KAWERAK, INC.
Our People & Tribes are Thriving

Bering Straits Comprehensive Economic Development Strategy, 2019-2024

Kowegok Slough in Unalakleet, Alaska Photo credit: Fisher Dill

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I. Introduction

The *Bering Strait Comprehensive Economic Development Strategy: 2019-2024* (CEDS) is the result of a continuous planning process at the local and regional level in the Nome Census Area of Northwestern Alaska. The 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.

This version of the *Bering Strait Comprehensive Economic Development Strategy* updates and replaces the previous document, which was active from 2013 to 2018. It reflects more recent economic and demographic data, updated Local Economic Development Plans (LEDP's), and the requisite public process to ensure that the plan reflects the wishes of the broader region. It has been developed with respect to the Economic Development Administration's (EDA) *CEDS Content Guidelines*, which have been revised since the previous CEDS was finalized.

Acknowledgments

The current document was developed with generous assistance from the University of Alaska Center for Economic Development and the Economic Development Administration.

Thank you to the following organizations for supporting the development of this CEDS planning document:

- Bering Strait Regional Housing Authority
- Brevig Mission Traditional Council
- Chinik Eskimo Community
- City of Nome
- Council Traditional Council
- Discovery Tours
- Gambell IRA
- King Island Native Community
- Mary's Igloo Traditional Council
- Native Village of Diomede
- Native Village of Elim
- Native Village of Gambell
- Native Village of Koyuk
- Native Village of Saint Michael
- Native Village of Savoonga
- Native Village of Shaktoolik
- Native Village of Shishmaref
- Native Village of Unalakleet
- Native Village of Wales
- Native Village of White Mountain
- Nome Chamber of Commerce
- Nome Eskimo Community
- Rural Credit Services
- Solomon Traditional Council
- Stebbins Community Association
- Teller Traditional Council
- UAA Business Enterprise Institute
- University of Alaska Fairbanks

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 which contributed to the planning process included in this document included the following individuals:

Bering Strait Development Council Board			
Seat	**Sector Represented**	**Organization Name**	**Member Name**
A	Transportation	Nome Chamber of Commerce	Paul Kosto
D	Banking	Rural Credit Services	Lahka Peacock
E	Tourism	Discovery Tours	Richard Beneville
G	Housing	Bering Strait Regional Housing Authority	Frank Johnson
H	City of Nome	City of Nome	Bryant Hammond
I	Chair	Kawerak, Inc.	Frank Katchatg
J	Northern Sub-Region	Brevig Mission IRA	Gilbert Tooktoo
J	Northern Sub-Region	Wales IRA	Anna Oxereok
K	South Central Sub-region	Elim IRA	Robert Keith
M	St. Lawrence Island	Gambell IRA	Larry Kava
Q	Higher Education	UAF-NW Campus	Barb Amarock

Table 1: Bering Strait Development Council Board
Source: Kawerak, Inc.

Comprehensive Economic Development Strategy (CEDS) 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 perspectives on economic development needs and opportunities within the region. The private sector is represented on the BSDC board, which guides the CEDS process. Additionally, Community Planning and Development staff (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 document was formulated over the winter, summer, and fall of 2019 and were available for public review and comment between November 26th and December 26th, 2019 via draft documents sent to regional entities, KNOM radio announcements, Kawerak website, and Kawerak Facebook page

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 Diomede 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. The 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.

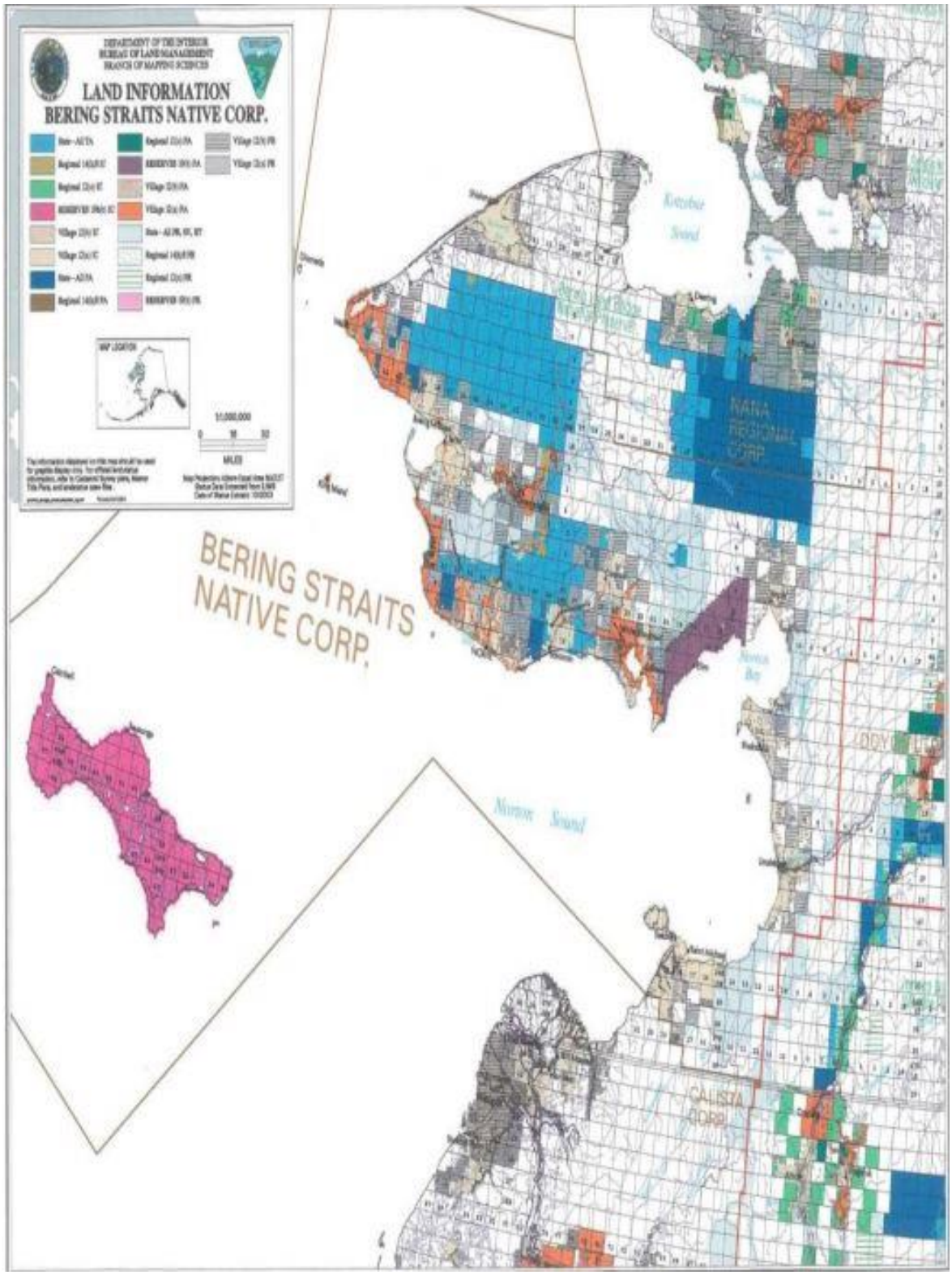

Figure 1: Bering Straits Region
Source: Bureau of Land Management

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. Generally, the total acreage owned by each village corporation is proportional to their respective village's population at the time the Alaska Native Claims Settlement Act was passed. The exceptions to this are 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.

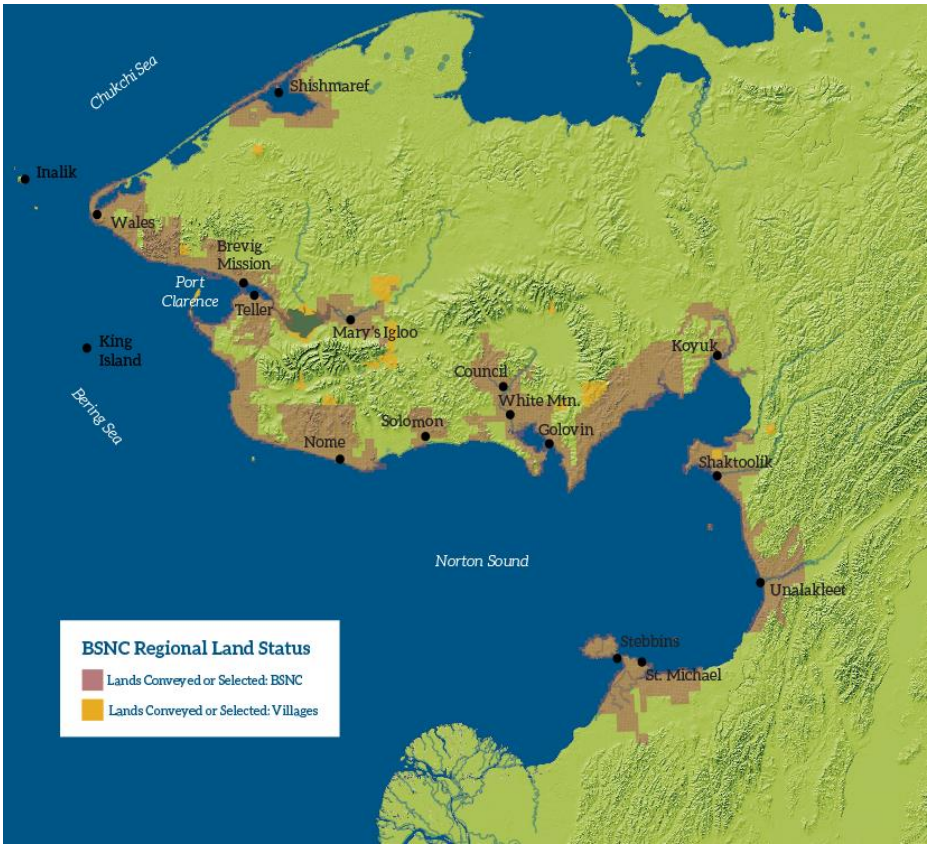

Figure 2: Land Status
Source: BSNC Land and Resource Department

Local Governing Bodies

All 16 communities in the Bering Strait region are in the unorganized borough and are each governed by three entities. Each community has a municipal government, organized as a second-class city, except for Nome, which is a first-class city. Municipal governments provide 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 BSNC ranks 11 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 Bay, 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 Bay is generally ice-free between early June and mid-November.[1]

The Kauwerak Eskimos in this area lived in migratory communities in pursuit of hunting and fishing grounds and traded furs with Siberia, Little Diomede, and King Island. They formed alliances with Wales, Little Diomede, 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.[2]

Economic and Community Information

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 the 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.

Brevig Mission Economic Indicators	
Population	425
Denali Commission Earnings[3]	$10,324
Percent of individuals "Distressed"[4]	82%
Heating Fuel Cost/Gallon	$4.22
Residential Electricity Cost	$0.50/kWh

Table 2: Brevig Mission Economic Indicators
Sources: American Community Survey (ACS) (2017), Denali Commission (2018), Division of Community and Regional Affairs (DCRA) (2019), and Alaska Energy Authority (AEA) (Jan. 2019)

Water and Sewer

Brevig Mission's water supply comes from Shelman 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 the wastewater treatment capacity will not meet the community's needs, given the population growth. Brevig Mission recently completed upgrades to its sewage system.[5]

Energy

Power Utility

Brevig Mission's utility is operated and maintained by Alaska Village Electric Cooperative (AVEC). In 2008, plans to install an intertie between Brevig Mission and Teller began, and the project was nearly completed in 2010. However, a storm damaged the undersea cable, and the project was never finished. AVEC received funding from FEMA to clean up the leftover materials and recoup some of the cost of the projects. The cleanup has not yet been completed because of issues with communication land-ownership agreements. There are plans to remove what is left of the intertie system during the summer of 2020.

