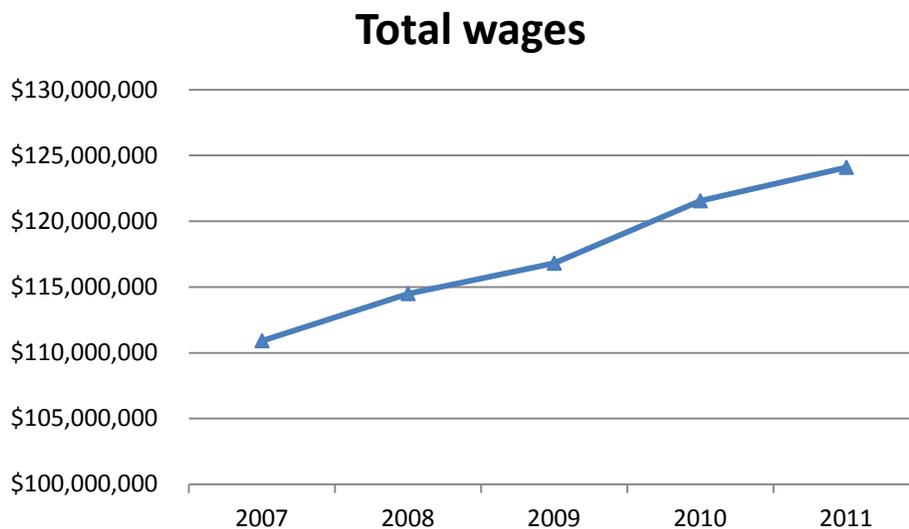


Data Source: Alaska  
DOL Research and  
Analysis

The workforce population has remained relatively stable in the Nome Census area over the past six years, fluctuating between 4,200 and 4,400 residents employed. Each year, males slightly outnumber females employed, with 2009 (48 percent females vs. 52 percent male) represented the greatest difference.



Income, on the other hand, steadily rose in the Bering Strait Region between the years 2007 and 2011 at an annualized rate of 2 percent.



### **Alaska Native Arts and Crafts**

Many Native residents of the Bering Strait region supplement their annual income by producing arts and crafts. A needs assessment performed by the Alaska Council of the Arts estimates that 25% of Nome-based artists and 7.1% of Shishmaref-based artists earn their annual income through arts and crafts production. These products range from goods produced using marine mammal materials, as well as non-marine marine mammal based goods. Alaska Natives are the only people in the United States allowed to harvest marine mammals such as seals, walrus, whale and polar bear. Such species are harvested for subsistence purposes and provide a valuable food source in rural villages where store-bought food can be prohibitively expensive and low in nutritional value. Alaska Natives are also allowed to use the harvested raw materials (such as ivory, pelts, bone, and baleen) for arts and crafts purpose. Examples of such products are jewelry, mittens, hats, mukluks, ivory carvings, masks, dolls, grass baskets, dolls, dance accoutrements, kayaks, and slippers.

Arts and crafts transactions in the Bering Strait region occur primarily in person, as artists travel to a location of potential sales (eg Nome, or the AFN Convention in Anchorage) with their products. The price paid for the artist's products does not reflect the artistic skill of the individual artist; rather, it reflects the artist's ability to negotiate and the price the market location will bear. Prices are better outside of the artist's home village and better still outside of the region. Bering Strait artists' work receives limited exposure due to the remote geographic location in which it is produced and the limited access to larger markets in urban areas of Alaska and the Lower 48. Artists travel to Nome or Anchorage when able and market their products at business locations, on the street, or through word of mouth. There are limited Internet access points in the villages, though some artists do market their products over the internet. There are several artists that use Etsy.com as a means to access larger markets, though most are Nome-based. Facebook pages such as Alaska Barterers and Sellers and Bering Strait Arts and Crafts have provided a venue for increased economic activity between villages in the region as well as some outside the region.

Additionally, cultural tourism brings some new outside money into the region. Tourists primarily visit Nome for this reason, but concrete data on this aspect of the economy is difficult to measure and therefore currently lacking.

### **Major Sectors and Cluster Discussion**

The Bering Strait economy is largely service-based, with government, educational, health, and social services making up the majority of the employment opportunities throughout the region. Major employers in the region include Bering Strait School District, Norton Sound Health Corporation, and Kawerak, Inc. Each of these organizations either directly employs or supports staff in each of the region's villages. Tribal and City government make up the majority of the remaining employment opportunities in the region's villages. Business and other professional services provide employment in Nome.

Transportation, retail, leisure, and tourism provide some economic stability to the region (Alaska Department of Labor and Workforce Development, December 2012).

Economic Clusters – Economic cluster theory is the body of work that emerged following Michael Porter’s 1990 publication of *The Competitive Advantage of Nations*. “A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities” (Porter, 2000). The interconnected companies and institutions within a cluster compete with one another, but also cooperate and display synergistic qualities. Porter, in his 2000 paper “Location Competition and Economic Development: Local Clusters in a Global Economy,” gives the example of the California wine cluster. The backbone of this cluster are the growers, vineyards, processing facilities and wineries; but without the grape-stock, the fertilizer suppliers, equipment retailers and mechanics, irrigation specialists, bottle, cork and barrel purveyors, labeling and advertising firms, tourists, and professional publications (among others), the wineries would not have the economic support systems necessary to survive. In addition to the private sector support system, research institutions, such as the University of California Davis Branch and government agencies contribute to the strength of the wine cluster. Porter goes on to explain that this cluster includes some “680 commercial wineries and several thousand independent wine grape growers” (Porter 2000) which are supported by the associated companies within the cluster.

Cluster thinking is a useful tool in rural economic development, despite the challenges posed by scale, especially in rural Alaska. The Alaska Partnership for Economic Development is currently sponsoring a cluster initiative called Alaska Forward. The Alaska Forward project is designed to increase dialogue between industry leaders and policy makers with the goal of strengthening four clusters identified in Alaska: clean energy, logistics, mining, and tourism.

Applying cluster thinking to the Bering Strait Region, we can identify major sectors in the regional economy that have interconnected economic support systems and human capital. According to statsamerica.org, an EDA supported project that provides tools for regional economic analysis, there are two primary clusters that have location quotients greater than 1.0 in terms of cluster establishments, cluster employment, and annual wages: transportation and logistics and mining. While these two clusters account for only 4.93% of measured establishments in the region, they account for 9.27% percent of regional employment and 13.26% of regional wages.

The mining cluster itself accounts for 70 jobs within the region, with total wages of \$5,977,145. According to statsamerica.org, employment within this cluster is 12.43 times more concentrated than in the rest of the United States, and wages are 18.69 times more concentrated. The transportation and logistics cluster shows less concentration, though still maintains a location quotient of greater than 1.0. Establishments, employment and wages are 1.38 (10 cluster establishments), 2.45 (278 jobs), and 3.14 (\$15,112,181 in wages) times more concentrated in the Nome Census Area than the United States as a whole, respectively.

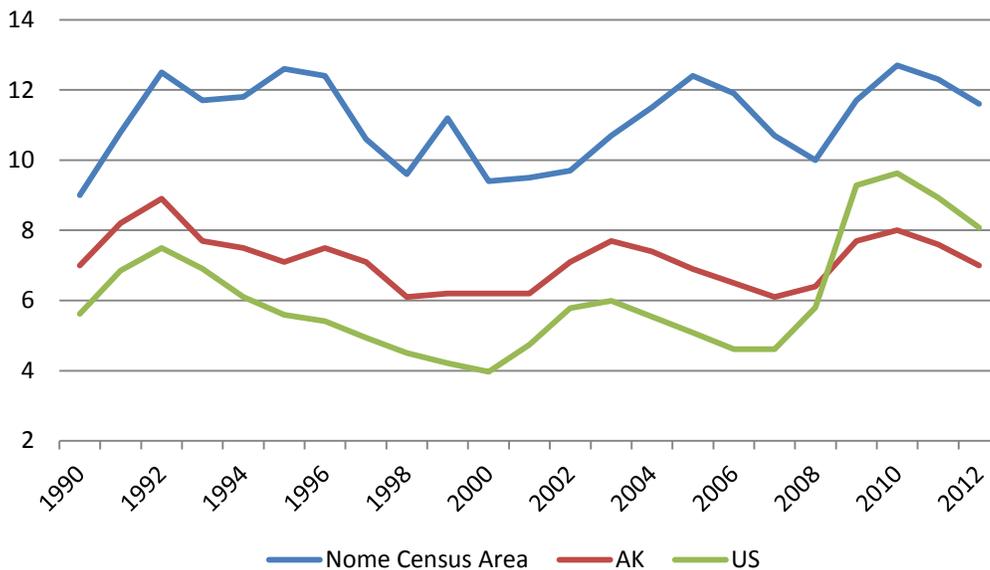
As discussed in the opportunities section (beginning on page 82), the mining industry is tied to Nome’s recent history and continues to represent economic opportunities in the Bering Strait Region. There are several potential mines in the region, as well as a recent boom in small scale placer mining off the coast of Nome. The City of Nome benefits from the increased tax revenue generated over the summer, as do the supply and hardware stores from the increased volume in sales.

Transportation and logistics companies see benefits in the increased volume of equipment and people moving into and out of the region. Transportation and logistics are a major component of the regional economy, as distance, weather, and lack of land based infrastructure present challenges to moving people and products. Nome serves as the hub of the region, complemented in this role somewhat by Unalakleet. A number of air passenger and freight carries move products and people through Nome to the regional villages. Likewise, during the summer ice-free months, a number of barge companies provide slower, more cost effective transportation of heavy equipment and non-perishable products.

**Unemployment**

Unemployment rates in the Bering Strait region are consistently higher than the average unemployment rates in Alaska and the United States. Increases and decreases in the Bering Strait unemployment rate appear to occur at similar times in the region, the state and the rest of the country. The region and the State of Alaska appear to have been affected by the 2008 recession, but not as dramatically as the rest of the country. However, the national unemployment rate high point marks the Bering Strait region’s low point over the past 22 years.

**Non-seasonally Adjusted Unemployment Rate**



As discussed above, there are fewer employment opportunities in Rural Alaska, due to low population densities, remoteness, and a high cost of living and doing business, than there are elsewhere in the United States. It follows that unemployment would be higher in such areas. However, official unemployment rates do not fully elucidate the reality of employment in rural Alaskan communities. Unemployment numbers account for members of the workforce actively seeking employment, but do not adequately capture adults whose job searches are inactive. Anecdotal evidence suggests unemployment rates in Village’s Bering Strait region to be higher than the official numbers the Department of Labor publishes.

## Poverty

Due to the low educational attainment levels and limited employment opportunities, unemployment levels are high in rural Alaska. The Bering Strait region is no exception.

One means of assessing poverty levels in the region is through the Denali Commission's Distressed Community List. "The distressed status is determined by comparing average income of a community to full-time minimum wages earnings and a measure of the percentage of the population engaged in year-round wage and salary employment."<sup>2</sup> Any community that meets two or three of these criteria is classified as "Distressed." To meet criteria 1, a community must have an average market income that is lower than \$16,120, which is slightly more than 0.5 FTE at minimum wage annually. To meet criteria 2, a community must have more than 70 percent of residents, ages 16 and older, earning less than \$16,120. To meet criteria 3, fewer than 30 percent of resident, ages 16 and older, worked all four quarters in the previous year.

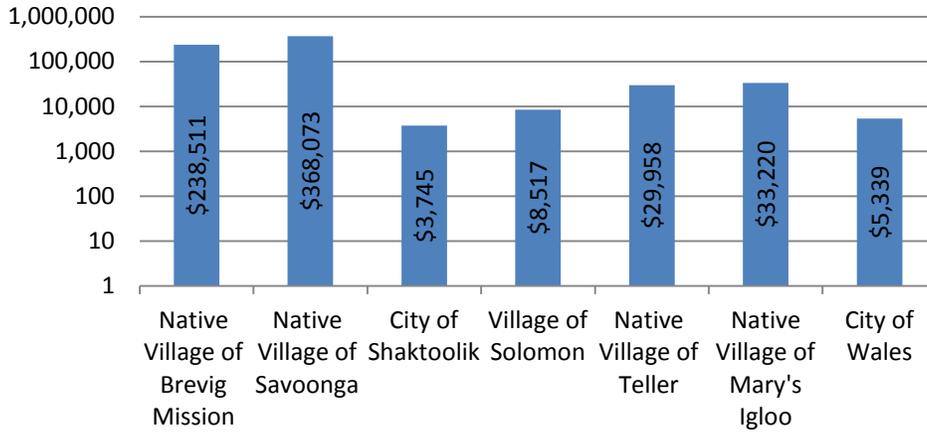
The graph below details the communities in the Bering Strait region that meet the Denali Commission criteria for distressed communities.

	2013 Status	2012 Status	Average earnings in 2012 from UI employment and fishing	% w/2012 earnings less than minimum wage of \$16,120	% Employed all four quarters of 2012	Becomes Distressed in 2013 with 3% formula
Brevig Mission	Distressed	Distressed	\$10,475	76.7	37.1	
Diomede	Non-Distressed	Distressed	\$16,142	65	31.7	YES
Elim	Distressed	Non-Distressed	\$13,387	70.6	39.7	
Gambell	Distressed	Distressed	\$9,514	79.2	27.8	
Golovin	Non-Distressed	Non-Distressed	\$23,209	46.2	60.4	
Koyuk	Distressed	Distressed	\$13,885	71.2	41.4	
Nome	Non-Distressed	Non-Distressed	\$34,260	44	52.3	
Savoonga	Distressed	Distressed	\$8,733	80.9	23.7	
Shaktoolik	Non-Distressed	Non-Distressed	\$20,408	64.2	43.4	
Shishmaref	Distressed	Distressed	\$11,761	73.6	40.9	
St. Michael	Non-Distressed	Distressed	\$11,087	66.7	44.9	
Stebbins	Distressed	Distressed	\$9,781	77.9	30	
Teller	Non-Distressed	Distressed	\$12,646	68.7	39.3	YES
Unalakleet	Non-Distressed	Non-Distressed	\$22,785	59	37.6	
Wales	Non-Distressed	Distressed	\$16,887	55.8	55.8	
White Mountain	Non-Distressed	Distressed	\$17,472	65.3	46.3	

<sup>2</sup> Distressed Community Criteria 2012 Update

Another means of assessing the economic distress in the region is through the Department of Commerce, Community and Economic Development's *Lien Watch*. This semi monthly report shows which communities in rural Alaska are in trouble through keeping track of liens placed on small communities.