Electricity Cost

According to the Alaska Energy Authority (AEA), the average cost for residential electricity was $0.50 per kWh in FY18. The reported PCE credit for Brevig Mission is $0.26 kWh, making the effective residential rate $0.24 kWh for the first 500 kWh of usage. Customers who are neither residential nor public do not receive PCE credit and pay the full $0.50 per kWh.[6]

The community paid an average price of $2.67 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

Brevig Mission is currently running solely on diesel power. However, the community is in the process of installing a solar array and wind turbine system in an effort to reduce the amount of diesel burned for power and save the community money. The renewable energy system project is funded by the Norton Sound Economic Development Corporation's (NSEDC) Community Energy Fund and is expected to be completed in 2020.

The community has also applied for an outdoor lighting retrofit grant through AEA and Wells Fargo. If their application is accepted, the community will be able to replace all their streetlights with energy-efficient LED fixtures, as well as replace outdoor lighting fixtures on all public facilities.

Space Heating

Residential heating oil is sold by the Brevig Mission Native Corporation and costs approximately $4.22 per gallon for residential customers.[7] The majority of residents heat their homes with small diesel monitor heaters, or "Toyostove" systems. Some residents have wood-burning stoves for supplemental heat. Driftwood can be collected and burned for heat, although the source is not reliable and the quality of the wood is low

The City of Brevig Mission buys fuel from NSEDC's Bulk Fuel Purchase Program.

Brevig Mission Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
Alaska Army National Guard	4,750
AVEC	66,900
BSSD	30,500
BSSD	71,000
Brevig Church	8,000
City	8,000
City	25,500
City	46,250
Total	**260,900**

Table 3: Brevig Mission Bulk Fuel Storage Facilities
Source: DCRA (2019).

Roads

Kawerak Transportation Program (KTP) completed road upgrades for safety and added new a road for future growth in 2009.[8]

Priority Projects

1. Housing
2. Recreation Center/High School Building
3. Tannery Building
4. Road Drainage/Maintenance
5. Relocate Landfill
6. Runway Expansion
7. Holding Cell
8. Mechanic Shop
9. More available Internet Services
10. Water & Sewer System Upgrade
11. Carving/Sewing Shop

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 997585
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, 60 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.[9]

Historically, the site 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 relatively 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. Several Nome residents have homes in Council, used for summer subsistence food-gathering activities and recreation.[10]

Water and Sewer

Households haul their own water from locations outside Council. A well exists at the townsite; however, it would need to be restored in order to be used by the public. Most households use septic systems or outhouses. A few homes have indoor plumbing.[11]

Energy

Power Utility

There is no centralized power distribution system located in Council. Residents use either generators or alternative energy resources to generate power for their seasonal needs. Remnants of an old electrical system exist but would need investment and updating before it could supply power to the community.

Renewable Energy and Efficiency Upgrades

There are no community-wide renewable energy systems or efficiency upgrades projects in Council. Several residents use small off-grid renewable energy systems, such as solar and wind power combined with battery storage, or solar thermal heating for hot water.

Space Heating

Most homes in Council are seasonal residences and require minimal space heating. Some residents have diesel-fueled monitor heaters, while many others have woodstoves, utilizing the abundant wood in and around the community.

Bulk Fuel Storage

There are no bulk fuel storage facilities in Council. Residents haul their own fuel for power generation, heating, and transportation from Nome and store it in private tanks.[12]

Priority Projects

- Land Planning
- Environmental Protection
- Education, business training, and economic development
- Energy programs
- Elders, youth, and cultural activities.
- Dumpsite improvements
- Road improvements
- Fire safety and training/creating firebreaks
- Community cooperation
- Cemetery renovations
- Equipment storage building

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.[13]

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." During World War II, Little Diomede residents who strayed into soviet waters were taken captive. When the Iron Curtain was formed, Big Diomede became a Soviet military base, and all Native residents were moved to mainland Russia.[14]

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.[15]

Economic and Community Information

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.[16] 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.[17]

Diomede Economic Indicators	
Population	102
Denali Commission Earnings	$16,788
Percent of individuals "Distressed"	66%
Heating Fuel Cost/Gallon	$5.20
Residential Electricity Cost	$0.65/kWh

Table 4: Diomede Economic Indicators
Source: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Transportation

Due to constant winds from the north, accessibility by air to Little Diomede is often limited. A state-owned heliport allows for weekly mail delivery. In 2012, Diomede was awarded grant funds to participate in the Essential Air Services program. Weekly flights by helicopter are available year-round, weather permitting. There is no airstrip due to the steep slopes and rocky terrain, so ski planes must land on an ice strip in winter. Regular flights are scheduled from Nome, weather permitting. 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. There are plans to construct a breakwater and

small boat harbor to allow for more regular sea travel between the Mainland and Diomede. Cargo Barge stops are irregular due to sea or ice conditions but deliver at least annually. Transportation on Little Diomede is primarily by foot on a system of boardwalks and trails. The boardwalks are owned by the city, though they are maintained by the IRA through Bureau of Indian Affairs (BIA) funding. A project to reconstruct 1.5 miles of boardwalks was completed during the summer of 2005.[18]

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. ANTHC funded upgrades to the water treatment facility in 2008.[19]

Energy

Power Utility

Little Diomede's utility is operated and maintained independently by Diomede Joint Utilities, part of the City of Diomede. The small power plant runs two diesel generators, one primary and one backup. Power outages due to high winds and sea storms occur frequently and have been more frequent in recent years due to a lack of sea ice. The utility is in the process of completing a powerhouse upgrade project with funds from the NSEDC Community Energy Fund. The distribution system and powerhouse control systems upgrades are expected to be completed in the summer of 2020. There are generator back-up systems in place at the water treatment plant, and the Diomede School runs its own generator system. The school is used as a shelter for residents when there are prolonged power outages.

Electricity Cost

According to the FY18 PCE report from the AEA, residents of Diomede pay an average of $0.65 per kWh for residential electricity. Diomede's PCE credit is reported at $0.22 per kWh, making the effective residential rate was $0.43 per kWh for the first 500 kWh of usage. Customers who are neither residential nor public do not receive PCE credit and pay the full $0.65 per kWh.[20]

The community paid an average price of $2.29 per gallon for diesel fuel used for power generation. The City of Diomede purchases fuel from NSEDC's Bulk Fuel Purchase Program

Renewable Energy and Efficiency Upgrades

Diomede is currently running solely on diesel power. However, the community has hopes to explore alternative energy solutions and renewable energy resources soon. Plans for the new Diomede Native Store may include a solar array to help offset the cost of running the store and potentially reduce the prices of goods and services to residents.

In 2019, the community completed an energy efficiency project, funding by the NSEDC Community Energy Fund, which allowed for upgrades to all residential monitor heaters and residential fuel storage tanks. The new heating systems will decrease fuel costs for residents, produce more efficient heating, and reduce overall greenhouse gas emissions on the island.

Space Heating

Residential heating oil is sold by the Diomede Native Store, operated by the Native Village of Diomede, and costs approximately $5.20 per gallon for residential customers. All residents heat their homes with small diesel monitor heaters, or "Toyostove" systems.[21]

The Native Village of Diomede buys fuel from NSEDC's Bulk Fuel Purchase Program.

Diomede Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
Diomede Native Store	40,200
City of Diomede	80,800
BSSD	42,000
Total	**163,000**

Table 5: Diomede Bulk Fuel Storage Facilities
Source: DCRA (2019).

Priority Projects

1. Housing
2. Transportation
3. Solid Waste Program
4. New Clinic Building
5. Water and Sewer
6. Education and Training
7. Public Safety
8. Revive Traditions and Culture
9. Elder Care Program
10. VBC/Wellness Program

Community Contacts

City of Diomede

PO Box 7037
Diomede, AK 99762
Phone: 907-686-3071
Fax: 907-686-2192

Inalik/Diomede Native Corporation

PO Box 7040
Diomede, AK 99762
Phone: 907-686-3221
Fax: 907-686-3222

Native Village of Diomede

PO Box 7079
Diomede, 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 sq. miles of water. Elim has a subarctic climate with maritime influences. Norton Sound is ice-free generally between mid-June and mid-November.[22]

The site of the community 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 the title to the 298,000 acres of land in the former Elim Reserve. The Iditarod Sled Dog Race passes through Elim each year.[23]

Economic and Community Information

Elim is an Inupiat Eskimo village. The economy is based on subsistence harvests. Employment is largely limited to fishing, the city, and the school. Unemployment, like many villages in the region, is high.[24] Thirty-eight residents hold commercial fishing permits.[25] The village wants to develop a fish processing plant. Residents rely on fish, seal, walrus, beluga whale, reindeer, moose, and home gardens.[26]

Elim Economic Indicators	
Population	370
Denali Commission Earnings	$14,830
Percent of individuals "Distressed"	75%
Heating Fuel Cost/Gallon	$3.99
Residential Electricity Cost	$0.52/kWh

Table 6: Elim Economic Indicators
Source: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

The community's water comes from a well and is treated. The water and sewer 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.[27]

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. Some updates to sanitation facilities have been made, but more are needed.[28]

Energy

Power Utility

The community of Elim's utility is operated and maintained by AVEC in partnership with the City of Elim. The powerhouse in Elim operates diesel generator sets that produce an average of 1,293,051 kilowatt hours annually for 133 customers (90 residential, 11 community facilities, and 32 non-community facilities).

The community is currently working with AVEC on options for upgrading its main diesel generator set, possibly by utilizing the Volkswagen Environmental Mitigation Settlement Funding Opportunity combined with an EPA Diesel Emissions Reduction Act Grant.

Electricity Cost

According to the FY18 PCE report from the AEA, electric customers in Elim pay an average of $0.52 per kWh for residential electricity. The community's PCE credit is reported at $0.28 per kWh, making the effective residential rate was $0.24 per kWh for the first 500 kWh of usage. Customers who are neither residential nor public do not receive PCE credit and pay the full $0.52 per kWh.[29]

The community pays an average price of $2.75 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

Elim is currently running solely on diesel power at the powerhouse. However, the community has a GARN biomass boiler. This is a renewable energy system that is designed to heat the water treatment plant and storage tank facility. The biomass boiler has maintenance issues occasionally, and there is only one trained operator. Collecting wood to sell to the City of Elim creates job opportunities for residents and reduces the amount of diesel purchased by the City to heat the water treatment plant.

In the past, the community has explored utilizing its geothermal resources located outside of the community. These studies did not prove that a feasible resource exists for geothermal power and are too distant for an affordable transmission line to be constructed.

Space Heating

Residential heating oil is sold by the Elim Native Store and costs approximately $3.99 per gallon for residential customers. Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems. Many residents also have wood-burning stoves for primary and/or supplemental heat. There is an abundant wood resource, mainly black spruce, and cottonwood, in and around the community.[30]

The City of Elim buys fuel from NSEDC's Bulk Fuel Purchase Program.

Elim Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
BSSD	30,250
BSSD	27,160
AVEC	70,850
City of Elim	49,840
City of Elim	56,590
City of Elim	36,000
AK Army National Guard	4,500
ADOT Airport	3,000
Total	**278,290**

Table 7: Elim Bulk Fuel Storage Facilities.
Source: DCRA (2019).