### Total Liens in Bering Strait Communities February 2013



3

<sup>3</sup> DCRA Lien Watch, Jan/Feb 2013

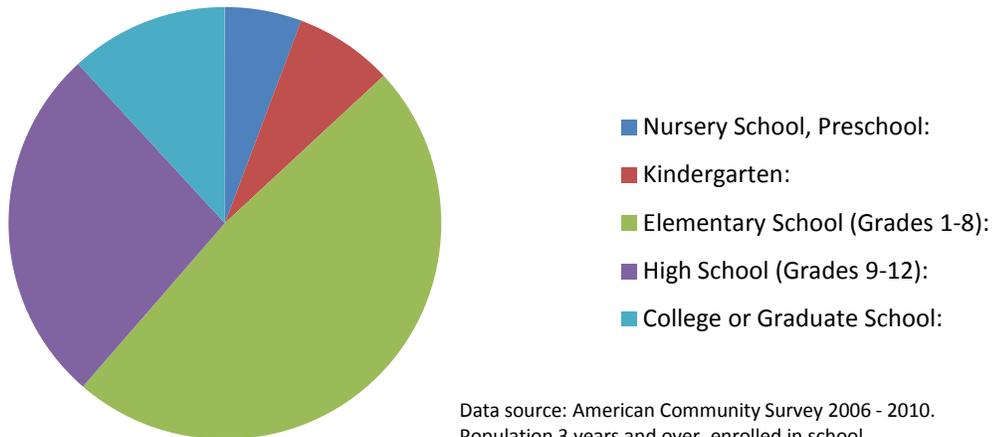
## Workforce Experience and Educational Attainment

Number of Workers with Experience in Industry 2007–2011

Accommodation and food services	513	Management of companies and enterprises	40
Administration and support and waste management	227	Manufacturing	50
Agriculture, forestry, fishing and hunting	7	Mining	175
Arts, entertainment and recreation	353	Professional, scientific and technical services	104
Construction	750	Real estate and rental and leasing	325
Educational services	13	State government	564
Finance and insurance	190	Trade	1,321
Health care and social assistance	1,614	Transportation and warehousing	389
Information	120	Utilities	174

From Alaska Department of Labor and Workforce Development Research and Analysis

## School Enrollment



Several organizations within the region work to enhance workforce development. Kawerak Education Employment and Training division provides village based training, youth employment services, and scholarships. Norton Sound Economic Development Corporation provides fisheries related training, as well as scholarships for university and vocational training. The Bering Strait School District operates the Northwest Alaska Career and Technical Center (NACTEC) in Nome, which brings students from the region into Nome for career exploration and training opportunities.

**Transportation Access**

Air travel and freight transportation is the only means to efficiently access the Bering Strait year round. During the ice-free months between June and November, barges are able to deliver freight to the region. There are several hundred miles of roads in the region. The majority of these roads extend north, east, and west from Nome, connecting the Taylor mining area, Council, and Teller, respectively. Other roads in the region connect Stebbins and St. Michael, Wales and Tin City, and serve as evacuation roads from Shaktoolik and Gambell. Ground transportation between villages is primarily accomplished by snow-machine in the winter and ATV in the summer.

Nome serves as the transportation hub of the region, with two Alaska Airlines jets coming through the airport daily. Jets carrying air cargo also land daily in Nome. Bering Air, Era Alaska, and Ryan Air provide service from Nome to the region’s villages. Era Alaska makes a daily flight between Unalakleet and Anchorage as well.

With the exception of Diomede, each community in the Bering Strait region has a year-round runway. Most runways are gravel and owned by the State of Alaska. Diomede has a concrete heliport at the edge of the village. When the sea ice becomes thick enough, the village maintains an ice runway in the strait between Little and Big Diomede Islands.

<b>Brevig Mission</b>	2990 x 100 ft.	<b>Savoonga</b>	4400 x 100 ft.
<b>Council</b>	3000 x 60 ft.	<b>Shaktoolik</b>	4001 x 75 ft.
<b>Diomede</b>	64 x 64 ft. heliport	<b>Shishmaref</b>	5000 x 70 ft.
<b>Elim</b>	3401 x 60 ft.	<b>Solomon</b>	1150 x 35 ft.
<b>Gambell</b>	4500 x 96 ft.	<b>Stebbins</b>	3000 x 60 ft.
<b>Golovin</b>	4000 x 75 ft.	<b>Teller</b>	3000 x 60 ft.
<b>Koyuk</b>	3000 x 60 ft.	<b>Unalakleet</b>	6004 x 150 ft.
<b>Nome</b>	6001 x 150 ft and 5576 x 150 ft	<b>Wales</b>	4000 x 75 ft.
<b>St. Michael</b>	4001 x 75 ft.	<b>White Mountain</b>	3000 x 60 ft.

The mode of transportation affects the prices of consumer products in Nome and more so in the region's villages.

	<b>Cost to ship 2,000 pounds Via</b>					
	<b>Bypass Mail</b>		<b>Ocean Barge</b>		<b>Air Cargo</b>	
	<i>Total Cost</i>	<i>Cost/Lb</i>	<i>Total Cost</i>	<i>Cost/Lb</i>	<i>Total Cost</i>	<i>Cost/ Lb</i>
<b>Anchorage to Nome</b>	809	0.45	973	0.49	2,165	1.08
<b>To Average Village</b>	809	0.45	1,496	0.97	4,366	2.18

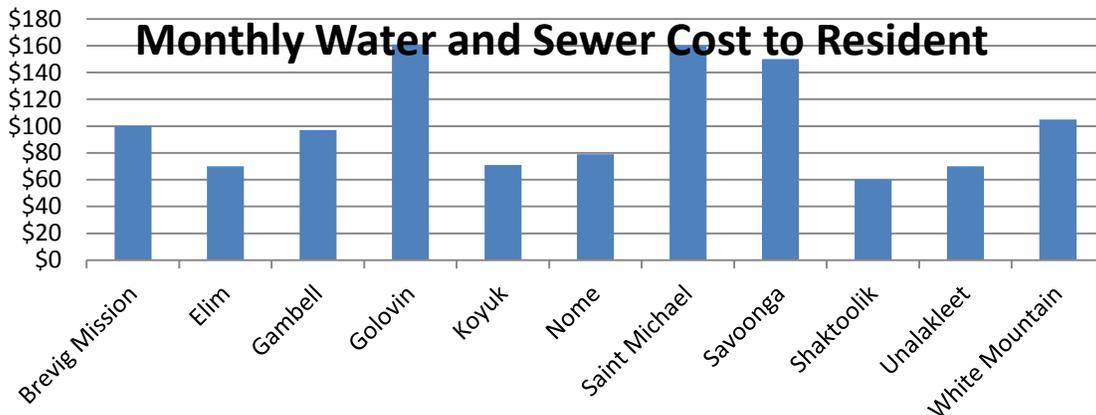
<b>Weight</b>	<b>Rate Cents/Lb</b>	<b>\$ Subtotal</b>	<b>Fuel Surcharge 28%</b>	<b>\$ Total</b>	<b>Cents/Lb</b>
<b>2,000</b>	0.38	760	213	973	0.49
<b>18,000.00</b>	0.25	4,500	1,260	5,760	0.32
<b>24,000.00</b>	0.20	4,800	1,344	6,144	0.26
<b>40,000.00</b>	0.13	5,200	1,456	6,656	0.17

## Water & Sewer Infrastructure

Significant needs remain in terms of water and sewer infrastructure in the region. With the exception of teacher housing, there is no water and sewer service available in the communities of Diomedede, Wales, Shishmaref, Stebbins, and Teller. Residents wash clothes at the washeteria and haul water for use in their homes. In the remaining 10 villages, most of the residents are served; however, several homes in each community still do not have service.

Community	Water		Sewer	
<b>Brevig Mission</b>	Circulating	Buried	Gravity	Buried
<b>Diomedede</b>	Wash	None	Honey-bucket	None
<b>Elim</b>	Circulating	Buried	Gravity	Buried
<b>Gambell</b>	Circulating	Buried	Gravity	Buried
<b>Golovin</b>	Circulating	Buried	Gravity	Buried
<b>Koyuk</b>	Circulating	Buried	Gravity	Buried
<b>Nome</b>	Circulating	Buried	Gravity	Buried
<b>Saint Michael</b>	Circulating	Above	Vacuum	Above
<b>Savoonga</b>	Circulating	Above	Vacuum	Above
<b>Shaktoolik</b>	Circulating	Buried	Gravity	Buried
<b>Shishmaref</b>	Haul	None	Haul	None
<b>Solomon</b>	Individual Haul	None	Honey-bucket	None
<b>Stebbins</b>	Wash	None	Honey-bucket	None
<b>Teller</b>	Wash	None	Honey-bucket	None
<b>Unalakleet</b>	Circulating	Buried	Gravity	Buried
<b>Wales</b>	Wash	None	Honey-bucket	None
<b>White Mountain</b>	Circulating	Buried	Gravity	Buried

Sewer and water systems are costly to maintain in an arctic environment, partly due to the amount of energy needed to keep the system from freezing up.



## **Disaster Preparedness**

All communities in rural Alaska face many community development challenges (infrastructure development, healthcare, transportation, communications, energy, education, local services, economy, jobs, business development, public safety, and emergency planning). All of the communities in the Bering Strait are located on the sea coast or shores of rivers. Due to recent environmental impacts of climate change, our region is seeing an increase in severe weather, more intense storms, and flooding. Erosion is a major concern to low lying communities which fear the need for relocation. Also these small communities have fewer resources to respond to emergencies of all types.

The Bering Strait region has fifteen villages located outside of the hub community of Nome. Each community has three to five health aides and is covered by mid-level practitioners. There are only eight Village Public Safety Officers (VPSO's) and a handful of Village Police Officers (VPO's) in the region. Most communities have an active Volunteer Fire Department and some local Search and Rescue Volunteers, but emergency equipment and supplies are limited. Some communities have developed local emergency response plans in collaboration with the school and/or clinic, but more needs to be done.

Currently, the Alaska Native Tribal Health Consortium (ANTHC) has two staff that assists communities with Emergency Operations Plans (EOPs). These two people attempt to help all communities in the state, but do not have the means to travel as much as is needed.

Other support agencies like the State of Alaska Division of Homeland Security and Emergency Management and the United States Federal Emergency Management Administration (FEMA) provide technical assistance and training as well. However, they have limited staff and funding and must cover the entire state as well.

Below is a listing of the communities in this region and actions they have taken to begin addressing emergency preparedness needs. Things may have changed because communities may be at a more advanced stage in their planning.

The table below lists each community in the Bering Strait Region, population, information on who has completed a Hazard Mitigation Plan (HMP), emergency operation plan (EOP) and if the community has a search and rescue group and an established volunteer fire group:

<b>Communities</b>	<b>Population</b>	<b>Completed HMP</b>	<b>Completed EOP</b>	<b>Search &amp; Rescue</b>	<b>Emergency Equipment</b>	<b>Established Volunteer Fire Group</b>
<b>Brevig Mission</b>	326	No	No	Yes	No	No
<b>Diomede</b>	110	No	No	Yes	No	No
<b>Elim</b>	294	No	No	Yes	No	No
<b>Gambell</b>	643	Yes	No	Yes	No	Yes
<b>Golovin</b>	154	Yes	No	Yes	No	Yes
<b>Koyuk</b>	368	No	No	Yes	No	Yes
<b>Nome</b>	3,695	Yes	Yes	Yes	Yes	Yes
<b>Savoonga</b>	712	Yes	No	Yes	No	Yes
<b>Shaktolik</b>	214	Yes	No	Yes	No	Yes
<b>Shishmaref</b>	615	Yes	Yes	Yes	No	Yes
<b>St. Michael</b>	446	No	No	Yes	No	Yes
<b>Stebbins</b>	612	No	No	Yes	No	no
<b>Teller</b>	258	No	No	Yes	No	No
<b>Unalakleet</b>	727	Yes	Yes	Yes	No	Yes
<b>Wales</b>	136	No	No	Yes	No	Yes
<b>White Mountain</b>	224	No	No	Yes	No	Yes

Other communities working on Hazard Mitigation Plans:

- |                   |                |                   |
|-------------------|----------------|-------------------|
| 1. Brevig Mission | 4. Koyuk       | 7. Teller         |
| 2. Diomede        | 5. Stebins     | 8. Wales          |
| 3. Elim           | 6. St. Michael | 9. White Mountain |

Communities with Emergency Operations Plans (EOPs):

- |                                      |               |
|--------------------------------------|---------------|
| 1. Golovin has an EOP working draft. | 3. Shaktoolik |
| 2. Nome's Tribe through the Nome EOP | 4. Shishmaref |
|                                      | 5. Unalakleet |

Communities with Continuation Plan:

- City of Nome

Cities with Comprehensive Plan:

- City of Nome

Cities with Long Range Transportation Plans:

- All

Villages with Small Community Emergency Response Plans (SCERPs) in various stages of completion:

<b><i>Legend</i></b>	White Mountain
SCERP complete in the community	Brevig Mission
SCERP Toolkit at DHS&EM	Diomedede
Community working on Toolkit	Elimn
Community has heard about the SCERP	Koyuk
	Teller
	Gambell
	Golovin
	Savoonga
	Shaktoolik
	Shishmaref
	Stebbins
	Saint Michael
	Unalakleet
	Wales

**Recommendations:**

- Develop a statewide preparedness outreach campaign to educate and inform rural communities on concrete steps they can take to increase their resilience to natural and man-made hazards.
- Improve training and technical assistance opportunities for all rural communities. Allow regional support entities like Kawerak to be eligible to apply for funding to provide this kind of support to the tribes that they serve through the establishment of full-time staff positions specializing in disaster risk reduction and emergency management.
- Improve training opportunities in rural Alaska for all emergency preparedness issues. Provide travel scholarships so more rural leaders can attend. Provide more village-based training to enable communities to effectively drill and practice emergency plans.
- Improve education on disaster assistance processes for communities which have been impacted by disasters.