Priority Projects

1. Housing
2. Water and Sewer
3. Rock Quarry
4. Boat Harbor
5. Protecting Language, Culture, and Subsistence
6. Timber Development
7. NSEDC OEF
8. Landfill
9. Old High School Building
10. Teen Center

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 usually freezes during mid-November, with break-up at the end of May.[31]

In the 18th and 19th centuries, over 4,000 people inhabited the island in 35 villages. Sivuqaq 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 the title to the 1.136 million acres of land in the former St. Lawrence Island Reserve. Savoonga and Gambell jointly own the island.[32]

The isolation of Gambell has helped residents maintain their traditional Siberian Yupik Eskimo culture and language. Residents are almost completely bilingual. Walrus-hide boats are still used for hunting.[33]

Economic and Community Information

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. Revenue from ivory carving is a popular source of income. The abundant number of seabird colonies provides an opportunity for limited tourism from birdwatchers.[34]

Gambell Economic Indicators	
Population	712
Denali Commission Earnings	$8,144
Percent of individuals "Distressed"	86%
Heating Fuel Cost/Gallon	$4.45
Residential Electricity Cost	$0.51/kWh

Table 8: Gambell Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

Service from the water and sewer utility 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.[35]

Gambell's water is derived from wells and Troutman Lake and is treated and stored in three storage tanks. There are no more community-wide water shortage issues due to a 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.[36]

Energy

Power Utility

The community of Gambell's utility is operated and maintained by AVEC. The powerhouse operates a diesel generator system that produces an average of 1,469,666 kilowatt hours annually for 212 customers (162 residential, 14 community facilities, and 36 non-community facilities).[37]

In 2009, the AVEC installed three 100kW (NorthWind 100) wind turbines, which generate approximately 502,851 kWh of power on an annual basis.

Electricity Cost

According to the FY18 PCE report from the AEA, electric customers in Gambell paid an average of $0.51 per kWh for residential electricity. The PCE credit for Gambell is reported at $0.24 per kWh, making the effective residential rate $0.27 per kWh for the first 500 kWh of usage. Customers who are neither public nor residential do not receive PCE credit and pay the full $0.51 per kWh.[38]

The community paid an average price of $2.88 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

Gambell has three 100 kW wind turbines, installed and operated by AVEC, which produce over 500,000 kWh of power for the community each year. The wind turbines were installed in 2009 by contractor STG Incorporated for AVEC.

Space Heating

Residential heating oil is sold by Gambell Native Store and costs approximately $4.45 per gallon for residential customers (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems.

Gambell Native Corporation buys fuel from NSEDC's Bulk Fuel Purchase Program.

Gambell Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
Presbyterian Church	2,700
BSSD	51,700
BSSD	46,100
AVEC	142,700
Native Store	332,400
City of Gambell	55,300
National Guard Armory	10,400
7th Day Adventist Church	2,300
Total	**643,600**

Table 9: Gambell Bulk Fuel Storage Facilities
Source: DCRA (2019).

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.[39]

Priority Projects

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

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: 907-985-501

Golovin

Location, Climate, Brief History

Golovin is located on a point of land between Golovin Bay and Golovin Lagoon on the Seward Peninsula. It is 70 miles east of Nome. The area encompasses 3.7 sq. miles of land and 0 sq. miles of water. Marine climatic influences prevail during the summer when the sea is ice-free. Golovin Bay is usually frozen from early November to mid-May.[40]

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 were 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.[41]

Economic and Community Information

Golovin is an Inupiat Eskimo village. Their economy is based on subsistence activities, reindeer herding, fish processing, and commercial fishing. Eight-teen residents hold commercial fishing permits. The salmon fishery and reindeer herding offer some potential income to augment subsistence food harvests. Fish, beluga whale, seal, moose, and reindeer are the main sources of meat.[42]

Golovin Economic Indicators	
Population	173
Denali Commission Earnings	$22,844
Percent of individuals "Distressed"	57%
Heating Fuel Cost/Gallon	$4.75
Residential Electricity Cost	$0.38/kWh

Table 10: Golovin Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

The City has finished the development of a community-wide piped water and sewer system. Water is pumped from Chinik Creek, treated, and stored in three large tanks. Approximately 98% of homes have plumbing. A new 1.2-million-gallon water tank, a washeteria, and a treatment plant have been funded. A new water source is needed.[43]

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

Energy

Power Utility

Golovin's electric utility is owned and operated by Golovin Power Utilities, under the City of Golovin. The powerhouse operates four diesel generator sets that produce approximately 1,044,080 kilowatt hours annually for 103 customers (49 residential, 11 community facilities, and 43 non-community facilities).

The community is currently in the beginning stages of relocating its power plant. The current location is in the flood zone. During recent winter storms, the water level rose dangerously close to the power plant, putting the community at risk for loss of electric services.

Golovin received a $500,000 grant from the NSEDC Community Energy Fund in 2019 to begin site preparation for a new power plant located on higher ground, above the flood zone, and near the new water treatment plant facility. They are exploring options with the State of Alaska as well as federal funding to finance the remainder of the project.

Electricity Cost

Golovin residents' electricity costs average at $0.38 per kWh. Golovin's reported PCE credit is reported at $0.13 per kWh for their utility, making the effective residential rate was $0.25 per kWh for the first 500 kWh of usage. Non-residential and non-community facility customers pay the full $0.38 per kWh (businesses and schools do not get the credit).[44]

The City of Golovin paid an average price of $2.26 per gallon for diesel fuel used for power generation.

Renewable Energy and Efficiency Upgrades

Golovin's sole source of power is currently diesel. However, the community has explored installing renewable energy systems to displace diesel fuel and to lower the cost of energy. Possible options include the use of solar energy to heat the community's water storage tank.

Space Heating

The City of Golovin is the distributor of residential heating oil. Heating oil costs approximately $4.75 per gallon for residential customers (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems.

The City of Golovin buys fuel through NSEDC's Bulk Fuel Purchase Program.[45]

Golovin Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
City of Golovin	97,000
BSSD	59,400
Total	**156,400**

Table 11: Golovin Bulk Fuel Storage Facilities.
Source: DCRA (2019).

Priority Projects

1. Water and Sewer
2. Alternative energy
3. Rock quarry
4. New Dock and Barge Landing
5. Erosion control
6. Youth Center
7. 14(C)(3)
8. New Store
9. Post Office and Zip Code
10. Youth Center
11. Crosswind runway
12. New City Building
13. Housing

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 sq. miles of water. Koyuk has a subarctic climate with a maritime influence.[46] 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 townsite 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 steamships 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.[47]

Economic and Community Information

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 little 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.[48]

Koyuk Economic Indicators	
Population	337
Denali Commission Earnings	$12,706
Percent of individuals "Distressed"	80%
Heating Fuel Cost/Gallon	$4.71
Residential Electricity Cost	$0.51/kWh

Table 12: Koyuk Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

A system for piped water and sewer service 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. The 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.[49]

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

Energy

Power Utility

AVEC operates the power utility in Koyuk, which runs solely on diesel generators. The powerhouse produces an average of 1,392,775 kWh annually for 132 customers (93 residential, 11 community facilities, and 28 non-community facilities).

Electricity Cost

The community reports an average of $0.51 per kWh for residential electricity. The community's PCE credit is reported at $0.27 per kWh, making the effective residential rate $0.24 per kWh for the first 500 kWh of usage. Non-residential and non-community facility customers do not receive PCE credit and pay the full $0.51 per kWh (businesses and schools do not get the credit).[50]

The community pays an average of $2.26 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

Koyuk power is currently sourced solely through diesel power from the powerhouse. However, the community has explored installing renewable energy systems to displace diesel fuel and to lower the cost of energy. Potential renewable energy sources include wind and hydropower. A wood resource assessment was also completed looking at potential biomass applications. Currently, there are no active plans to implement renewables into the community.

A community-wide energy efficiency project was approved by the tri-councils of Koyuk in 2019, and a grant application for NSEDC's Community Energy Fund was submitted. The community is hoping to replace residential appliances to help people save money on their electricity bills, reduce diesel fuel use, and decrease emissions for the community. The project proposal also includes a plan to upgrade all streetlights and add new streetlights throughout the community to lower costs, save energy, and make the nighttime streets safer for residents.

Space Heating

Residential heating oil is sold by Koyuk Native Corporation and costs approximately $4.71 per gallon (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems. Many homes also utilize wood-burning stoves, as there is an abundant wood resource in and around the community.

The Koyuk Native Corporation buys fuel from NSEDC's Bulk Fuel Purchase Program.

Koyuk Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
BSSD	63,000
BSSD	2,500
AVEC	71,250
Koyuk Native Corporation	95,400
Koyuk Native Corporation	3,400
City of Koyuk	16,000
Beach (unknown)	6,500
ADOT (Airport)	3,000
Total	**261,050**

Table 13: Koyuk Bulk Fuel Storage Facilities.
Source DCRA (2019).

Priority Projects

1. Housing
2. Sanitation Facilities Improvement
3. New Head Start Building
4. Acquire New Heavy Equipment
5. Roads and Airport Dust Control
6. Youth and Cultural Center
7. Upgraded SAR Equipment
8. Law Enforcement – VSPO
9. Developing Natural Resources – Timber Products and Commercial Fisheries
10. Continue Developing Tribal Court

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.[51]

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 $1,500-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 entrepreneurs 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 goldfields 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.[52]

Economic and Community Information

The population of Nome is a mixture of mostly Inupiat 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 1960s. 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. Forty-three residents hold commercial fishing permits. Government services provide most of the employment. Retail services, transportation, mining, medical, and other businesses provide year-round income. Several small gold mines continue to provide some employment.[53]

Nome Economic Indicators	
Population	3,690
Denali Commission Earnings	$36,176
Percent of individuals "Distressed"	50%
Heating Fuel Cost/Gallon	$5.40
Residential Electricity Cost	$0.33/kWh

Table 14: Nome Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

The water source is the Moonlight Springs aquifer, which is classified as a groundwater 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 the distribution system. It could be reactivated in the event of an emergency and is available to provide an additional source of firefighting water to the facilities in the vicinity of the high school. Most of the residents currently have complete plumbing. A utilidor replacement project was complete in 2003.[54]

Energy

Power Utility

Nome Joint Utility Systems (NJUS) operates the local electric utility. NJUS produces an average of 31,443,312 kWh for a total of 2,196 customers (1,744 residents, 79 community facilities, and 373 non-community facilities).

NJUS runs two large diesel generator sets as well as two large 90 kW wind turbines. The utility also gets occasional power from 16 older 20kW wind turbines, which operate inconsistently. These older turbines are slowly being phased out from the utility system. The operating wind turbines produce 2,251,280 kWh of power annually.

Electricity Cost

NJUS customers pay an average of $0.33 per kWh for residential electricity. The PCE credit for the community is reported at $0.08 per kWh, making the effective residential rate $0.25 per kWh for the first 500 kWh of usage. Non-residential and non-community facility customers do not receive PCE credit and pay the full $0.33 per kWh (businesses and schools do not get the credit).[55]

The community pays an average price of $2.01 per gallon for diesel fuel used for power generation. NJUS purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

NJUS has a total of 20 wind turbines, of which the 2 large Energen 90kW turbines generate the most power. Sixteen smaller 20kW turbines run occasionally and contribute a minimal amount of power to the grid. Two of the smaller turbines are completely inoperable.

Currently, there are no active plans to implement additional renewables into the community; however, there are various solar arrays on residential and commercial buildings throughout the town. Many residents outside of city limits also utilize renewable energy to offset their electrical costs.

A community-wide energy efficiency program would be a great benefit for the community and help to reduce the overall demand on the current system.

Space Heating

Residential heating oil is sold by various entities in Nome. Fuel costs are approximately $5.40 per gallon for residential customers without discounts (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters or "Toyostove" systems. There are also a variety of in-floor heating systems, boiler systems with baseboard heating, and a few forced air systems. Many homes also utilize wood-burning stoves and collect their firewood from surrounding communities and driftwood resources throughout the year. There is a limited number of pellet stove used throughout the town.