## IV. Analysis of Economic Development Opportunities and Challenges

### SWOT Analysis

A SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis is a tool used by organizations to evaluate internal organizational qualities (strengths and weaknesses) in relation to the external environment in which the organization is situated (opportunities and threats).<sup>4</sup>

As such, SWOT analyses have been used by organizations and regions to make strategic decisions exploiting natural strengths to maximize the returns on identified opportunities. An effective SWOT analysis focuses on the factors determined to be the most significant in affecting an organization's future. The factors of the SWOT can be visually represented through a 2 X 2 matrix delineating internal and external, as well as positive and negative, factors:

	<b>Internal</b>	<b>External</b>
<b>Positive</b>	Strengths	Opportunities
<b>Negative</b>	Weaknesses	Threats

Yet another way of interpreting the above matrix views the internal factors as characteristics that may describe present attributes of the organization in question; while the external factors can be said to represent future events that may affect the organization. Similar to categorizing the factors by internal / external, categorizing as present / future implies a similar amount of organizational control over the internal / present characteristics. The external / future characteristics represent an area in which the organization has less control or advance knowledge.

The United States Economic Development Administration recommends a CEDS incorporate an analysis of a regional economy's strengths and weaknesses in relation to factors dependent on the context of the state, national and international economies. A SWOT analysis is a method of accomplishing these tasks.

The current SWOT analysis focuses on the regional scale by incorporating strengths, weaknesses, opportunities, and threats identified by individual communities through the local economic development process and evaluating them by significance and impact to the region. Relevant material from other government sponsored plans has been incorporated into the process to maintain consistency across different organizational plans.

One criticism of a SWOT analysis focuses on the ambiguous nature of the characteristics highlighted. In light of this criticism, the current SWOT concentrates on categorizing regional characteristics in terms of mainstream economic development. For instance, geographic isolation provides quality of life benefits to residents who enjoy rural and subsistence lifestyles; however, the distances goods and non-local service providers need to travel before reaching the Bering Strait market increases the cost of such rural living. While subsistence activities make up a significant part of the regional economy, transportation costs imposed by the geographic isolation of the region have a greater impact overall on the economy of the Bering Strait.

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<sup>4</sup> Sabokkhiz, M and Sabokkhiz, S. Sustainable development through desert tourism planning: a SWOT approach.

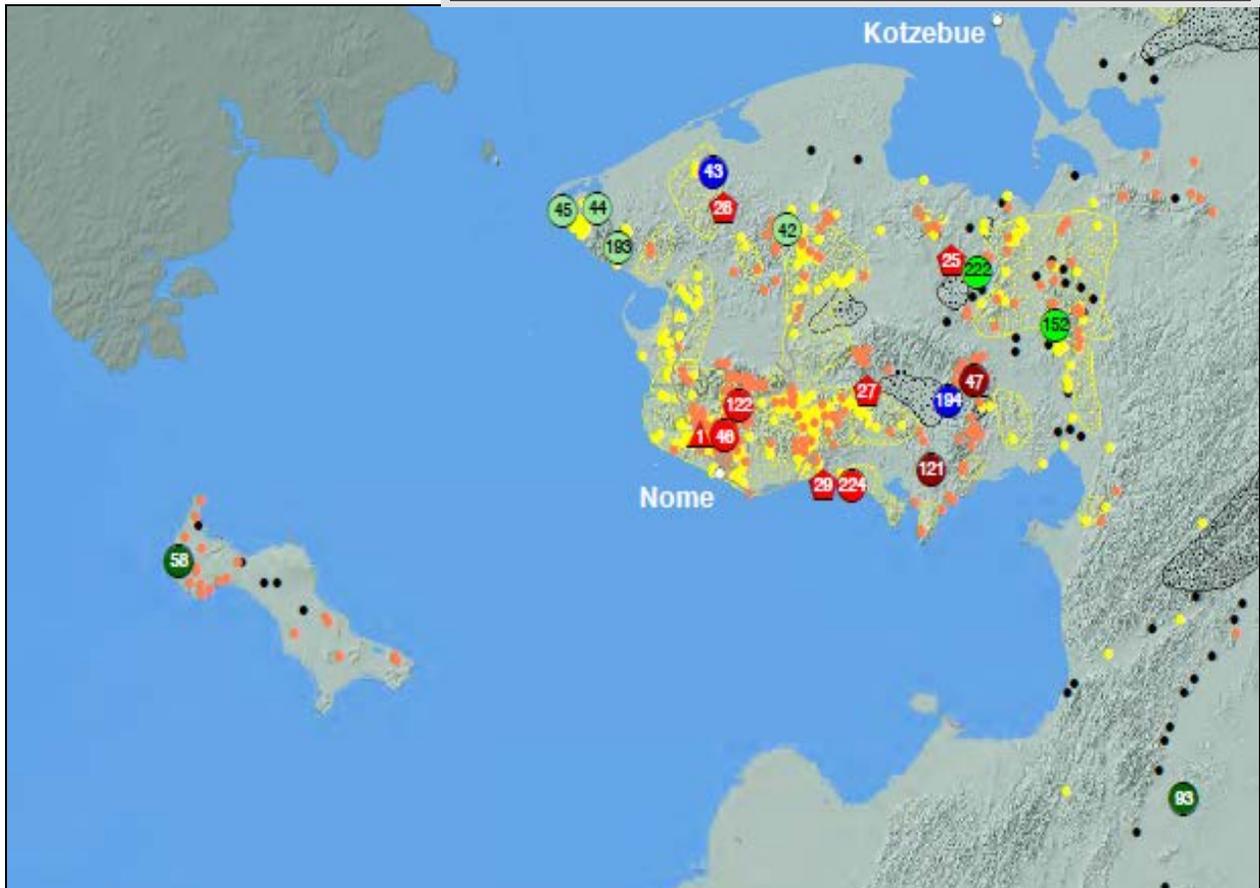
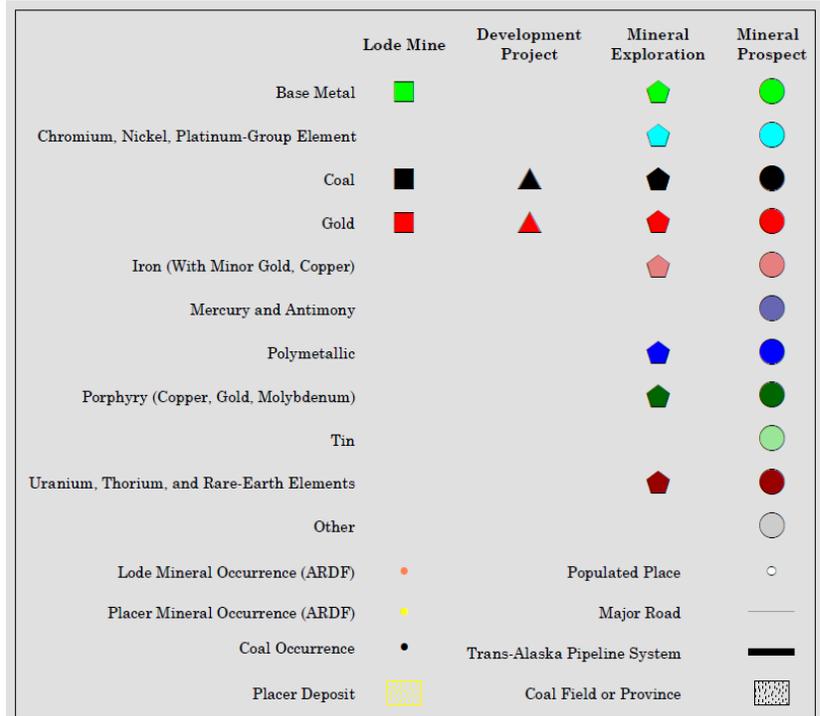
<p><b><u>Strengths</u></b></p> <ul style="list-style-type: none"> <li>• Natural Resources</li> <li>• Health Care</li> <li>• Access to Subsistence Resources</li> <li>• Native Culture</li> <li>• Renewable Resources</li> <li>• Strong Local Knowledge</li> <li>• Land Ownership</li> <li>• Shareholder benefits</li> <li>• Funding resources not available to lower 48</li> <li>• Compact agreements / federal recognition</li> <li>• Local / traditional art</li> </ul>	<p><b><u>Opportunities</u></b></p> <ul style="list-style-type: none"> <li>• Mineral Development</li> <li>• Tourism</li> <li>• Education</li> <li>• Internet upgrades</li> <li>• Alternative energy</li> <li>• Fisheries</li> <li>• Deep draft port in Nome or region</li> <li>• Increasing traffic through Bering Strait</li> <li>• Possibility of a Coast Guard station in Nome</li> <li>• Reindeer meat seems to be valued outside region</li> <li>• Start up competitions</li> <li>• Road to Nome</li> </ul>
<p><b><u>Weaknesses</u></b></p> <ul style="list-style-type: none"> <li>• Infrastructure</li> <li>• Social Health</li> <li>• Income</li> <li>• Geographic Isolation</li> <li>• Low Skilled Workforce</li> </ul>	<p><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>• Environmental</li> <li>• Politics and Regulations</li> <li>• Invasive Species</li> <li>• Subsistence</li> <li>• Disease</li> <li>• Road to Nome</li> <li>• Increasing traffic through Bering Strait</li> </ul>

The following section is an analysis of the economic development challenges and opportunities in Bering Strait region of Alaska. The present format departs somewhat the conventional SWOT analysis that outlines a brainstormed list by planning group participants. The current SWOT analysis proceeds from the lists brainstormed at the village level and discusses the relevant regional characteristics in narrative format.

## Opportunities and Strengths

### Mineral Development

Natural resources frequently arose in either the strength and/or opportunities category during the planning process. Some natural resources frequently cited were geologic and pertaining to mineral development in the region. The Seward Peninsula has a long history of mineral development. Beginning with a gold rush on the southern coast of the Seward Peninsula the region has been prospected and developed to varying degrees by operations of varying size.

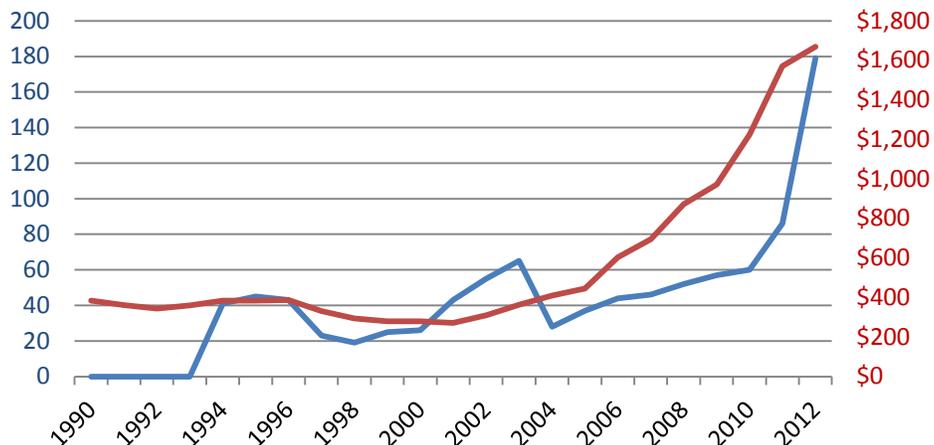


There has been significant placer gold mining in the region, most famously around in the Nome area. Beginning in the late 19<sup>th</sup> Century, the beaches of Nome were mined using primitive sluice box techniques. The population swelled and declined concurrent with the success of these early operations. Through the first half of the 20<sup>th</sup> century, large dredges mined the prehistoric beaches between the shore and the uplands to the north. As the costs of running these energy-intense operations increased, the dredges gradually ceased operations, with the last stopping in the 1970s. Many of the dredges or remnants of the dredges still dot the landscape today.

In 1999, NovaGold acquired about 5700 hectares of mining claims in the Nome area. After two years of construction, the company began production in September 2008, but abruptly ended production in late November due to mechanical and technical issues, environmental concerns and the recession. The mine was expected to produce about 100,000 oz of gold annually and provide nearly 100 jobs in the Nome area. The Rock Creek mine has been operating in care and maintenance status; and, along the Big Hurrah deposit, the property has been sold. Several thousand acres of placer deposits were acquired by Nome Gold Alaska, while the larger deposits were acquired by the Bering Straits Native Corporation. At the time of writing, BSNC was still evaluating the nature of future investments in the Rock Creek and Big Hurrah deposits. If reopened, mining operations at these sites could provide jobs for regional residents. It is currently unclear how many jobs will be produced.

Offshore dredging has been a part of the Nome economy for decades, with a handful of residents steadily working through each season. In the late 1980s, the Western Gold Exploration and Mining Company operated the world’s largest mining vessel off the coast of Nome. The 525’ Bima used bucket dredge methods to mine waters up to 150’ deep. With the recent high gold prices, shallow water suction techniques have become common and the number of small operations has grown substantially in recent years. This is evident in the number of docking permits issued for use of the Nome Small Boat Harbor (see chart). The rapid increase in the number of permits in 2012 can be directly attributed to a rise in the number of personal gold dredges working the coast of Nome.

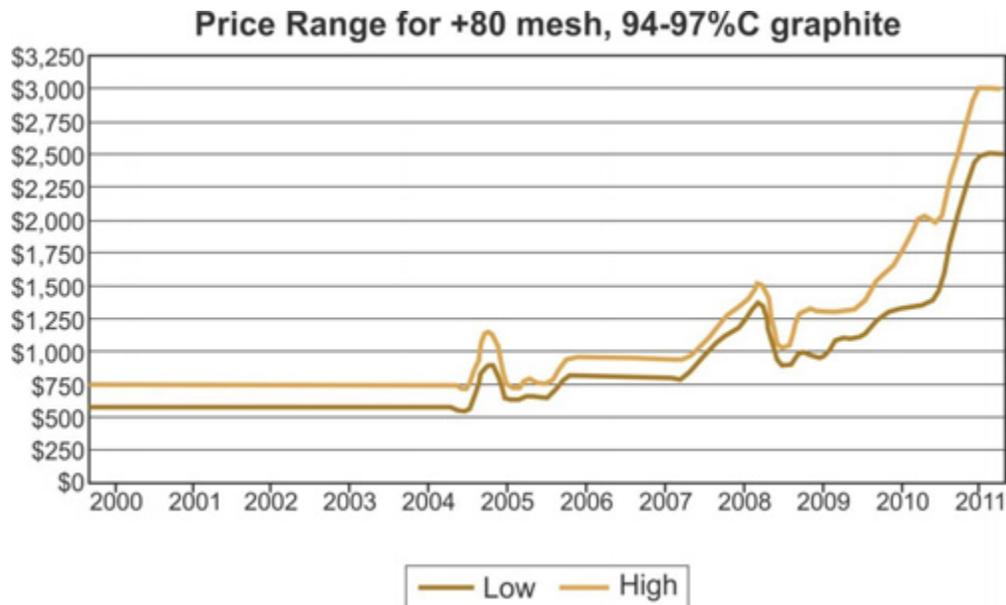
### Nome Harbor Docking Permits and the Price of Gold



The increase in miners working the offshore waters represents some opportunity to the local economy. Hardware stores' sales are up, landlords and hotels see fewer vacancies, and the city is able to collect more taxes through these increases. A reality TV show "Bering Sea Gold," has increased the profile of Nome, which in turn may boost tourism. One resident opened a small food stand to sell burgers and fries to miners living on the beach. However, the influx of miners also presents difficulties for local residents and organizations. Many out-of-state miners invest significant amounts of money out-of-state and ship their supplies in, which leaves them nearly destitute until (if) they begin to produce gold. Basic and social services are stressed as the number of police and ambulance calls increase while the stores on the shelves of the local food bank are depleted.

Gold is not the only mineral available for development in the Bering Strait region. There are also known deposits of minerals including tin, graphite, and uranium.

An exploration company is currently exploring a graphite deposit north of Nome. Preliminary reports indicate a sizable deposit of high grade large flake graphite and exploration will continue in the summer of 2013. While a graphite mining project might produce significant benefits for the region, the property is not connected to existing transportation systems making considerable infrastructure development necessary to bring the property to production.



Source: Graphite One Resources

Bering Strait Native Corporation produces gravel for public works projects at the Cape Nome quarry.

Tin has not been mined or smelted in the United States since 1993 and 1989, respectively. While the Western Seward Peninsula has a tin resource, tin prices will need to rise before the region becomes attractive to future development.

**Key Regional Actors:** Bering Straits Native Corporation, NomeGold, Alaska Department of Natural Resources, Alaska Department of Fish and Game, Solomon Gold, City of Nome, Graphite One Resources, General Refining Corporation,

**Key Regional Resources:** gold, graphite

**Key Issues:** housing for workforce expansion during the summer months, impact on fish and wildlife, impact on City of Nome's basic service provision, infrastructure development to bring the minerals to market, funding needed for additional exploration, community relations

**Growth:** There is a potential for growth in larger scale operations; however, this part of the sector has been stagnant since the closure of the Rock Creek Mine. There has been significant growth in the smaller scale operations coinciding with recent television programming featuring offshore dredge-style mining.

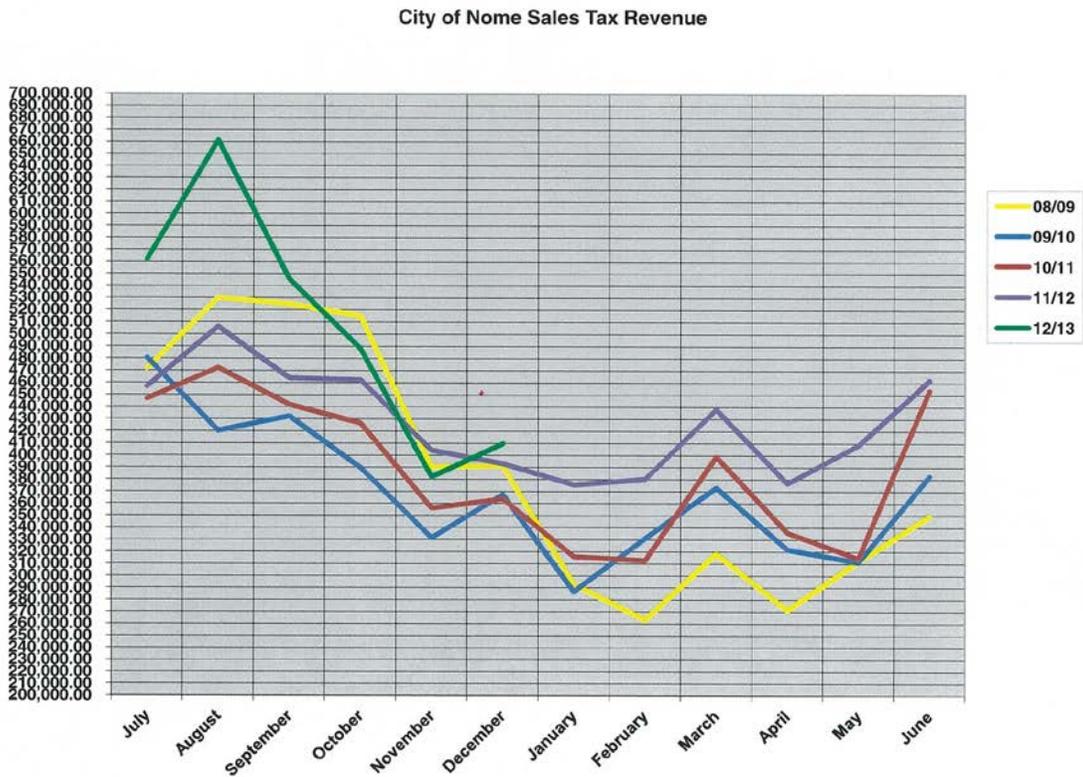
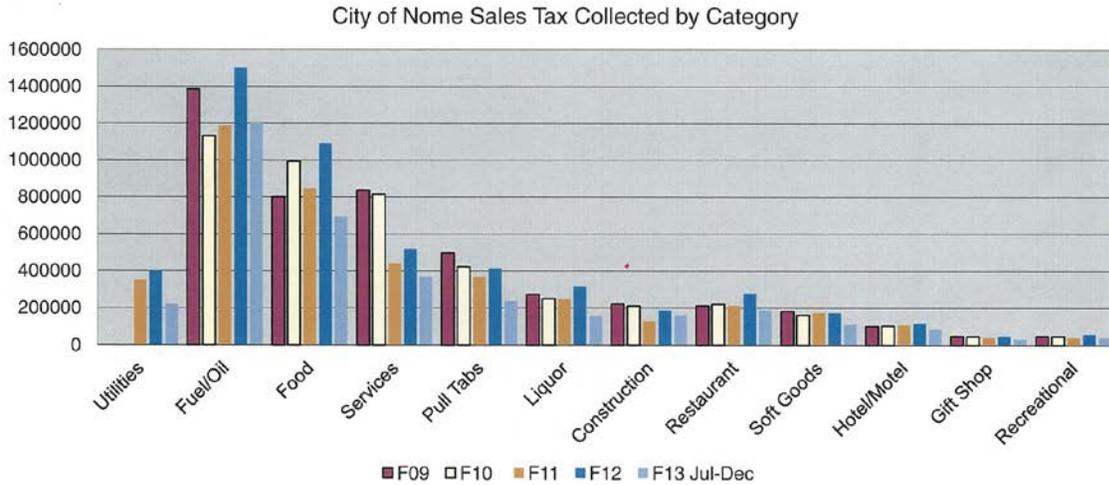
### **Tourism**

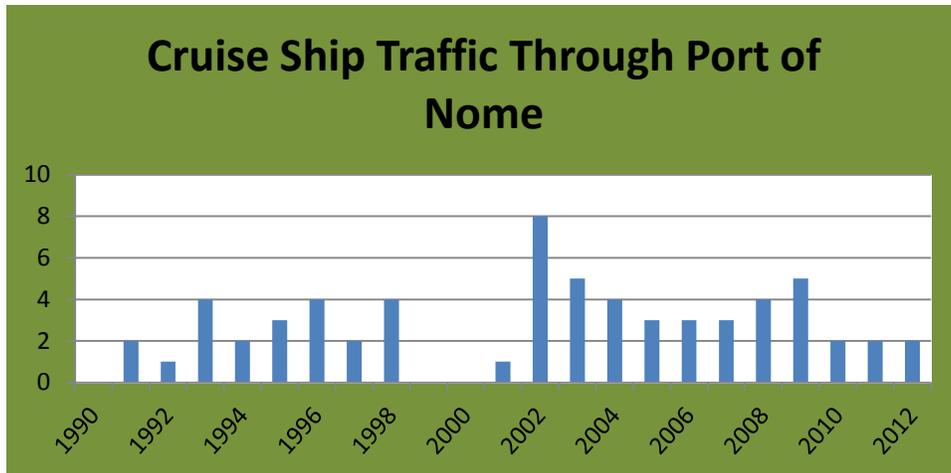
The Bering Strait Region's Native culture, natural resources, sporting events, and unique history provide excellent tourism opportunities with Nome serving as hub and a major attractor to both out-of-state and in-state tourists. The Seward Peninsula is a unique destination in rural Alaska because it has over 250 miles of state maintained roads which allow access to a number of sightseeing and recreational opportunities for tourists. Many communities recognized tourism, as well as the qualities of the region that attract tourists, as an existing strength or a potential opportunity. Suggested means to capitalize on the opportunity were through expanded accommodations, restaurants and other concessions, Eco-tours, and a greater focus on birding.

While the Nome Convention and Visitors Center maintains a sign in book, collecting names, place of origin, and comments, it does not systematically collect detailed information on visitors arriving in Nome on an annual basis. One method of assessing visitor trends is examining the year-over-year bed and sales tax revenues collected by the City of Nome. However, this indicator is less reliable when assessing tourism in the villages. Most of the villages in the Bering Strait region do not assess a bed tax. Some do not have sales tax as well. For the villages that do have a sales tax, it is difficult to differentiate the sales generated by tourism and the sales generated by local residents' daily economic activities.

Another indicator of economic activity associated with the tourism industry is the amount of and the change in business licenses held in the region.

Yet another indicator of tourism activity is the amount of cruise ships passing through the region each summer. Cruise ship traffic seems to have peaked in 2002 and has dwindled to two per season in recent years. In 2011, a cruise company based in New Zealand was discussing the possibility of using Nome as a base port: the passengers would fly to Nome, go through customs at Bering Air, and fly to Provideniya to get on the ship. Activities did not proceed past the planning stage.





*Birding:* Alaska’s myriad species of birds make the state a prime draw for birding enthusiasts. Taking advantage of the diverse shorebirds, raptors, songbird, and waterfowl that populate or migrate through the state each year, many communities host birding festivals in the spring and fall in celebration. At the time of writing, 471 different species of birds have been positively identified in Alaska. To encourage the identification of rare birds, the Alaska Department of Fish and Game has implemented the program “Wings Over Alaska,” in which participants<sup>5</sup> are awarded free certificates for bird species they have identified in Alaska. Four different levels of certification differentiate between birders who have identified 50, 125, 200, and 275 species, the governor signing the certificate for 275 species identified.

Visitors come from Alaska, as well as out-of-state, to take advantage of the birding opportunities present in the Bering Strait region. The region lies along a major flyway for migrating birds and its sparsely populated tundra landscape provides ideal habitat for a variety of species. The Bering Strait is renowned for some of the birding rarities that live, breed and/or pass through, including: Emperor goose, ivory gull, Ross’ gull, common ringed plover, various stints, ruff, common cuckoo, brambling, bluethroat, red-throated pipit, yellow and white wagtails, and McKay’s bunting.