Nome Bulk Fuel Storage Facilities*	
Tank Owner	**Tank Capacity (US gallons)**
West Nome Tank Farm	N/A
Crowley Marine Services	N/A
Nome Joint Utility Systems	N/A
Air National Guard	N/A
Aviation Companies, Various	N/A
Total	**11,628,000**

*****This community is not one of the communities tracked by the DCRA fuel survey

Table 15: Nome Bulk Fuel Storage Facilities.
Source: DCRA (2019).

Roads

Nome Eskimo Community has improved streets in Nome to lessen dust and improve mobility.[56]

Priority Projects

1. Build and construct a cultural center for art, history, language, performances, and tourism
2. Establish a Nome Native public safety system to ensure the protection of our residents
3. Assisted living Elder quarters – "traditional"
4. Form a parenting organization that is culturally relevant to the region
5. Establish a youth residential treatment center in Nome for the region
6. Shoreline erosion prevention projects at Nuuk, Fort Davis, and Nome Seawall
7. Tribes and Native organizations work with the schools to integrate culture in education
8. Support the Bering Strait Inuit Cooperative to broader market art
9. Job/vocational training
10. Expand our hub transportation system for more economic development with regional village

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

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

King Island Native Corporation

PO Box 992
Nome, AK 99762
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 subarctic 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.[57]

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 the title to the 1.1 million acres of land in the former St. Lawrence Island Reserve. The villages of Savoonga and Gambell jointly own the island. [58]

Economic and Community Information

The community 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, the community has retained many of its cultural and linguistic traditions. 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.[59]

Savoonga Economic Indicators	
Population	760
Denali Commission Earnings	$10,102
Percent of individuals "Distressed"	82%
Heating Fuel Cost/Gallon	$5.60
Residential Electricity Cost	$0.50/kWh

Table 16: Savoonga Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

The water and sewer utilities are operated and maintained by Alaska Rural Utility Collaborative. 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. In 2004, the washeteria was closed, as revenues were unable to cover operating expenditures. Most of the homes in the community are on the water and sewer system, including 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. They must conserve water at certain times of the year. Water and sewer service costs $150 per month. Some residents haul water from a local spring.[60]

Energy

Power Utility

The community of Savoonga's utility is operated and maintained by AVEC. The powerhouse was constructed in 2008 and operates diesel generator sets that produce an average of 2,148,940 kilowatt hours annually for 213 customers (158 residential, 9 community facilities, and 46 non-community facilities).[61]

The utility also has two 100kw Northwind 100 wind turbines, which produce around 125,256 kWh annually. Strong winds and delayed maintenance have affected the wind turbine production on occasion.

Electricity Cost

According to the FY18 PCE report, people in the community paid an average of $0.50 per kWh for residential electricity. After applying the Power Cost Equalization (PCE) credit, which was reported at $0.25 for their utility, the effective residential rate was $0.25 per kilowatt hour for the first 500 kWh of usage. Customers who are neither residential nor public do not receive PCE credit and pay the full $0.50 per kWh.[62]

The utility paid an average price of $2.63 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy & Efficiency Upgrades

Savoonga has two 100kw Northwind 100 wind turbines, installed by AVEC in 2009. The turbines produce around 125,256 kWh annually, as reported in the FY2018 PCE Report from AEA. Strong winds and delayed maintenance have affected wind turbine production on occasion. The turbines work to displace diesel, and when working at full capacity, can produce approximately 15 percent of Savoonga's power needs from the wind.

Space Heating

Residential heating oil is sold by the Savoonga Native Store and costs approximately $5.60 per gallon for residential customers (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems.

The Native Village of Savoonga buys fuel from NSEDC's Bulk Fuel Purchase Program.

Savoonga Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
City of Savoonga	7,500
City of Savoonga	9,000
BSSD	149,500
AVEC	136,100
Native Village of Savoonga	279,000
AKDOT	9,500
Water Treatment Plant	12,000
National Guard	7,500
Presbyterian Church	5,900
Total	**616,000**

Table 17: Savoonga Bulk Fuel Storage Facilities
Source: DCRA (2019)

Priority Projects

1. Evacuation Road and Shelter
2. Housing
3. New Landfill
4. Meat Processing Plant
5. Tribal Police
6. Multipurpose Building (Youth/Elder/Community Center)
7. Airport Relocation
8. Bypass Mail Storage Facility
9. Museum/Tourism Center

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 sq. miles of water. Shaktoolik has a subarctic climate with maritime influences when Norton Sound is ice-free.[63]

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.[64]

Economic and Community Information

The Shaktoolik economy is based on subsistence, supplemented by part-time wage earnings. Forty-eight residents hold commercial fishing permits. The 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.[65]

Shaktoolik Economic Indicators	
Population	279
Denali Commission Earnings	$17,756
Percent of individuals "Distressed"	77%
Heating Fuel Cost/Gallon	$4.99
Residential Electricity Cost	$0.50/kWh

Table 18: Shaktoolik Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

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 existing water tank was constructed in the 1970s and needs to be replaced. The location of the dump is a concern because it could harm the water source. A piped water and sewage collection system serve most homes. 75% of homes have complete plumbing and kitchen facilities.

Energy

Power Utility

Shaktoolik's utility is operated and maintained by AVEC. The powerhouse runs on diesel generator sets that produce an average of 778,175 kilowatt hours annually for 96 customers (62 residential, 4 community facilities, and 28 non-community facilities).

The utility also has two 100kw Northwind 100 wind turbines, which produce nearly half of Shaktoolik's power needs, at 346,958 kWh annually.

Electricity Cost

According to the FY18 PCE report from the AEA, people in the community paid an average of $0.50 per kilowatt (kWh) hour for residential electricity. After applying the Power Cost Equalization (PCE) credit, which was reported at $0.23 for their utility, the effective residential rate was $0.27 per kilowatt hour for the first 500 kWh of usage. Customers who are neither residential nor public do not receive PCE credit and pay the full $0.50 per kWh.[66]

The community paid an average price of $2.67 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy & Efficiency Upgrades

Shaktoolik has two 100kw Northwind 100 wind turbines, installed by AVEC in 2011. The turbines produce around 346,958 kWh annually, as reported in the FY2018 PCE Report from AEA. The turbines work to displace diesel, and when working at full capacity, can produce nearly 50% of Shaktoolik's power needs from the wind.

Space Heating

Residential heating oil costs approximately $4.99 per gallon for residential customers in Shaktoolik. Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems, although some have woodstoves for supplemental heating.[67]

Shaktoolik Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
Shaktoolik Native Corporation	242,400
Shaktoolik Native Corporation	2,000
AVEC	79,200
BSSD	3,500
Total	**327,100**

Table 19: Shaktoolik Bulk Fuel Storage Facilities
Source: DCRA (2019)

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 and Snow Fencing
7. New Clinic
8. Shaktoolik Boat Harbor
9. Fish Processing Plant/ Buying Station
10. Early Childhood Education

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.[68]

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.[69]

In 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 seven and a half feet per year. In July 2002, residents voted to relocate the community. Another storm in 2005 caused a large amount of land loss, after which the US Army Corps of Engineers built a new seawall as a temporary solution. Another vote was held in 2016, and residents again expressed their desire to relocate the community.[70]

Economic and Community Information

Shishmaref is a traditional Inupiat village. The economy is based on subsistence supplemented by part-time wage earnings. One resident holds 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, war recently remodeled for local artisans.[71]

Shishmaref Economic Indicators	
Population	555
Denali Commission Earnings	$10,569
Percent of individuals "Distressed"	80%
Heating Fuel Cost/Gallon	$4.29
Residential Electricity Cost	$0.53/kWh

Table 20: Shishmaref Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

Water is derived from a surface source and is treated and stored in a tank. The existing water supply and storage tanks are in poor condition and do not have the capacity to meet community needs. Residents

must conserve water at certain times of the year. Only the school, clinic, washeteria, and teacher housing have service. Most residents rely on hauling water from the washeteria and honey buckets. There are City honey-bucket bins available around town. Shishmaref some major improvements, with the construction of a flush/haul system and household plumbing for some HUD homes. 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. The sewage lagoon is vulnerable to storm surge and erosion.[72]

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.

Energy

Power Utility

The Shishmaref electrical utility is operated and maintained by AVEC. The powerhouse runs on diesel generator sets that produce an average of 1,653,881 kilowatt hours annually for 203 customers (145 residential, 10 community facilities, and 48 non-community facilities).[73]

Electricity Cost

Electric customers in the community pay an average of $0.53 per kWh for residential electricity. Shishmaref's PCE credit is reported at $0.28 per kWh, making the effective residential rate $0.24 per kWh for the first 500 kWh of usage. Customers who are neither residential nor public do not receive PCE credit and pay the full $0.53 per kWh.[74]

The utility pays an average price of $2.82 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy & Efficiency Upgrades

In Shishmaref, there are no community renewable energy systems. Several years ago, wind turbines were installed by Alaska Native Tribal Health Consortium on the water treatment plant to reduce the amount of diesel used to heat the water storage tanks. The turbines are no longer functional and are planned to be removed. There is also a small wind turbine system integrated into the Shishmaref Tannery facility, the only other renewable energy system in the town.

In 2019, the City of Shishmaref applied for and received a Village Energy Efficiency Program (VEEP) grant from AEA and Wells Fargo. With the VEEP grant, the community will replace all their outdoor lighting with energy-efficient LED lighting. The estimated project completion is in the Summer of 2020.

Space Heating

Residential heating oil is sold by Shishmaref Native Store and costs approximately $4.29 per gallon for residential customers. Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems.[75]

Shishmaref Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
BSSD	54,200
IRA Native Store	130,200
City of Shishmaref	62,100
City of Shishmaref	25,100
City of Shishmaref Water Treatment Facility	8,200
AVEC	122,200
US Fish and Wildlife	3,100
Nayokpuk Trading Post	82,600
Lutheran Church	6,900
Alaska National Guard	9,700
Total	**504,300**

Table 21: Shishmaref Bulk Fuel Storage Facilities
Source: DCRA (2019)

Seawalls

The USACE, Kawerak, and the State have invested in a gabion seawall where erosion is prevalent.[76]

Priority Projects

1. Multi-Purpose Building
2. Water and Sewer
3. Cultural Center and Activities
4. Human and Health Services (Bullying)
5. Alternative Energy Development
6. Community & Regional Technical Training Center
7. Youth
8. Housing, Apartments, and Rentals
9. Economic Development (Gift Shop, E-Commerce, Etc.)

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.[77]

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, several families moved away from Solomon. The post office and BIA school were discontinued in 1956. The Solomon Roadhouse operated until the 1970s.[78]

Economic and Community Information

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.[79]

Solomon Economic Indicators	
Population	0
Denali Commission Earnings	N/A
Percent of Individuals "Distressed"	N/A
Heating Fuel Cost/Gallon	N/A
Residential Electricity Cost	N/A

Table 22: Solomon Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

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.[80]

Energy

Power Utility

There is no centralized power distribution system located in Council. Residents use small personal generators to produce power for their seasonal needs. The old BIA Schoolhouse in Solomon has been converted into a seasonal bed and breakfast business, which is run by the Village of Solomon. The schoolhouse runs on a diesel generator during summer operations.[81]

Renewable Energy and Efficiency Upgrades

Solomon's energy vision statement is: "develop and innovate renewable energy that is consistent with our cultural identity." The vision statement was created in 2017 partially to support the goal of returning Solomon to a year-round village. The community gathered for the first renewable energy planning session at the village community center in August of 2017.