Two communities in the Bering Strait region, Nome and Gambell, are listed in the Department of Alaska Fish and Game’s “Ten Birding Hotspots.” Gambell’s remote cliffs provide excellent opportunities to see rare species, a trait the Village is known for in birding circles. Nome’s roads provide several hundred miles over diverse terrain to see up to 200 species of migratory birds from mid-May to mid-June, as well as the fall months. The Village of Solomon is located on the Nome road system and is home to the Solomon Bed & Breakfast. It’s located near an estuary that provides habitat for many types of rare birds and has rooms for rent to the general public. Shishmaref, although not specifically mentioned as one of the 10 Alaska birding hotspots, also provides excellent birding opportunities. In 2011, 86 species were positively identified by one local resident. Specifically, the Bering Strait region provides “appeal for birders whose interest is specialized” with “rare Western Alaskan specialties, Asian accidentals, and a representative sample of sought after, northern-Alaska bird species.”<sup>6</sup>

<sup>5</sup> <http://www.adfg.alaska.gov/index.cfm?adfg=birdviewing.wings>

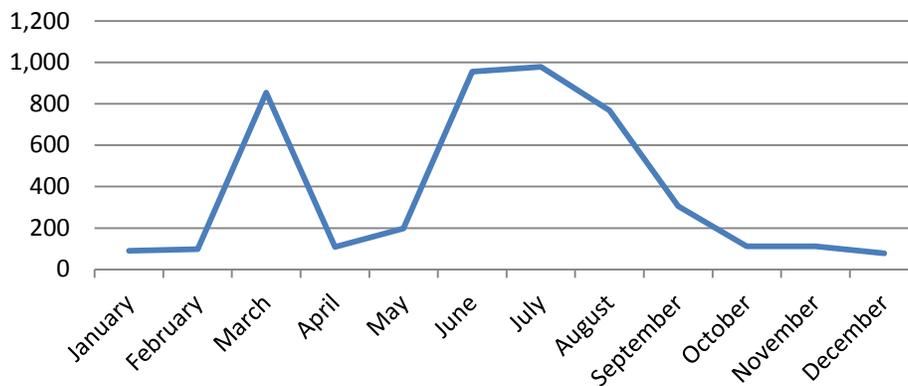
<sup>6</sup> Nome Area Tourism Demand, Potential and Infrastructure Study, October 2003

Camping and hiking: The Bureau of Land Management operates a campground at Salmon Lake, about 40 miles north of Nome. Sites are simple and free, with fire rings and tables available to campers. The lake provides boating and swimming opportunities. Some of the creeks in the area provide opportunities for fishing at different times of the year.

The Seward Peninsula is vast with opportunities for backpacking and backcountry camping. The coastline, old mining roads and four wheeler trails provide for hundreds of miles of hiking paths while the tundra allows for more difficult, in less formal, hiking. Several of the higher peaks on the peninsula (3870 and Mt. Osborne most notably) are able to be hiked to the summit and provide for challenging day hikes. There are some rock and ice climbing opportunities as well, but the sites are remote and the approaches are long. While there is a small group of climbers in Nome, it is unknown if visitors travel to the region for climbing purposes.

The primary landowners are the Bureau of Land Management, the State of Alaska, Bering Straits Native Corporation, and the local Village corporations. Some of the Native Corporations charge a nominal land use fee for access.

### Average Visitors to Nome by Month



History: The Seward Peninsula has a long, rich history. The area is the site of the Bering Land Bridge which served as a migration corridor for peoples, plants, and animals between the Eurasian and North American landmasses. The Bering Strait had been inhabited for thousands when Europeans first made contact with Alaska Native tribes in the 18<sup>th</sup> Century.

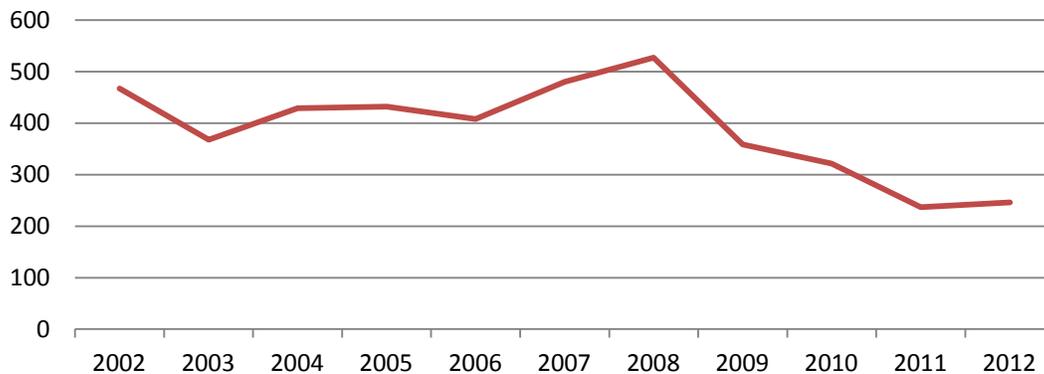
Today, the region is still inhabited by the Central Yup'ik, Inupiat, and Siberian Yup'ik peoples that originally settled here.

The City of Nome itself has a rich history as a gold rush and boomtown, which appeals to some visitors. Relics of the mining past dot the landscape on the road system surrounding Nome, including ditch lines, dredges, spent oil barrels, and railroads. There are a few interpretive signs explaining some sites on the road system and tour services are available out of Nome. Several Villages have sites catalogued in the National Register of Historic Places, including Teller, St. Michael, and Pilgrim Hot Springs (nearby Mary's Igloo town site). The City of Nome maintains a museum of history and its Front St storefront (along with Teller's) give it a "wild west" feel.

Alaska Native Villages: The Bering Strait Region has great potential for cultural tourism. The region contains 15 communities that maintain a strong subsistence-based Native culture. Facets of Bering Strait Native culture easily shared with visitors are Eskimo dancing and Alaska Native arts. Wales and Teller hold annual dance festivals, to which dance groups from around the region travel to perform. In the past, when cruise ships stopped at Little Diomedede more regularly, visitors were treated to feast of traditional foods and Eskimo dancing during their stay. On St. Lawrence Island, Siberian Yup'ik is still widely spoken. Accommodations are available in each village and vary according to location.

Hunting and Fishing: There is fair hunting and fishing in the Bering Strait region, most of which is taken advantage of by local residents for subsistence purposes. Big game includes moose, caribou, bear, and muskox. Guide services are available out of Nome and several Villages, as well as local taxidermy services available in Unalakleet. Many in the region provide opportunities for sport-fishing. Among the species that populate the region's streams are salmon (pink, silver, red, chum, and to a small degree, kings), dolly varden, grayling, tomcod, and whitefish.

### Average Monthly Visitors to Nome by Year



Iditarod: Each year the Iditarod Trail sled dog race brings a carnival-like atmosphere to the region. There are seven checkpoints (out of 27 on the southern route and 26 on the northern route) in the region where visitors can view mushers passing through, including the finish line in Nome. Typically, all accommodations in town are booked months in advance. The Nome Convention and Visitors Bureau coordinates a program where local residents rent out space in their houses to out-of-town visitors. Restaurants and bars feature a week of events, while local non-profits coordinate outside activities such as the annual snow-sculpting contest, 5k run/walk, and a six hole golf course set up on the Bering Sea ice.

Hot springs: There are two ‘developed’ hot springs on the Seward Peninsula: Pilgrim Hot springs and Serpentine Hot springs.

Of the two, Serpentine is more developed, though more remote. Situated in the Bering Land Bridge National Park, access during the summer months is either by foot or by small aircraft. During the winter months, visitors can access the springs by snow-machine. The site consists of a bathhouse and two bunk houses stocked with limited kitchen supplies.

Pilgrim hot springs is connected to the Seward Peninsula road system via a seven mile spur off the Kougarok Rd. The site was previously owned by the Catholic Church and served as an orphanage for some time. Later, the land was used in potato production and limited hay agriculture. There are several buildings still present on the grounds, though the site is now owned by Unaatuq, a consortium of Village and Regional for-profit and non-profit corporations. Land use permits are required to access the lands around Pilgrim Hot springs. They are free and are available at Bering Straits Native Corporation, the Aurora Inn, and the Nome Visitors' Center. The Bering Straits Native Corporation has a cabin for rent in the vicinity of Pilgrim Hot Springs. At the time of writing, the corporation was determining a nightly rate.

**Key Regional Actors:** Nome Convention and Visitors' Center, Bering Straits Native Corporation, Iditarod Trail Committee, Alaska Department of Fish and Game, Native Villages and Village Corporations, Norton Sound Economic Development Corporation, Alaska Airlines, Bering Air, Era Aviation, Nome Chamber of Commerce

**Key Regional Resources:** Natural and cultural history, tax revenues, State of Alaska Department of Commerce, Community and Economic Development,

**Key Issues:** distance and expense tourists face when traveling to the region, weather makes travel unpredictable, expenses narrow potential market to affluent visitors, lack of substantial camping facilities close to Nome, potential shortage of accommodations (depending on time of year, eg Iditarod and during bird migrations)

**Growth:** slightly declined due to fewer cruise ship traffic in recent years

## **Fisheries**

Another set of natural resources that were recognized by the public during the planning process were the region's fisheries. The Bering Strait has limited commercial fisheries opportunities. All five species of salmon found in Alaska are found in the Bering Strait region; however Chinook and Sockeye runs are not as strong as elsewhere in the state. The primary species harvested are chum and pink. There is a small king crab fishery in Norton Sound that is exploited both for commercial and subsistence purposes. Restricted to small boats, this fishery is designated super exclusive, which doesn't allow vessels registered in Norton Sound to participate in other king crab fisheries. The herring fishery is the largest in the Arctic, Yukon, and Kuskokwim region; however, the remoteness and late opening relative to other herring fisheries presents challenges to connecting with outside markets.

### **Crab**

21 vessels registered with NSEDC

#### **Salmon**

	<b>2010</b>	<b>2011</b>
Chinook	\$2.25	\$3.01
Chum	\$0.62	\$0.68
Coho	\$1.47	\$1.70
Pink	\$0.32	\$0.25
Sockeye	\$0.63	\$1.04
Crab	\$3.73	\$5.23

**Key Regional Actors:** Norton Sound Economic Development Corporation, Alaska Department of Fish and Game, Norton Sound Seafood Products, individual permit holders, North Pacific Fisheries Management Council

**Key Regional Resources:** five species of salmon, king crab, herring, Norton Sound Economic Development Corporation

**Key Issues:** Pollack fishery bycatch impacts on Bering Strait Salmon runs, late season ice impeding herring fishery

**Growth:** most of the region's salmon runs are in decline; however, the sockeye run into Salmon Lake is rebounding after a crash in the late 2000s. The crab fishery has been growing.

**Traffic through the Bering Strait**

As the extent of the summer sea ice in the Arctic Ocean decreases, greater numbers of vessels have been passing through the Bering Strait. The increase in potential shipping through the strait has been treated more ambivalently than other opportunities. From a different perspective, increased shipping brings increased risk of oil spill, marine mammal disturbance, and potential invasive species. However, additional shipping through the region could increase the demand to service the industry.

At present, the closest deep draft port is situated in Unalaska, over 700 miles to the south of Nome. This presents logistical problems for operations exploring the outer continental shelf, as well as other vessels carrying freight through the strait. In addition to the lack of a port with commercial marine services, safety concerns have arisen as well. The nearest Coast Guard base is on Kodiak, even further from the region than Unalaska. Further development of the Port of Nome would potentially both increase safety and response time, while allowing for additional economic activity with outside organizations.

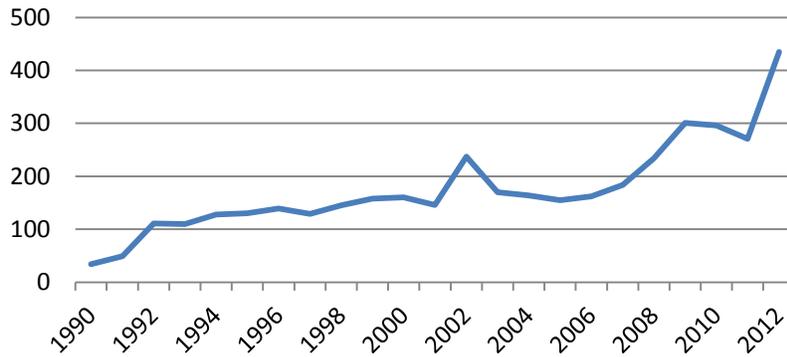


Figure 1: Northern Sea Route, Source: USA Today

Over recent years, traffic has increased through the Bering Strait. Communities on the coast have begun to take notice of the traffic transiting the Strait. Many of these vessels are research and energy exploration ships, but vessels carrying bulk fuel and cargo have starting using the Northern Sea Route across the north of Russia as the water opens up. Smaller recreational vessels are also starting to travel the Northwest Passage through the Canadian Arctic. Some scientists have estimated an ice free summer Arctic as early as 2050.

	2009	2010	2011	2012
<b>Recorded Bering Strait Transits</b>	277	338	239	316
<b>Northern Sea Route Transits</b>		4	34	46

## Total Dockings at Port of Nome



**Key Regional Actors:** City of Nome, United States Coast Guard

**Key Regional Resources:** State of Alaska, tax revenues, FEMA

**Key Issues:** Oil spill response preparedness, impact on natural resources, infrastructure to meet needs of traffic, national security

**Growth:** high growth in the number of vessels passing through strait.

## Challenges and Threats

While mineral development, tourism, fisheries and increased traffic through the Bering Strait offer opportunities to raise the standard of living, the Bering Strait Region faces significant challenges when it comes to economic development. Most notably among these are inadequate infrastructure, a poor level of social health, and the region’s isolated geography.

From a community and economic development perspective, the infrastructure throughout the Bering Strait Region presents significant challenges. Basic services, housing, communications, and transportation infrastructure all present challenges to communities in the region. This section outlines some of those challenges.

### Water and Sewer

The Arctic and sub-Arctic represent challenging environments to operate water sewer systems, with permafrost and eight months below freezing.

Eleven communities in the Bering Strait Region have piped sewer and water systems that service some to most of the

community. Five communities still rely on honey buckets for sanitation and haul water, either directly from the source or from a central watering point in the community. The piped water and sewer systems consume significant amounts of energy circulating and heating the water to avoid freeze up. Communities without piped water and sewer systems, such as Teller, have set water and sewer projects among their top priorities.

**Key Regional Actors:** Norton Sound Office of Environmental Health, City Governments, Norton Sound Economic Development Corporation

**Key Regional Resources:** Norton Sound Economic Development Corporation, Village Safe Water, Alaska Native Tribal Health Consortium, Alaska Department of Commerce, Community, and Economic Development

**Key Issues:** cost of installation and system maintenance costs, permafrost restrictions in construction, freeze ups during winter months

**Growth:** n/a

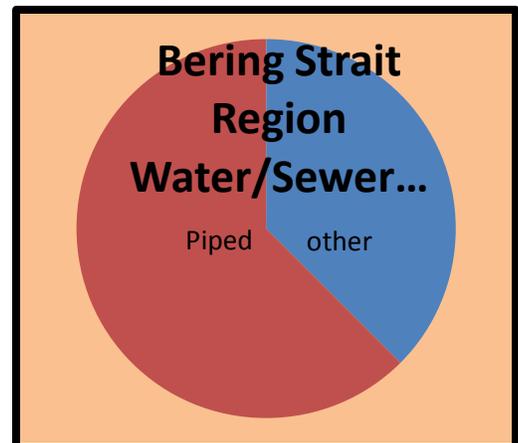


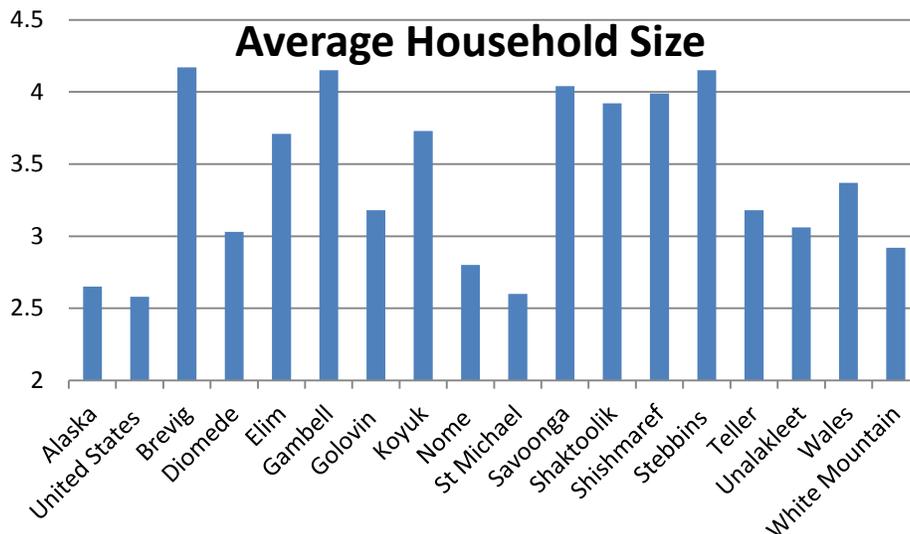
Figure 2: Collected by Pearl Mikulski

## Housing

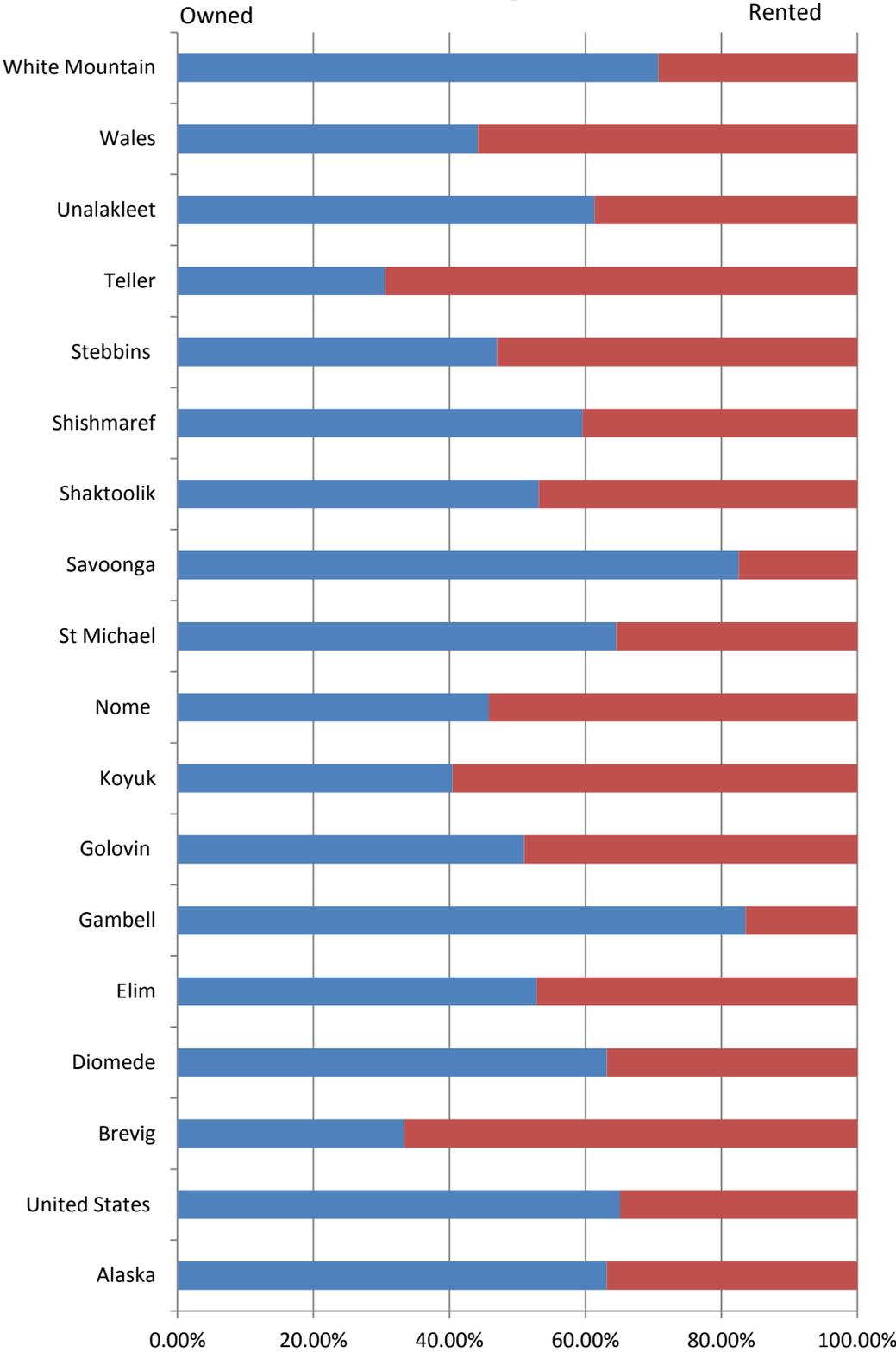
Building and maintaining adequate housing pose significant challenges in the Bering Strait region. According to the Alaska Department of Labor and Workforce Development Research and Analysis Section, the only communities in which homes were constructed in 2010 and 2011 were Nome and Koyuk. The Bering Strait Regional Housing Authority (BSRHA) is the primary developer of new housing in the Villages outside Nome. Some anecdotal evidence indicates individuals in a few communities find creative means to finance and build their own homes; however, these are exceptional cases. The Housing Authority faces considerable challenges in funding new housing construction due to rising transportation costs of materials, rising labor wages, and maintaining the current assisted housing stock. Currently, new construction in the Bering Strait can cost anywhere from \$350 to \$475 per square foot, making a small single family home in the Bering Strait comparable in costs to luxury homes in other parts of the country.

There is some private development occurring in Nome. However, the incentive to develop new housing is reduced, given that new construction appraisal value can be lower than accumulated construction costs. A few individuals (those who own and build themselves) have been able to circumvent this issue.

The housing rental market in Nome is landlord favored. For much of the year, finding a rental unit suitable for ones needs is challenging. What the average renter does find is expensive. Rates for a one bedroom apartment are typically \$1100 - \$1200. A three bedroom house will rent for well over \$2000.



# Owner-occupied vs. Renter Occupied Housing



**Key Regional Actors:** Bering Strait Regional Housing Authority, Nome Eskimo Community, Bering Straits Native Corporation, Nome Emergency Shelter Team

**Key Regional Resources:** United States Department of Housing and Urban Development, Alaska Housing Finance Corporation, RurAL CAP,

**Key Issues:** high costs of new construction, overcrowding in single family homes, energy inefficient homes, high cost of home heating and maintenance, difficulty financing new construction

**Growth:** There is potential for growth in this sector.

### **Telecom and IT**

Current infrastructure allows for speeds and bandwidth capacity well below that of communities on the Alaskan road system and the lower 48. Coupled with the geographic isolation and associated high costs of freight and travel, low IT capacity serves as a barrier to economic development. The low speeds do not allow opportunity for video conferencing, webinars, and other data intensive training and education tools now being used throughout the rest of the world. Moreover, bandwidth caps discourage internet users from participating in the more data intensive aspects of social media. Users who exceed the bandwidth quota are assessed fees on top of regular monthly subscription fees.

	<u>download</u>	<u>upload</u>	<u>cost</u>	<u>bandwidth</u>
<u>Brevig</u>	256 kbps	56 kbps	\$99.99	3500 mb
<u>Diomedede</u>	256 kbps	56 kbps	\$99.99	3500 mb
<u>Elim</u>	256 kbps	56 kbps	\$99.99	3500 mb
<u>Gambell</u>	256 kbps	56 kbps	\$99.99	3500 mb
<u>Golovin</u>	256 kbps	56 kbps	\$99.99	3500 mb
<u>Koyuk</u>	256 kbps	56 kbps	\$99.99	3500 mb
<u>Nome</u>	6 Mbps	2 Mbps	\$149.99	25000 mb
<u>St Michael</u>	256 kbps	56 Kbps	\$99.99	3500 mb
<u>Savoonga</u>	256 kbps	56 Kbps	\$99.99	3500 mb
<u>Shaktoolik</u>	256 kbps	56 Kbps	\$99.99	3500 mb
<u>Shishmaref</u>	256 kbps	56 Kbps	\$99.99	3500 mb
<u>Stebbins</u>	256 kbps	56 Kbps	\$99.99	3500 mb
<u>Teller</u>	256 kbps	56 Kbps	\$99.99	3500 mb
<u>Unalakleet</u>	6 Mbps	2 Mbps	\$149.99	25000 mb
<u>Wales</u>	256 kbps	56 Kbps	\$99.99	3500 mb
<u>White Mountain</u>	256 kbps	56 Kbps	\$99.99	3500 mb



## Transportation

<i><b>Brevig Mission</b></i>	<p>Brevig Mission is accessible by air and sea and, in the winter, over land or ice. A cargo ship visits annually. The state-owned 2,990' long by 100' wide gravel airstrip with a 2,110' long by 75' wide gravel crosswind strip enables year-round access. Regular air service is available from Nome, and charters are provided from Nome and Teller. Teller is 5 miles away by boat. A 72-mile gravel road between Teller and Nome is maintained by the state during the summer.</p>
<i><b>Diomede</b></i>	<p>Due to constant winds from the north, accessibility is often limited. A state-owned heliport allows for weekly mail delivery. There is no airstrip due to the steep slopes and rocky terrain, so ski-planes must land on an ice strip in winter. Few float plane pilots attempt to land on the rough and often foggy open sea during summer. Regular flights are scheduled from Nome, weather permitting. There is a breakwater and small boat harbor. Skin boats are still a popular method of sea travel to cover the 28 miles to Wales. Cargo barge stops are irregular, due to sea or ice conditions, but deliver at least annually. Lighterage services are available from Nome.</p>
<i><b>Elim</b></i>	<p>Elim is best reached by air and sea. It offers a 3,401' long by 60' wide gravel runway. Elim Native Corporation also owns a private 3,000' by 60' airstrip at Moses Point. There is no dock in the village, so supplies must be lightered to shore by a company operating from Nome. Plans are underway to develop a harbor and dock; an access road is under construction. A cargo ship brings freight annually to Nome.</p>
<i><b>Gambell</b></i>	<p>Gambell's isolated location on an island with no seaport results in heavy dependence upon air transport. The state-owned airport has a 4,500' long by 96' wide asphalt runway. Regular flights from Nome and charters from Unalakleet are available. Lighterage services bring freight from Kotzebue and Shishmaref.</p>
<i><b>Golovin</b></i>	<p>Since there are no roads connecting the city with other areas, access to Golovin is limited to air and sea. Both scheduled and chartered flights are available from Nome. A state-owned airport with a 4,000' long by 75' wide gravel runway is available. Supplies are lightered from Nome and offloaded on the beach. A cargo ship brings supplies once each summer from Nome.</p>
<i><b>Koyuk</b></i>	<p>There are no roads connecting Koyuk with other villages. Access is limited to air and sea. There is a state-owned 3,000' long by 60' wide gravel runway. Regular flight service from Nome and Unalakleet is available. Supplies arrive in Nome and are lightered to shore. There is no dock in the village.</p>
<i><b>Saint Michael</b></i>	<p>Saint Michael is accessible by air and sea only. The state owns a 4,001' long by 75' wide gravel airstrip, and a seaplane base is available. Regular and charter flights are available from Nome and Unalakleet. It is near the Yukon River Delta and has a good natural harbor but no dock. Lighterage service is provided on a frequent basis from Nome. Saint Michael receives at least one annual shipment of bulk cargo. A 10.5-mile road exists to Stebbins.</p>
<i><b>Savoonga</b></i>	<p>Savoonga's isolated location with no seaport and iced-in conditions during the winter means a dependence on air transport. The state-owned gravel airstrip is 4,400' long and 100' wide. Regular air service is available from Nome and Unalakleet. There is no dock, and supplies are lightered from Nome or off-loaded on the beach.</p>