The community defined their collective vision and their first approach at achieving their "Alternative Energy for Solomon Village" priority, which has been listed in their LEDP since 2010. In addition to creating an energy vision, youth-inspired REP, goals, and values, the community decided to form an Energy Leadership Committee.

Space Heating

Most homes in Council are seasonal residences and require minimal space heating. Some residents have diesel-fueled monitor heaters, while many others have woodstoves that utilize driftwood or logs from the nearby Council area.

Bulk Fuel Storage

There are no bulk fuel storage facilities in Solomon. Camp residents haul their own fuel for power generation, heating, and transportation from Nome and store it in private tanks. The Village of Solomon hauls their own fuel to the Bed and Breakfast for heating and power generation during seasonal operations.

Priority Projects

- Obtain a tribal community hall/office in Nome.
- Expand and improve our ICWA services.
- Assess the effects of climate change and collaborate for Salmon enhancement and testing in Solomon.
- The fully effective operation of the Solomon Bed & Breakfast (business plan, obtain land, tourism development, gift shop, alternative, and renewable energy).
- Create and manage our own transportation program for Solomon (roads, boat harbor, airstrip).
- Improve our language resources in our dialect (immersion school, educational resources, writing children's books, and Solomon history books).
- Improve access in public schools to learn tribal government, Alaska Native history, and math and science using our environment as a tool.
- Advocate for restorative justice and tribal input into culturally appropriate sentencing of our tribal members.
- Work with other Nome-based tribes to develop culturally related classes and activities for all ages to pass on cultural knowledge and promote wellness.
- Improve education and enforcement of land use rights in and around Solomon.
- Clean up land and old church site, improve drainage, and add historical markers in and around Solomon.
- Advocate for an affordable family-friendly laundry/washeteria/carwash in Nome.

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 subarctic climate with a maritime influence during the summer. Norton Sound is ice-free from June to November, but clouds and fog are common.[82]

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. [83]

Economic and Community Information

Stebbins is a Yup'ik 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. [84]

Stebbins Economic Indicators	
Population	643
Denali Commission Earnings	$10,013
Percent of individuals "Distressed"	82%
Heating Fuel Cost/Gallon	$4.35
Residential Electricity Cost	$0.50/kWh

Table 23: Stebbins Economic Indicators
Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

Community water is obtained from Big Clear Lake, 3 miles east of Stebbins. During the summer months, water is pumped from the lake and carried to Stebbins via a 4-inch pipeline and stored in two tanks, one with a million-gallon capacity, the other 500,000-gallon capacity. The Stebbins water treatment system has a peak day design capacity of 10,000 to 50,000 gallons per day. There is a central water distribution point at the washeteria distributed from the tanks via a plastic pipeline. The washeteria is operated by the City of Stebbins. The washeteria serves as a water distribution point and laundromat, and as a place where community members can bathe or shower. Sanitary sewage is collected in the homes in 5-gallon buckets and carried by hand to centrally located steel framed plastic collection bins (honey buckets), which are transported to the sewage lagoon, adjacent to the landfill, with an all-terrain vehicle (ATV).[85]

Energy

Power Utility

The AVEC powerhouse runs diesel generators that produce an average of 3,553,170 kilowatt hours annually for 183 customers in Stebbins (62 residential, 4 community facilities, and 28 non-community facilities) and 142 customers in St. Michael (92 residential, 10 community facilities, and 40 non-community facilities).[86]

AVEC is in the process of completing a wind turbine project – a 100kW Northwind 100 turbine – with installation plans for Summer 2020. The excess power produced by the turbine is planned to be used for a wind-to-heat system that will heat the water treatment plant in St. Michael. St. Michael has some of the highest water bills in the region and state.

Electricity Cost

Electric customers in Stebbins pay an average of $0.50 per kWh for residential electricity. Stebbins PCE credit is reported at $0.24 kWh, making the effective residential rate was $0.24 per kWh for the first 500 kWh of usage. Customers who are neither residential nor public do not receive PCE credit and pay the full $0.50 per kWh.[87]

The community paid an average price of $2.63 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

A Northwind 100 wind turbine is planned to be installed by AVEC in Summer 2020.

Space Heating

Residential heating oil is sold by the City of Stebbins and costs approximately $4.35 per gallon for residential (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters, or “Toyostove” systems, although some have woodstoves for supplemental heat, using driftwood from the beaches.

Stebbins buys fuel (gasoline and heating oil) from NSEDC’s Bulk Fuel Purchase Program.

Stebbins Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
AVEC	112,000
BSSD	101,000
City of Stebbins	111,800
Ferris General Store	26,800
Alaska Army National Guard	3,000
Charlie Steves	3,000
ADOT	3,000
Total	**361,000**

Table 24: Stebbins Bulk Fuel Storage Facilities
Source: DRCA (2019)

Priority Projects

1. Water and Sewer Projects
2. Cultural Heritage Preservation
3. Housing Development
4. Job Training Awareness
5. Seawall
6. Volunteer Fire Department
7. Teen Center
8. Multipurpose Evacuation Center
9. Suicide Prevention Program
10. Safe Homes
11. City Heavy Equipment Garage

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 subarctic climate with maritime influences during the summer.[88]

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'iks 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.[89]

Economic and Community Information

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 employment is through in city government, the IRA council, the village corporation, schools, and local stores. Eight 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.[90]

St. Michael Economic Indicators	
Population	390
Denali Commission Earnings	$12,679
Percent of individuals "Distressed"	80%
Heating Fuel Cost/Gallon	$4.35
Residential Electricity Cost	$0.50/kWh

Table 25: St. Michael Economic Indicators

Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

Water comes from Clear Lake. It is treated and stored in a 1.2 million-gallon tank. A new sanitation system was recently finished to provide water delivery and holding tanks for homes, a piped gravity & vacuum sewer system with septic treatment, and household plumbing. 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 a percentage of the residents are not hooked up because their accounts are delinquent, or they can't afford the monthly subscription

fee. 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.[91]

Energy

Power Utility

AVEC operates the electric utility in St. Michael and is connected by a 10-mile intertie to the nearby village of Stebbins. This is the only intertie in the Bering Strait Region. Most of the two communities' electricity is produced in Stebbins, and the St. Michael facility is maintained as a back-up. The power lines within the village of St. Michael used to connect homes through the utilidor system running above ground through town. AVEC raised the power lines on poles, completing the project in 2010. Maintenance is performed regularly during spring and fall seasons and as needed in the case of storm damage.

The powerhouse runs diesel generators that produce an average of 3,553,170 kWh annually for 183 customers in Stebbins (62 residential, 4 community facilities, and 28 non-community facilities) and 142 customers in St. Michael (92 residential, 10 community facilities, and 40 non-community facilities).

AVEC is in the process of installing a wind turbine – a 100 kW Northwind 100 turbine – with installation plans for Summer 2020 in Stebbins. The excess power produced by the turbine is planned to be used for a wind-to-heat system that will heat the water treatment plant in St. Michael. St. Michael has some of the highest water bills in the region and state.

Electricity Cost

The communities of Stebbins and St. Michael pay an average of $0.50 per kWh for residential electricity. St. Michaels PCE credit is reported at $0.24 per kWh, making the effective residential rate $0.24 per kWh for the first 500 kWh of usage. Non-residential and non-community facility customers do not receive PCE credit and pay the full $0.50 per kWh (businesses and schools do not get the credit).[92]

AVEC pays an average price of $2.63 per gallon for diesel fuel used for power generation in Stebbins. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

A Northwind 100 wind turbine is planned to be installed in Stebbins by AVEC in Summer 2020.

Space Heating

Residential heating oil costs approximately $4.35 per gallon for residential (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems, although some have woodstoves for supplemental heat, using driftwood from the beaches.

St. Michael buys fuel (gasoline and heating oil) from NSEDC's Bulk Fuel Purchase Program.

St. Michael Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
AVEC	76,000
BSSD	28,500
BSSD	52,000
The city of St. Michael	14,000
AK Army National Guard	10,000
AK Commercial Company	10,000
AK Commercial Company	22,000
AK DOT	3,000
Total	**215,500**

Table 26: St. Michael Bulk Fuel Storage Facilities.
Source: DCRA (2019).

Priority Projects

1. Public safety building with Holding Cell
2. Completion of 14c process
3. Local bulk fuel tank farm
4. Seawall erosion protection
5. Additional water storage tank
6. Heavy equipment facilities
7. Reindeer facilities
8. New teen center
9. Establish a Local Housing Authority
10. New Gravel Store
11. More Housing and Rental Units

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.[93]

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.[94]

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. The city was formed in 1963.[95]

Economic and Community Information

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. [96]

Teller Economic Indicators	
Population	247
Denali Commission Earnings	$13,932
Percent of individuals "Distressed"	76%
Heating Fuel Cost/Gallon	$6.11
Residential Electricity Cost	$0.54/kWh

Table 27: Teller Economic Indicators

Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

Teller currently draws water seasonally from Coyote Creek (2 miles via pipe) approximately 1000 feet upstream from the Coyote Creek Subdivision and stores it in a one-million-gallon storage tank. Water is treated at a plant run jointly by the City and the school. Distribution to individual homes is available by request from the City water truck, where residents fill home storage tanks. Water is piped to the school and teacher housing. Individuals haul water from a central watering point at the Laundromat, at no cost. Springtime rationing occasionally decreases water usage. Some residents used their own ATV's or snow machines to haul water and/or melt ice from area creeks. Woolley Lagoon and Gold Run River (about 20 miles southwest and southeast of town, respectively) are used for this purpose. The school operates its own sewage system to which teacher housing is connected. The existing lagoon the school uses is undersized and must be pumped several times per year into Port Clarence. 100 percent of remaining households use honey buckets. One home has a septic tank. The city, as well as individuals, hauls the waste from each home to the fenced landfill five miles southeast of town. Trash and honey bucket hauling services $35 per month for residences and $50 per month for businesses in September 2011.[97]

Energy

Power Utility

Teller's power utility is operated and maintained by AVEC. In 2008, plans to install an intertie between Brevig Mission and Teller began, and the project was nearly completed in 2010. However, the project was never completed, due to the undersea intertie cable being blown out by a storm. AVEC accessed FEMA funding to assist with the cleanup of the leftover intertie and recoup the costs from the failed project. Due to stalled communications and land ownership agreements, the cleanup is still taking place today. There are plans to remove what is left of the intertie system during the summer of 2020. As of today, Teller and Brevig Mission still have separate micro-grid facilities.

The powerhouse operates off a diesel generator system that produces an average of 845,976 kWh annually for 111 customers (72 residential, 6 community facilities, and 33 non-community facilities).

Electricity Cost

Electric rates in Teller are $0.54 per kWh for residential electricity. Teller's PCE credit is reported at $0.30 per kWh, making the effective residential rate $0.24 per kWh for the first 500 kWh of usage. Non-residential and non-community facility customers do not receive PCE credit and pay the full $0.54 per kWh (businesses and schools do not get the credit).

The community paid an average price of $2.76 per gallon for diesel fuel used for power generation. AVEC purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

There are no community-scale renewable energy systems in Teller. The community had a wind energy assessment survey completed, but no projects have been pursued to date.

In 2019, the City of Teller, in partnership with ANTHC, applied for and received the USDA High Energy Cost Grant to install a heat recovery system, capturing the waste heat from their powerhouse generators to heat community facilities and displace the amount of diesel used by the community.

Space Heating

Residential heating oil is sold by Teller Native Corporation and costs approximately $6.11 per gallon for residential customers (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems.

Teller Native Corporation buys its fuel (gasoline and heating oil) from the BIA Bulk Fuel Purchase Program.