<b><i>Shaktoolik</i></b>	Shaktoolik is primarily accessible by air and sea. A state-owned 4,001' long by 75' wide gravel airstrip is available. The Alex Sookiayak Memorial Airstrip allows for regular service from Unalakleet. Summer travel is by ATV, motorbike, truck, and boat; winter travel is by snow-machine and dog team. Cargo is barged from Nome, then lightered to shore.
<b><i>Shishmaref</i></b>	Shishmaref's primary link to the rest of Alaska is by air. A state-owned 5,000' long by 70' wide paved runway is available for charter and freight services from Nome. Most people use boats for trips to the mainland.
<b><i>Stebbins</i></b>	Stebbins is accessible by air and sea. There is a state-owned 3,000' long by 60' wide gravel runway. Regular flights, charters, and freight services are available from Bethel. A cargo ship brings supplies annually. There is no dock, and goods must be lightered out of Nome. Overland travel in the winter is by snow-machine.
<b><i>Teller</i></b>	Teller has a road link to Nome from May to September via a 72-mile gravel road. The community can also be accessed by sea and air. There is a state-owned 3,000' long by 60' wide gravel runway with regular flights from Nome. There is no dock; goods are lightered from Nome and offloaded on the beach. Port Clarence is a nearby natural harbor.
<b><i>Unalakleet</i></b>	Unalakleet has a state-owned 5,900' long by 150' wide gravel runway and a gravel strip that is 1,900' long and 75' wide. There are regular flights to Anchorage. Cargo is lightered from Nome; there is a dock. Local overland travel is mainly by ATVs, snow-machines, and dogsleds in winter.
<b><i>Wales</i></b>	Wales is accessed by air and sea only. There is a state-owned 4,000' long by 75' wide gravel airstrip, and the ice on the straits is frequently used as a landing area by planes in the winter. Scheduled and charter flights are available. Cargo is delivered by barge and lightered half mile to shore. Skin boats are still a popular method of sea travel, and snow-machines are used in winter. There is a 6.5-mile road to Tin City.
<b><i>White Mountain</i></b>	Access to White Mountain is by air and sea. There are no roads. The 3,000' long by 60' wide gravel runway is operated by the state, and scheduled flights are available daily from Nome. There is no dock in the village; supplies are lightered from Nome and offloaded on the beach. Cargo barges cannot land at White Mountain.
Source: <a href="http://www.commerce.state.ak.us/dcra/">http://www.commerce.state.ak.us/dcra/</a>	

**Key Regional Actors:** Bering Air, Era Aviation, Alaska Airlines, Lynden Transport, Ryan Air, Northland Services, Port of Nome

**Key Regional Resources:** Alaska Department of Transportation

**Key Issues:** cost of fuel versus demand for services and passenger/freight volume

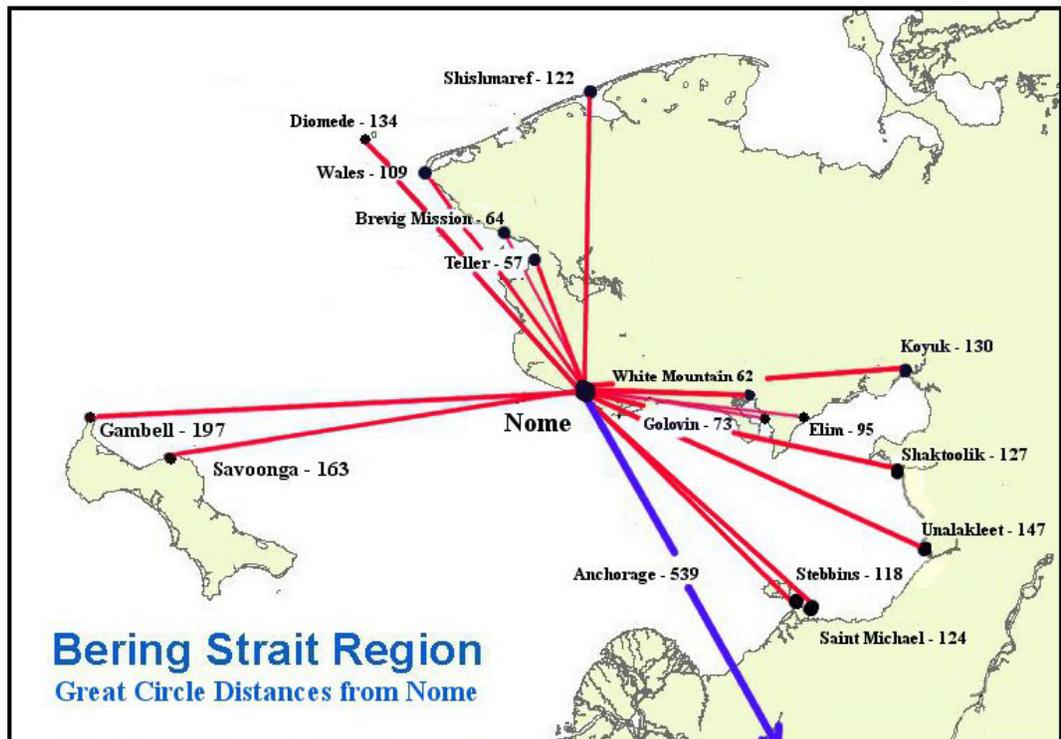
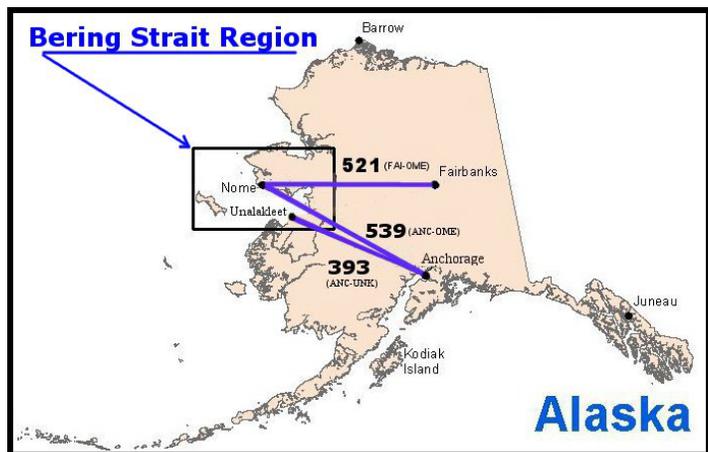
**Growth:** high potential for growth, though dependent on increasing flows of people and goods through the region's ports

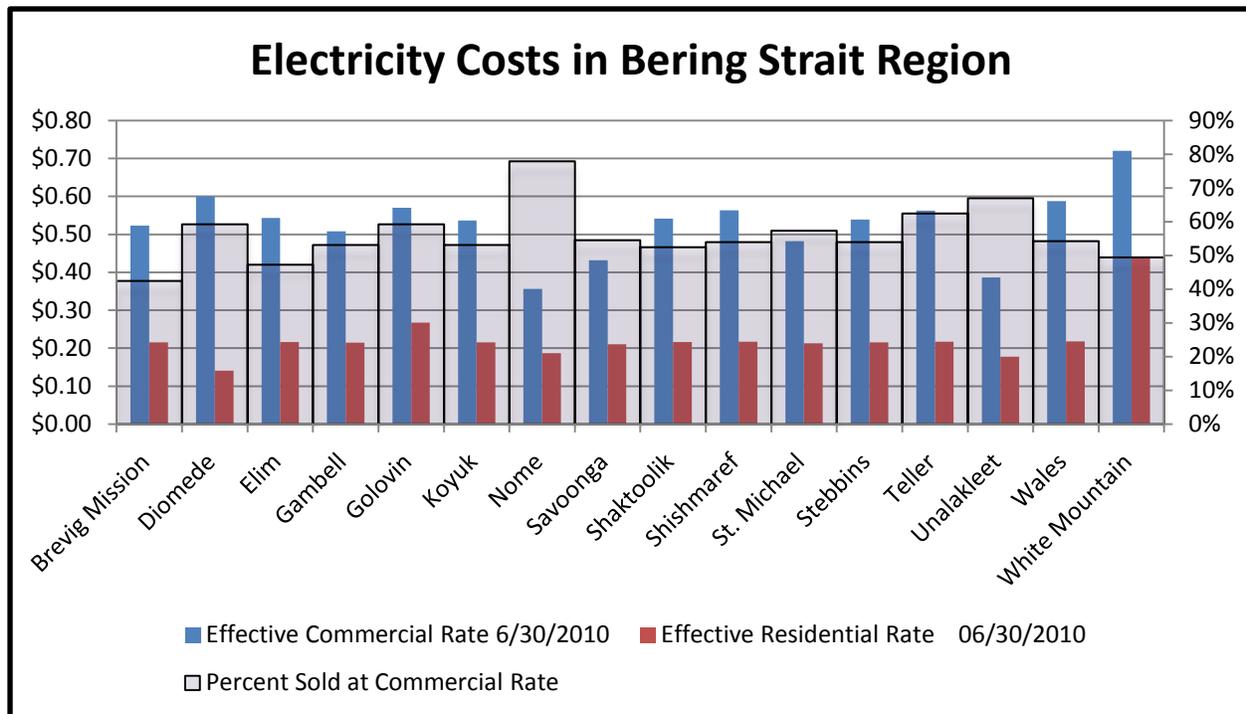
## Geographic Isolation

Situated over 500 miles from the Alaska road system, Nome enjoys some benefits from its geographic isolation such as access to wilderness and low hunting pressure on subsistence resources. It is not unusual to spend time in the backcountry of the Seward Peninsula without seeing an individual other than those you are traveling with. However, the increased distance from population center and connecting transportation networks results in high transportation and high energy costs. The high costs of transportation and energy are the perhaps the greatest challenge the region faces. These costs pervade nearly every aspect of the regional economy, from food costs, to space heating, to housing construction, and water and sewer system maintenance.

Electricity in the region is primarily generated through diesel powerhouses situated in each community. Diesel must be imported by tanker during the ice-free summer months and must suffice through the ice-bound months until another shipment can arrive. Fuel must be purchased during the summer months when market prices are typically at their highest.

The logistics of delivering the fuel are reflected in the cost of electricity passed on to customers. White Mountain, which is situated slightly inland on the Fish River, has the highest electricity prices in the region.

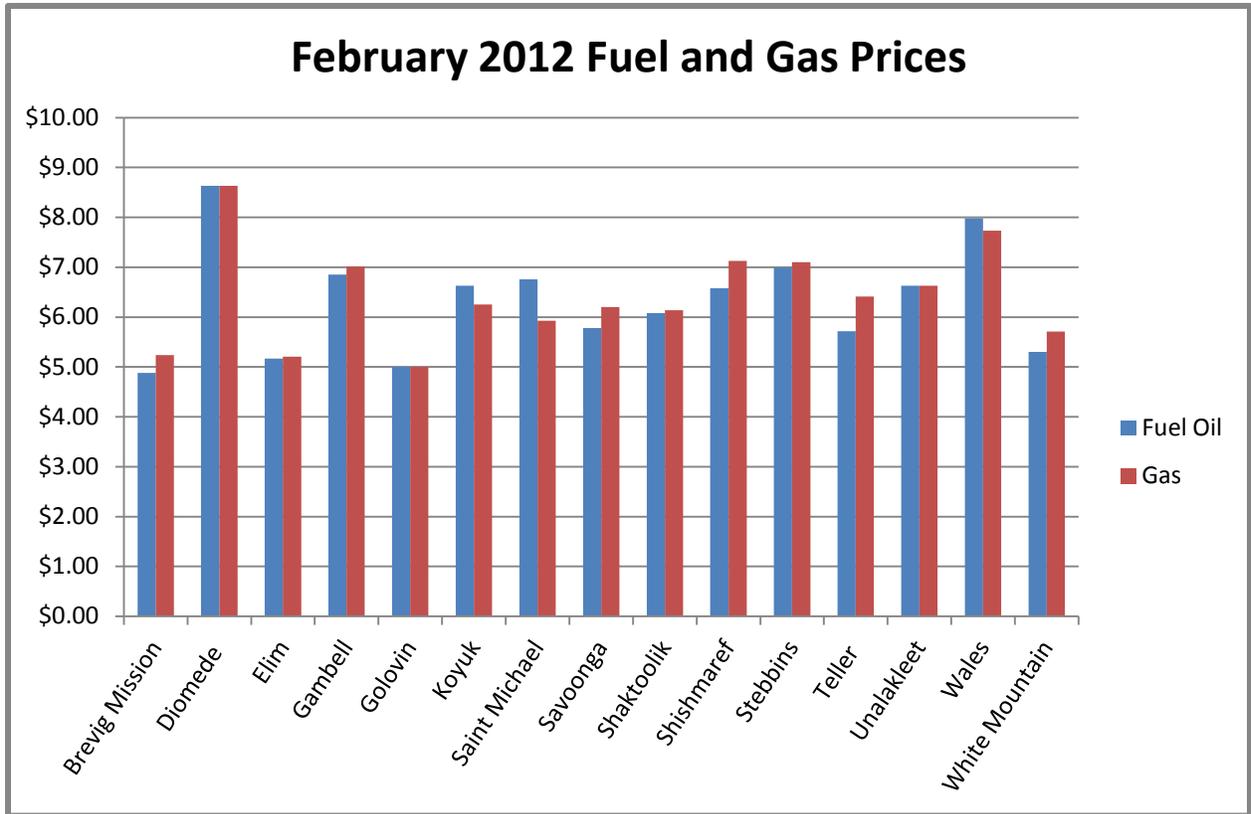




The Alaska Energy Authority operates the Power Cost Equalization (PCE) program, which provides a subsidy on electricity prices for residential users off the road system. The subsidy is meant to equalize, to some degree, the prices residential users pay on the first 500kWh of power per month. Typically, the average rural consumer uses about 380kWh per month, staying well below the upper limit of the subsidy.

While this assists some consumers, commercial consumers pay rates substantially higher than those offered at residential rates. High electricity costs serve as a disincentive for business and economic development in the region, making start-ups and business expansion difficult. Typical economic development programs have a business attraction component. However, with the limited population density, distance from external markets, and high electricity costs, most businesses are not attracted to the region.