Teller Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
Richard Blodgett	199,400
Richard Blodgett	12,000
Teller Commercial	1,900
Teller Commercial	5,600
Teller Native Corporation	66,500
Teller Power Company	1,900
City of Teller Clinic	1,000
BSSD	66,400
BSSD	4,800
Teller Native Corporation Store	3,500
Teller Lutheran Church	6,100
Army National Guard	2,300
AKDOT	3,300
Total	**374,700**

Table 28: Teller Bulk Fuel Storage Facilities.
Source: DCRA (2019).

Priority Projects

Teller

1. Seawall
2. Water and Sewer
3. Evacuation Road
4. Tank Farm
5. Roads
6. More Housing
7. Weatherization
8. Crosswind Runway
9. Emergency Equipment
10. Landfill
11. Multi-Purpose Building
12. Reindeer Husbandry
13. Power Plan

Mary's Igloo

1. More Housing and Rental Units
2. Bulk Fuel Improvements
3. Heavy Equipment and Storage
4. Alternative Sanitation Solutions for Teller
5. Climate Change Coalition and Subsistence Advocacy
6. Improve Public Safety
7. Build a Community Hall
8. Local Job Training and Local Job Database
9. Alternative Energy Development Projects
10. Re-Establish the Tribe at Mary's Igloo Seasonally

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 subarctic climate with considerable maritime influences when Norton Sound is ice-free, usually from May to October. Winters are cold and dry.[98]

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.[99]

Economic and Community Information

Unalakleet has a history of diverse cultures and trade activities. 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.[100]

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. NSEDC operates a fish processing plant here. Government and school positions are relatively numerous. Bering Strait School District is based out of Unalakleet. Unalakleet is the “southern hub” of the region. Tourism is becoming increasingly popular, as world-class silver fishing is available in the area.[101]

Unalakleet Economic Indicators	
Population	745
Denali Commission Earnings	$26,479
Percent of individuals "Distressed"	62%
Heating Fuel Cost/Gallon	$5.00
Residential Electricity Cost	$0.44/kWh

Table 29: Unalakleet Economic Indicators

Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

Unalakleet’s water and sewer systems were developed and installed by the U.S. Public Health Service between 1964 and 1976 and are operated by the city public works department. Water is obtained from an infiltration gallery located at Powers Creek, 5 miles north of the village, and is treated and stored in a million-gallon steel storage tank in town. In the winter, the water is heated at the pump station, and the treatment facility then pumped to the tank and throughout the community. Village Safe Water is working with the city to reroute the water line from Powers Creek. A 2.2 acre, double-storage facultative

sewage lagoon is presently in use and is located just across the bridge northeast of the village. A new wastewater treatment facility is in the design phase. A sludge bed truck is also in the works to empty the lagoon and transport it to the landfill.[102]

100% of the homes in Unalakleet have water and sewer service provided and maintained by the City. The water is chlorinated and fluoridated. Service costs $75/month per residence. Elders have a discounted cost of $45/month. Homes outside of town have separate septic systems.

A new main water line is the community's top priority right now. The existing line is vulnerable to storm damage because it runs right along the shoreline from town, north to the water source. The community is planning to access an alternate water source, and potential sites are being assessed. There have been water shortages during the last two years. [103]

Energy

Power Utility

The community's electric utility is operated and maintained by the Unalakleet Valley Electric Cooperative (UVEC). UVEC installed six wind-turbines just outside of town in 2009, which produce around 972,128 kWh per year.

The powerhouse operates off a diesel generator system that produces an average of 3,441,700 kWh annually for 379 customers (270 residential, 21 community facilities, and 88 non-community facilities).[104]

Electricity Cost

Unalakleet electric customers pay an average of $0.44 per kWh for residential electricity. Unalakleet's PCE credit is reported at $0.16 per kWh, making the effective residential rate $0.28 per kWh for the first 500 kWh of usage. Non-residential & non-community facility customers do not receive PCE credit and pay the full $0.44 per kWh (businesses and schools do not get the credit).[105]

The utility pays an average price of $2.49 per gallon for diesel fuel used for power generation. UVEC purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

UVEC operates six Northwind 100kw wind turbines. The turbines generate close to 1 million kWh of power on an annual basis. In 2020, UVEC plans to upgrade its transmission and distribution system to decrease line loss and maximize their renewable energy. They are also exploring battery storage options to capture excess wind.

There are various residential and small-commercial solar arrays in Unalakleet. The community is the only utility in the region that allows net-metering, and the residents are very knowledgeable about their own energy systems.

Space Heating

Residential heating oil is sold by Unalakleet Native Corporation and costs approximately $5.00 per gallon for residential customers (Phone survey, September 2019). Most residents heat their homes with small

diesel monitor heaters, or “Toyostove” systems. Some also use woodstoves for primary or secondary heat. There are various wood resources surrounding the community.

Unalakleet Native Corporation buys fuel (gasoline and heating oil) from the NSEDC Bulk Fuel Purchase Program.

Unalakleet Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
West Coast Aviation	7,200
West Coast Aviation	329,500
AVEC	358,000
UNK Native Corporation	261,900
City of Unalakleet	23,000
City of Unalakleet	43,400
ATS	1,900
AKDOT	2,700
AKDOT	45,600
ACC	24,300
Covenant Church	1,500
BSSD	54,200
BSSD	39,800
Total	**1,193,000**

Table 30: Unalakleet Bulk Fuel Storage Facilities.
Source: DCRA (2019)

Priority Projects

1. Construct New Water/Sewer System
2. Rehabilitate Roads to Both Subdivisions
3. SAR and VFD Funding
4. Acquire and Maintain City Heavy Equipment
5. Sub-Regional Clinic Fully Staffed
6. Evacuation/Recreation Center
7. More Housing
8. Construct New Access Roads
9. Replace Boat Ramps
10. Continued Monitoring of Contaminated Sites

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, 111 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.[106]

A burial mound of the "Birnirk" 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.[107]

Economic and Community Information

Wales has a strong traditional Kingikmiut whaling culture. Ancient songs, dances, and customs are still practiced. During the summer months, Little Diomede 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 from Wales, and residents are employed to assist in the harvest. Whales, walrus, polar bear, moose, salmon, and other fish are utilized.[108]

Wales Economic Indicators	
Population	179
Denali Commission Earnings	$12,262
Percent of individuals "Distressed"	81%
Heating Fuel Cost/Gallon	$6.25
Residential Electricity Cost	$0.56/kWh

Table 31: Wales Economic Indicators

Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

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 the 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.[109]

Energy

Power Utility

The AVEC and the City of Wales operate and maintain the electric utility. The electric generation source is diesel. The powerhouse produces an average of 645,091 kWh annually for 75 customers (47 residential, 5 community facilities, and 23 non-community facilities).

Electricity Cost

Electric customers in Wales pay an average of $0.56 per kWh for residential electricity. Wale's PCE credit is reported at $0.31 per kWh, making the effective residential rate $0.24 per kWh for the first 500 kWh of usage. Non-residential & non-community facility customers do not receive PCE credit and pay the full $0.56 per kWh (businesses and schools do not get the credit).[110]

The utility pays an average price of $2.79 per gallon for diesel fuel used for power generation. AVEC purchases its fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

There are remnants of a high-penetration wind generation system in Wales, installed by the Department of Energy National Renewable Energy Lab (NREL) in partnership with Kotzebue Electric Association, AVEC, and AEA in 2001. A battery storage system was also tested but had many issues with operation and maintenance. The system is no longer functional.[111]

Space Heating

Residential heating oil is sold by Wales Native Store and costs approximately $6.25 per gallon for residential customers (Phone survey, September 2019). This is the highest in the region. Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems. Some also use woodstoves for secondary heating, using driftwood collected on the beaches.

Wales Native Store buys fuel from the NSEDC Bulk Fuel Purchase Program.

Wales Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
Wales Native Store	101,100
City Water Treatment Plant	10,700
AVEC	62,828
BSSD	47,850
Total	**222,478**

Table 32: Wales Bulk Fuel Storage Facilities.
Source: DCRA (2019).

Priority Projects

1. Bulk Fuel
2. New Clinic
3. HBH Lagoon/Dumpsite
4. Seawall Lagoon, Boat Harbor, and Fishing
5. Cemetery
6. Repair Housing
7. Public Safety
8. Heavy Equipment/Storage
9. Water and Sewer Line
10. Renovate Church
11. Youth Center
12. Long- and Short-Term Housing
13. New Power Plant/Wind Solar Energy
14. Gravel Business
15. Grader
16. Snow Fencing
17. Tourism

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.[112]

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.[113]

Economic and Community Information

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 residents runs a reindeer farm.[114]

White Mountain Economic Indicators	
Population	212
Denali Commission Earnings	$16,090
Percent of individuals "Distressed"	73%
Heating Fuel Cost/Gallon	$4.23
Residential Electricity Cost	$0.55/kWh

Table 33: White Mountain Economic Indicators

Sources: ACS (2017), Denali Commission (2018), DCRA (2019), and AEA (Jan. 2019)

Water and Sewer

Water is derived from a well near the Fish River and is treated. Fifty-nine 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. Twenty 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 cost $105.[115]

Energy

Power Utility

The City of White Mountain operates and maintains the local electric utility. The electric generation source is diesel. The powerhouse produces an average of 821,952 kWh annually for 102 customers (73 residential, 8 community facilities, and 29 non-community facilities).

Electricity Cost

Electric customers in White Mountain pay an average of $0.55 per kWh for residential electricity. White Mountain's PCE credit is reported at $0.26 per kWh, making the effective residential rate was $0.29 per kWh for the first 500 kWh of usage. Non-residential and non-community facility customers do not receive PCE credit and pay the full $0.55 per kWh (businesses and schools do not get the credit).[116]

The utility an average price of $2.42 per gallon for diesel fuel used for power generation. The City of White Mountain purchases fuel through a bulk purchasing program.

Renewable Energy and Efficiency Upgrades

White Mountain has explored some renewable energy options, but none have proven viable projects. If there is interest, solar power, wind power, and biomass could all be feasible solutions for the community.

Space Heating

Residential heating oil is sold by White Mountain Native Store and costs approximately $4.23 per gallon for residential customers (Phone survey, September 2019). Most residents heat their homes with small diesel monitor heaters, or "Toyostove" systems. Some also use woodstoves for primary or secondary heating. There are abundant wood resources in and around the community.

White Mountain Bulk Fuel Storage Facilities	
Tank Owner	**Tank Capacity (US gallons)**
WMO Native Store	43,500
BSSD	131,600
WMO Lodge	2,000
AKDOT	3,000
Reindeer Farm	4,900
Total	**185,000**

Table 34: White Mountain Bulk Fuel Storage Facilities.
Source: DCRA (2019).