The heating of homes, community buildings, businesses, and utilities consumes a significant amount of energy. As in electricity generation, space heating is typically done by diesel fuel and the logistics of shipping the fuel to a remote sub-arctic community and storing it are passed on to the consumers. As is the case with electricity costs, high fuel oil costs make operations and maintenance difficult for organizations operating in the region.



The geographic isolation also results in high gasoline costs. Coupled with the greater distances traveled by snow-machine or boat, the high cost of gasoline presents challenges to inter-village travel and subsistence activities.

In summary, as the cost of oil rises, so do many aspects of living and doing business in the Bering Strait. Food prices rise, as airlines and barge companies compensate for their increased fuel use. The construction of new homes, community, and commercial buildings increases in cost raising barriers to increased economic activity.

	Cost to ship 2,000 pounds Via					
	<i>Bypass Mail</i>		<i>Ocean Barge</i>		<i>Air Cargo</i>	
	Total Cost	Cost/Lb	Total Cost	Cost/Lb	Total Cost	Cost /Lb
<b>Anchorage to Nome</b>	809	0.45	973	0.49	2,165	1.08
<b>To Average Village</b>	809	0.45	1,496	0.97	4,366	2.18

Bypass mail serves to keep the cost of some consumer goods low; however, as the federal budget tightens, the bypass mail program continues to be a target of legislatures looking for spending to cut.

**Key Regional Actors:** Alaska Village Electric Cooperative, Nome Joint Utilities, Independent Utilities, Crowley, Bonanza Fuel Co

**Key Regional Resources:** Alaska Energy Authority, United States Department of Energy, Norton Sound Economic Development Corporation, Bering Straits Native Corporation, Alaska Department of Commerce, Community, and Economic Development, Alaska Industrial Development and Export Authority

**Key Issues:** rising cost of energy for electrification, transportation, and space heating

**Growth:** due to rising costs of fossil fuel energy, alternative energy development growth potential is high.

## V. Economic Development Goals and Objectives

- Goal #1: Strengthen our economy in ways that preserve and enhance our quality of life without harming our environment.
  - **Objective 1**: Educate and train residents for employment in growing industries.
  - **Objective 2**: Support entrepreneurship by providing business planning and research assistance.
  - **Objective 3**: Capitalize on natural resources in environmentally responsible ways.
  
- Goal #2: Promote economic stability by creating, maintaining, and upgrading infrastructure to adequately meet our current and anticipated needs.
  - **Objective 1**: Increase access to and improve water and sewer access.
  - **Objective 2**: Increase internet speeds and decrease costs.
  
- Goal #3: Improve community services to enhance our quality of life.
  - **Objective 1**: Increase housing availability and accessibility.
  - **Objective 2**: Improve public safety by establishing, maintaining, and improving the necessary emergency services, planning and facilities.
  - **Objective 3**: Provide tax assistance to communities on a yearly basis.
  - **Objective 4**: Improve and expand educational capacity to meet current and future needs.
  
- Goal #4: Reduce fossil fuel costs by exploring renewable energy alternatives and increasing energy-efficiency in our communities.
  - **Objective 1**: Conduct energy audits on community and commercial buildings throughout the region.
  - **Objective 2**: Make energy efficiency improvements on needed buildings.
  - **Objective 3**: Explore alternatives and evaluate feasibility of projects.
  - **Objective 4**: Increase residents' knowledge of ways to reduce costs of energy use.

## Strategies

*Build local workforce to take advantage of:*

- Maritime trades and traffic through Bering Strait
- Skilled trades (plumbing, electrical etc)
- Oilfield support services
- Mineral exploration services
- Mining
- Alternative energy development and maintenance

*Build infrastructure to encourage:*

- Mining and mineral development
- Information economy
- Reduced cost of living and doing business
- Capture shipping traffic business during the ice free seasons

*Encourage entrepreneurship to:*

- Develop support industries for mining, shipping, energy etc
- Diversify the size of firms in the region

*Decrease the cost of living and doing business in the region by:*

- Addressing high energy costs
- Advocating for cheaper, sustainable transportation alternatives
- Encouraging local sourcing and cultivation of food

## VI. Action Plan and Evaluation Methods

**Goal 1:** Strengthen our economy in ways that preserve and enhance our quality of life without harming our environment.

- **Objective 1:** Educate and train residents for employment in growing industries.
  - **Partners:** Kawerak, Inc, Norton Sound Economic Development Corporation, Norton Sound Health Corporation, Bering Strait Native Corporation, Bering Strait village corporations, Alaska Department of Labor and Workforce Development, UAF Northwest Campus, Bering Strait School District, Nome Public Schools, Northwestern Alaska Career and Technical Center
  - **Activities and Tasks:**
    1. Provide regional residents opportunities to gain work experience.
    2. Provide village-based training in carpentry and heavy equipment operations.
    3. Assist residents of the region with documented disabilities improve job-related skills.
  - **Performance Measures:**
    - # of trainings and participants for carpentry and heavy equipment operations
    - # of residents assisted gain job-related skills
  
- **Objective 2:** Support entrepreneurship, provide business planning and research assistance.
  - **Partners:** Kawerak, Inc, Alaska Small Business Development Center, Norton Sound Economic Development Corporation, tribal entities, UA Center for Economic Development, Nome Chamber of Commerce
  - **Champion:** Kawerak Business Planning Specialist
  - **Activities and tasks:**
    1. Promote tuition assistance to individuals interested in new or expanding business.
    2. Seek new partners and funding to conduct and promote general business start-up workshops covering areas such as business planning, marketing, and accounting principles.
    3. Promote an environment in which small business will succeed by creating networks of resources and business owners.
    4. Promote e-commerce by supporting training workshops and educating individuals and tribes on the use of the internet as a business and marketing tool. Continue to seek out funding to complete installation and updating of regional e-commerce centers.

- 5. Promote Alaska Marketplace and Norton Sound Economic Development small business seed money competitions and provide technical assistance.
- **Performance Measures:**
  - # of individuals completing business related classes
  - # of business workshops held in region
  - Amount of investment in new or expanding business
- **Objective 3:** Capitalize on natural resources in environmentally responsible ways.
  - **Partners:** Kawerak, Inc, Norton Sound Economic Development Corporation, Bering Strait Native Corporation, Bering Strait village corporations, tribal councils, City of Nome, Alaska Department of Natural Resources, Alaska Department of Fish and Game, Private Sector
  - **Activities and tasks:**
    1. Work with the Nome Chamber of Commerce to incorporate village concerns and needs into regional tourism planning. Provide technical assistance to villages that have identified tourism as a priority.
    2. Explore the feasibility of a fish hatchery in Norton Sound
    3. Promote safe diving practices for divers engaged in offshore dredging activities
    4. Work with village corporations to standardize land use fees
    5. Identify and provide support services for gold mining industry
  - **Performance Measures:**
    - Visitor Counts at the Nome visitor center
    - Tax revenue
    - Gold production and price
    - Fisheries harvest # and price
    - Other mineral production and price

**Goal 2:** Promote economic stability by creating, maintaining, and upgrading infrastructure to adequately meet our current and anticipated needs.

- **Objective 1:** Increase access to and improve water and sewer access.
  - **Partners:** Kawerak, Inc., Norton Sound Health Corporation, Rural Utility Business Advisor, Alaska Native Tribal Health Consortium, Alaska Department of Commerce, Community, and Economic Development
  - **Activities and tasks:**
    1. Complete water and sewer plans for Bering Strait Communities
    2. Support utilities and municipalities with pricing and management

- **Performance Measures:**
  - # of communities with sufficient sewer and water systems
  - % of homes served in each community
  - Prices for water and sewer service by community
- **Objective 2:** Increase internet speeds and decrease costs.
  - **Partners:** Kawerak, Inc., Alaska Broadband Task Force, GCI, TelAlaska, Quintillion, LLC, Alaska Regional Development Organizations, Alaska Partnership for Economic Development
  - **Activities and tasks:**
    1. Follow broadband task force activities and advocate for Bering Strait community interests.
    2. Work with our state and federal legislators.
  - **Performance Measures:**
    - Price per internet plan
    - Upload / download speeds
    - Bandwidth capacity
  - **Potential Projects:**
    - Quintillion spur construction off Arctic Fibre between Tokyo and London

**Goal 3:** Improve community services to enhance our quality of life.

- **Objective 1:** Increase housing availability and accessibility
  - **Partners:** Kawerak, Inc., Bering Strait Regional Housing Authority, Bering Strait Native Corporation, Sitnasuak Corporation, tribal entities, HUD, AHFC, Intershelter, Bering Strait Development Corporation, Norton Sound Economic Development Corporation
  - **Activities and tasks:**
    1. Research barriers to financing new construction in rural Alaska.
    2. Advocate for increased NAHASDA and HIP funding.
    3. Explore establishing Self Help Housing program in Nome.
    4. Develop case studies of regional individuals that have financed and/or built their own homes.
  - **Performance Measures:**
    - Decreased persons per household in communities and region
    - Increased construction projects year over year
    - Building permits
    - Construction jobs created

- **Objective 2:** Improve public safety by establishing, maintaining, and improving the necessary emergency services, planning and facilities
  - **Partners:** Kawerak, Inc., Alaska State Troopers, Alaska Division of Emergency Management, Alaska Red Cross, Norton Sound Health Corporation, Municipal governments, Norton Sound Economic Development Corporation, Norton Sound Health Corporation, Volunteer Fire/Search & Rescue/EMT Departments
  - **Activities and tasks:**
    1. Develop emergency planning specialist position at Kawerak CPD.
    2. Develop Hazard Mitigation Plans (HMP), Emergency Operation Plans (EOP), and Small Community Emergency Response Plans (SCERP) for region's communities.
    3. Support communities actively developing plans through research and advocacy.
    4. Assist village grant writers in obtaining funding for public safety projects.
    5. Attend Local Emergency Planning Committee (LEPC) meetings bi-monthly.
  - **Performance Measures:**
    - # of completed plans
    - # of LEPC meetings attended
    - # of projects implemented at regional and community level
  
- **Objective 3:** Provide tax assistance to communities on a yearly basis
  - **Partners:** Kawerak, Inc., Norton Sound Economic Development Corporation, Alaska Business Development Center, private sector accountants, tribal entities
  - **Activities and tasks:**
    1. Visit each community and work with individuals in preparing tax returns
    2. Provide telephonic assistance year round on tax matters
  - **Performance Measures:**
    - # of households assisted
    - \$ in returns to communities
  
- **Objective 4:** Improve and expand educational capacity to meet current and future needs.
  - **Partners:** Kawerak, Inc. Norton Sound Economic Development Corporation, UAF Northwest campus, Bering Strait School District, Nome Public Schools, Northwest Alaska Career and Technical Center, Department of Labor and Workforce Development

- **Activities and tasks:**
  1. Coordinate among entities to provide scholarships for regional residents.
- **Performance Measures:**
  - # scholarships provided

**Goal 4:** Reduce fossil fuel costs by exploring renewable energy alternatives and increasing energy-efficiency in our communities.

- **Objective 1:** Conduct energy audits on community and commercial buildings throughout the region.
  - **Partners:** Kawerak, Inc., Bering Strait Native Corporation, Norton Sound Economic Development Corporation, Alaska Energy Authority, RurAL CAP, tribal entities, municipal governments, Alaska Native Tribal Health Consortium, Denali Commission, National Renewable Energy Laboratory, US Department of Energy, AK Department of Commerce, Community, and Economic Development
  - **Activities and tasks:**
    1. Identify source of funding to conduct audits
  - **Performance Measures:**
    - Audits completed
    - Improvements made to structures
    - Reduced energy consumption measured by kWh and gallons of fuel oil
- **Objective 2:** Improve energy efficiency of homes and buildings
  - **Partners:** Kawerak, Inc., Bering Strait Native Corporation, Norton Sound Economic Development Corporation, RurAL CAP, Alaska Energy Authority, Alaska Native Tribal Health Consortium, tribal entities, USDA – Rural Development, Denali Commission, Alaska Department of Commerce, Community, and Economic Development, United
  - **Activities and tasks:**
    1. Collect and maintain energy usage data for community buildings and residences.
    2. Complete energy audits for home, public, and commercial buildings.
    3. Implement EnergyWise program in region.
    4. Provide energy specific information to regional grant writers.
    5. Develop appliance replacement program.
  - **Performance Measures:**
    - fuel oil consumption by building and community
    - kWh usage by building and community

- **Objective 3:** Explore alternatives and evaluate feasibility of projects.
  - **Partners:** Kawerak, Inc., Unuatuq, LLC, Bering Straits Native Corporation, Alaska Village Electric Cooperative, village corporations, Alaska Center for Energy and Power, Norton Sound Economic Development Corporation, US Department of Energy, Alaska Energy Authority, National Renewable Energy Laboratory, tribal entities, Alaska Department of Commerce, Community, and Economic Development, Alaska Department of Natural Resources, Economic Development Administration
  - **Activities and tasks:**
    1. Work through action plan in Bering Strait Strategic Energy Plan.
    2. Work with AVEC and communities to identify suitable sites for wind turbines.
    3. Work with ACEP to continue evaluation of Pilgrim geothermal project.
  - **Performance Measures:**
    - # of feasibility studies performed
  
- **Objective 4:** Increase residents' knowledge of ways to reduce costs of energy use
  - **Partners:** Kawerak, Inc., RuAL CAP, Norton Sound Economic Development Corporation, Bering Straits Native Corporation, tribal entities, municipalities, KNOM, KICY, The Nome Nugget
  - **Activities and tasks:**
    1. Develop and distribute flyers on energy saving tips
    2. Develop PSAs on energy efficiency programs
    3. Implement Energy Wise program in the region
  - **Performance Measures:**
    - # of residents participating in energy efficiency programs
    - # of flyers and PSAs developed

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