Priority Projects

1. Bulk Fuel
2. New Clinic
3. HBH Lagoon/Dumpsite
4. Seawall Lagoon, Boat Harbor, and Fishing
5. Cemetery
6. Repair Housing
7. Public Safety
8. Heavy Equipment/Storage
9. Water and Sewer Line
10. Renovate Church
11. Youth Center
12. Long- and Short-Term Housing
13. New Power Plant/Wind and Solar Energy
14. Gravel Business
15. Grinder
16. Snow Fencing
17. Tourism

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

PO Box 84090
White Mountain, AK 99784
Phone: 907-638-3651
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, [117] most of whom 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.[118]

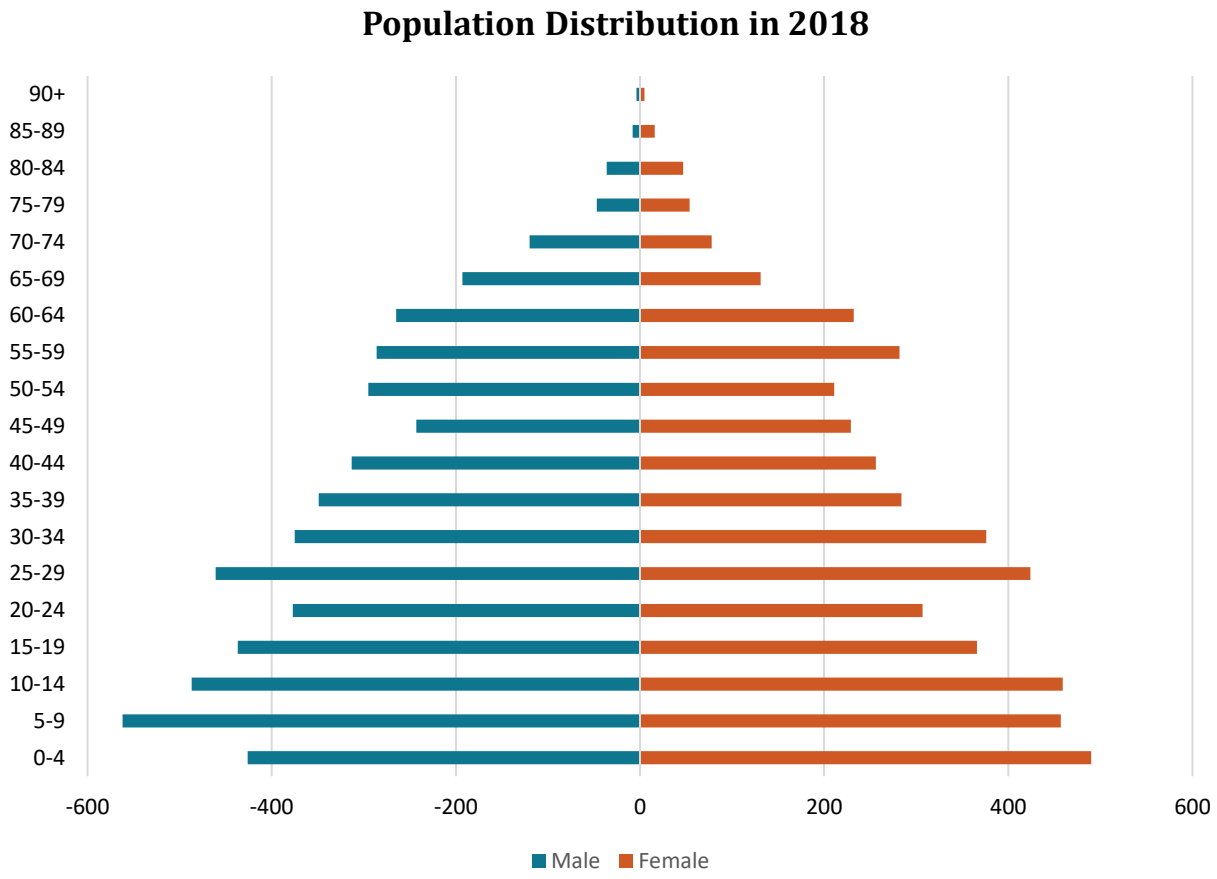

Figure 3: Population Distribution in 2018
Source: AK Dept. of Labor and Workforce Development

In 2018, the Nome Census Area had a population of approximately 9,988. According to the American Communities Survey, the population in the Bering Strait region is about 74% Alaska Native. Over one-third of the region's population resides in Nome, the area's largest community and commercial hub. Community populations varied from approximately 3,662 in Nome (51% Alaska Native) to as few as 99 in Diomede. Apart from Nome, the largest community is Savoonga (751). The third, fourth, and fifth largest communities are Unalakleet (722), Gambell (722), and Stebbins (646), respectively.[119]

In 2017, the Census Bureau estimates that 38% of the entire region's population was 20 or younger, with a median age of 27.9. Residents over 65 made up 7.3% of the region's population. Fifty-three percent of the population was male, and 47% of the population was female.[120]

According to the 2010 U.S. Census, forty percent 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. Fifty-three percent of the population was male, and 47% of the population was female. [121]

At the time of the 2000 Census, forty-one percent of the entire region's population was 20 years old or younger, with at a median age of 27.6. Six percent of the region's population was 65 or older. Fifty-four percent of the population was male, while 46% was female.[122]

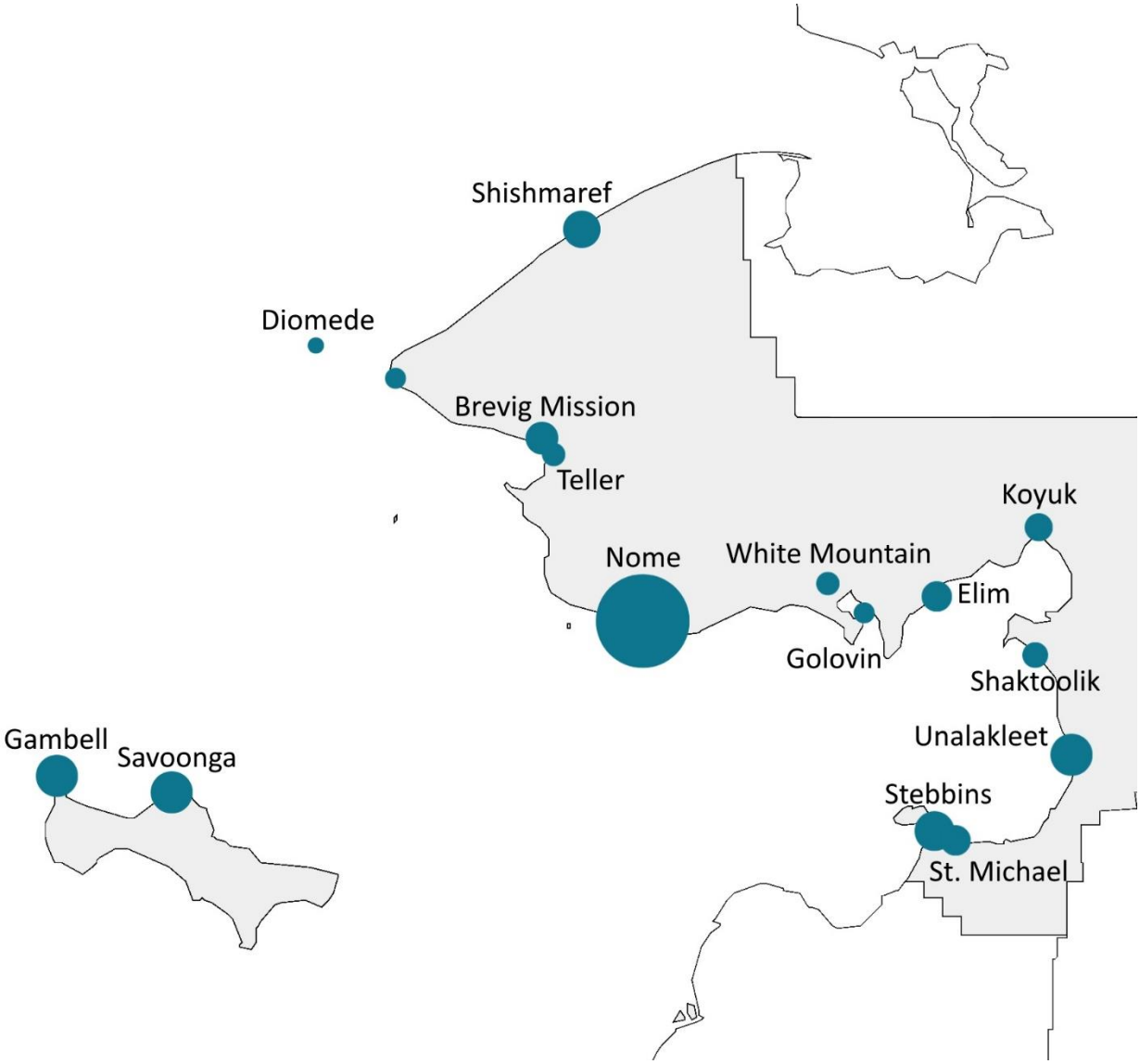

Figure 4: Map of Nome Census Area Community Populations in 2018
Source: AK Dept. of Labor and Workforce Development

Nome Census Area Community Populations in 2018			
Nome	3,622	**Shaktoolik**	275
Savoonga	751	**Teller**	237
Unalakleet	722	**White Mountain**	194
Gambell	722	**Wales**	165
Stebbins	646	**Golovin**	163
Shishmaref	598	**Diomede**	99
Brevig Mission	462	**Council**	0
St. Michael	398	**King Island**	0
Elim	368	**Mary's Igloo**	0
Koyuk	350	**Port Clarence**	0

Table 35: Nome Census Area Community Populations in 2018
Source: AK Dept. of Labor and Workforce Development

Overall, between the 1970 Census and the 2010 Census, the regional population increased at an annual growth rate of 1.67%. However, between 1990 and 2010, the annual growth rate was 0.8 percent. Assuming the regional growth rate follows the trend established over the past 20 years, the region can expect to double in population over the next 50 years.[123]

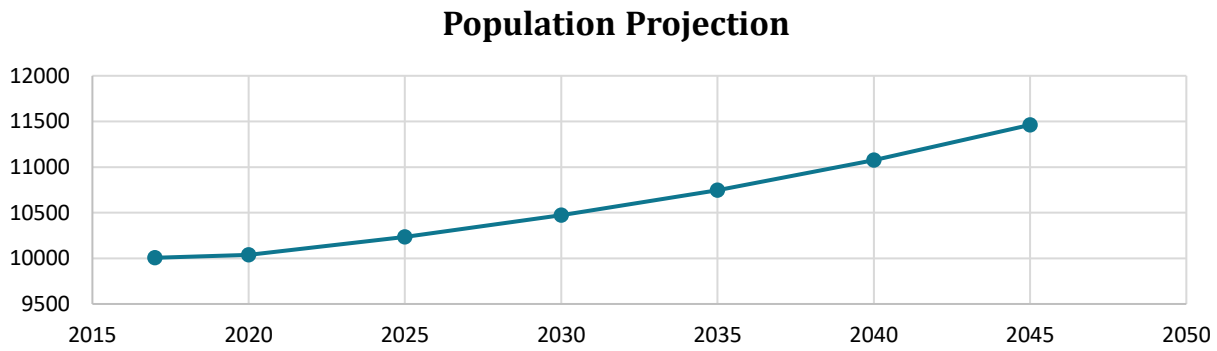

Figure 5: Population Projection, Nome Census Area
Source: AK Dept. of Labor and Workforce Development

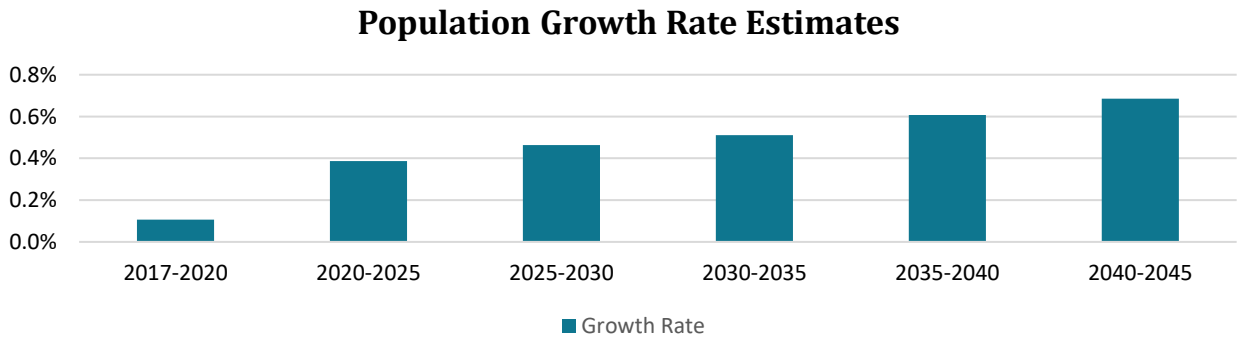

Figure 6: Population Growth Rate Estimates
Source: AK Dept. of Labor and Workforce Development

While the regional population increased, some communities' populations decreased in the last 10 years for which we have data. Port Clarence's population is now zero, according to the AK Department of Labor and Workforce Development. Excluding Port Clarence, Diomede had the largest decrease both in the number of people and the percentage of the population (28 people, 22%).[124]

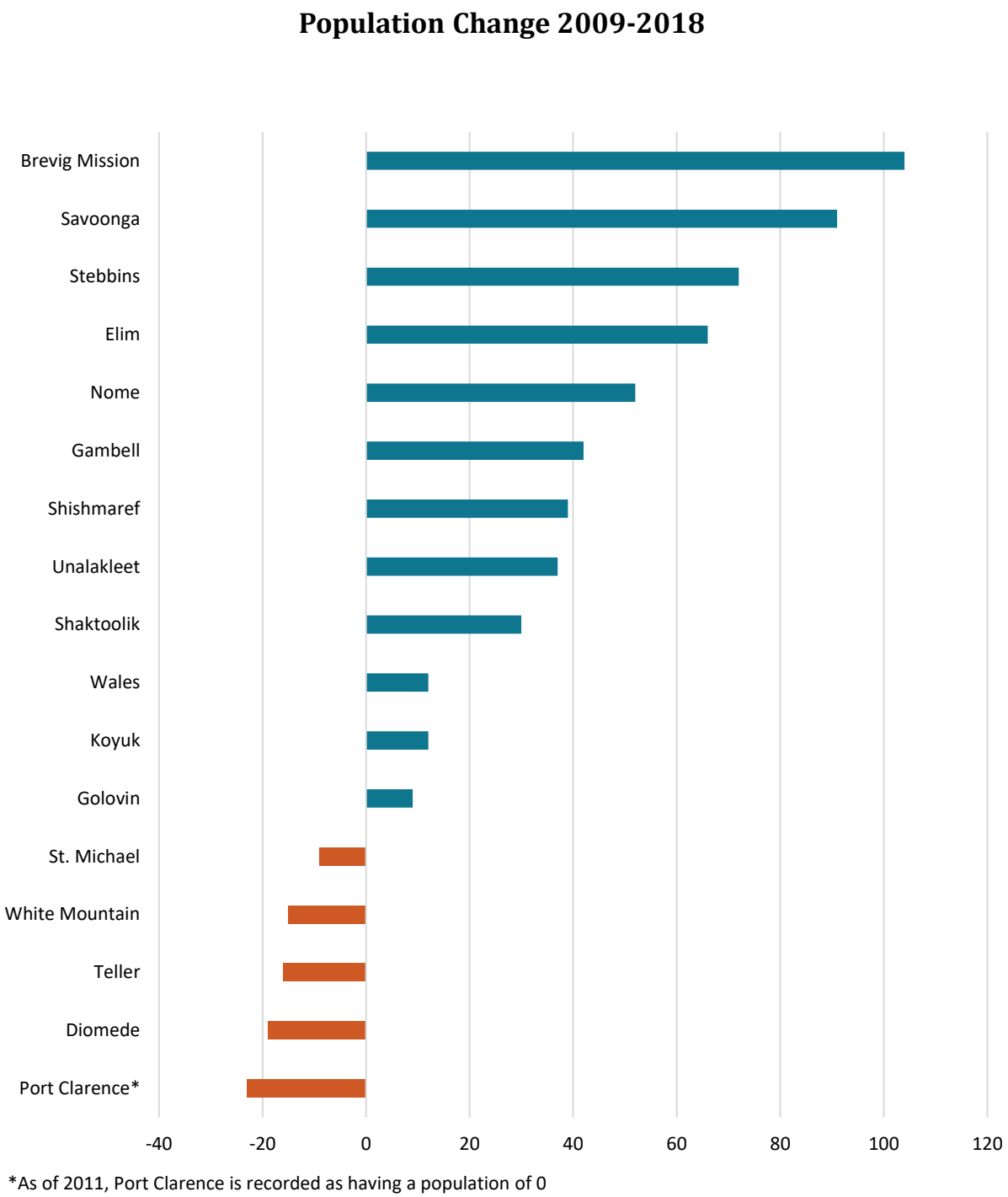

Figure 7: Population Change 2009-2018
Source: AK Dept. of Labor and Workforce Development

Economy – Employment and Income Levels

The Nome Census Area has a mixed economy based on cash and subsistence practices. Most employment opportunities are found in government, healthcare, education, transportation, and utilities. Of these, the local government provides the most opportunity for employment within the region. Health care and educational services provide significant opportunities for employment, as well. Together, these two sectors account for most employment opportunities in the region's villages outside Nome.[125]

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

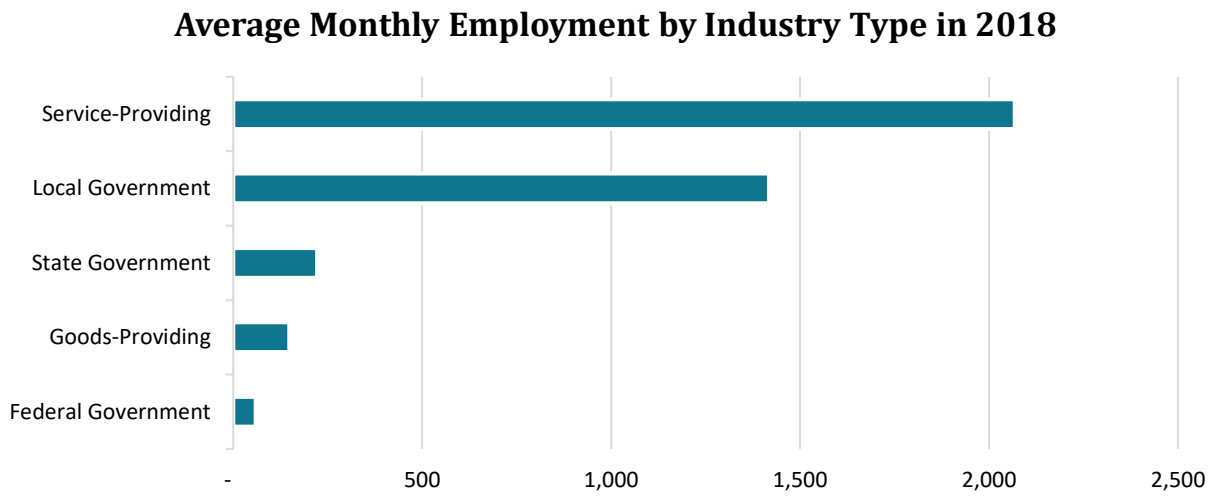

Figure 8: Average Monthly Employment by Industry Type in 2018
Source: AK Dept. of Labor and Workforce Development

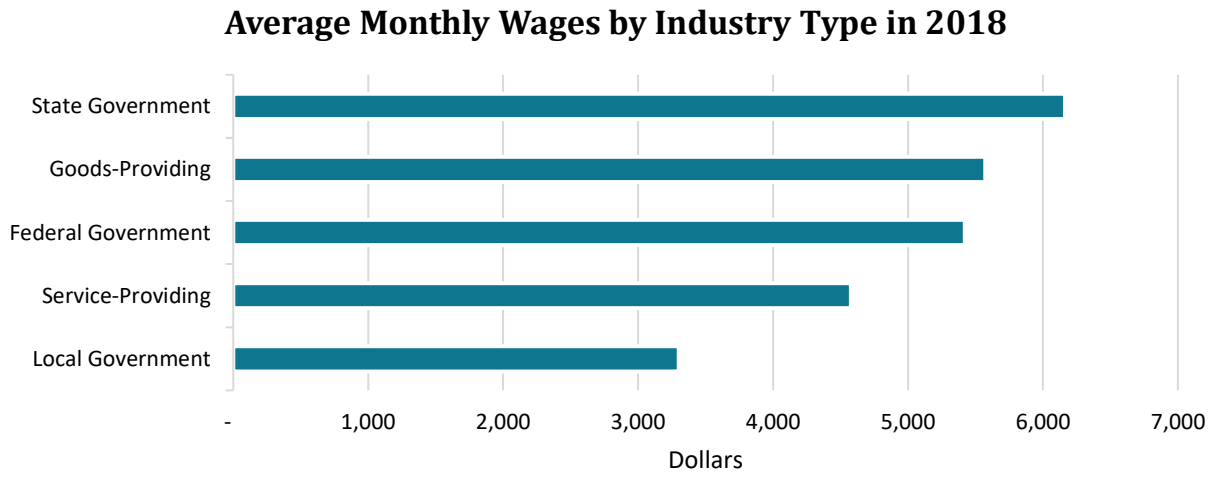

Figure 9: Average Monthly Wages by Industry Type in 2018
Source: AK Dept. of Labor and Workforce Development

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 highest average wages, though has a relatively low average monthly employment. [126]

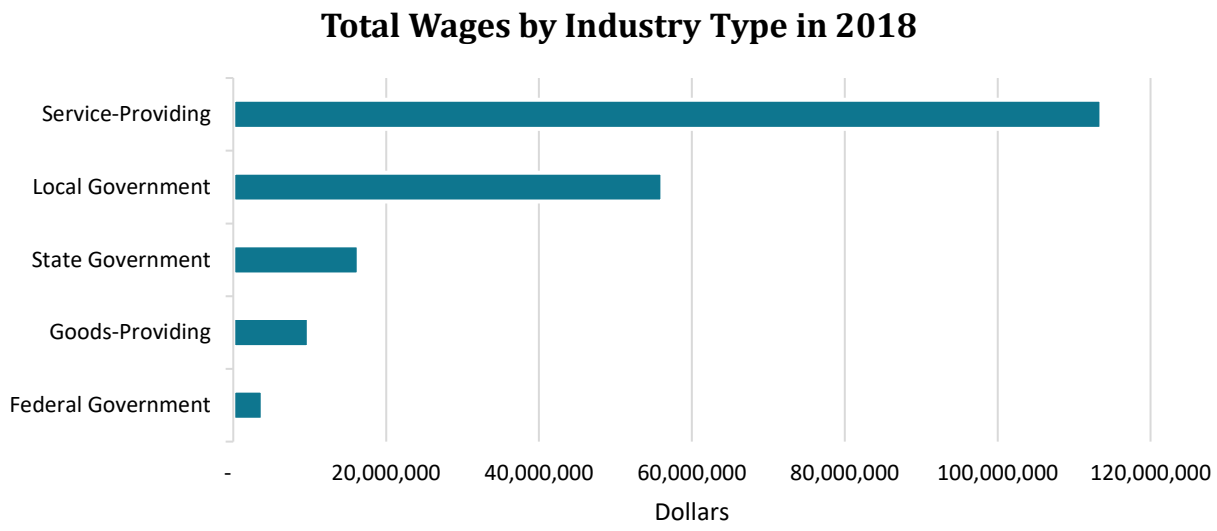

Figure 10: Total Wages by Industry Type in 2018
Source: AK Dept. of Labor and Workforce Development

The workforce population has remained relatively stable in the Nome Census Area over the past nine years, with between 3,900 and 4,100 residents employed each year. Males consistently outnumber females in the workforce. In each of the last nine years, males represented at least 52% of the workforce. However, females consistently have a higher workforce participation rate. Females have an average of 75% workforce participation compared to 73% for males.[127]

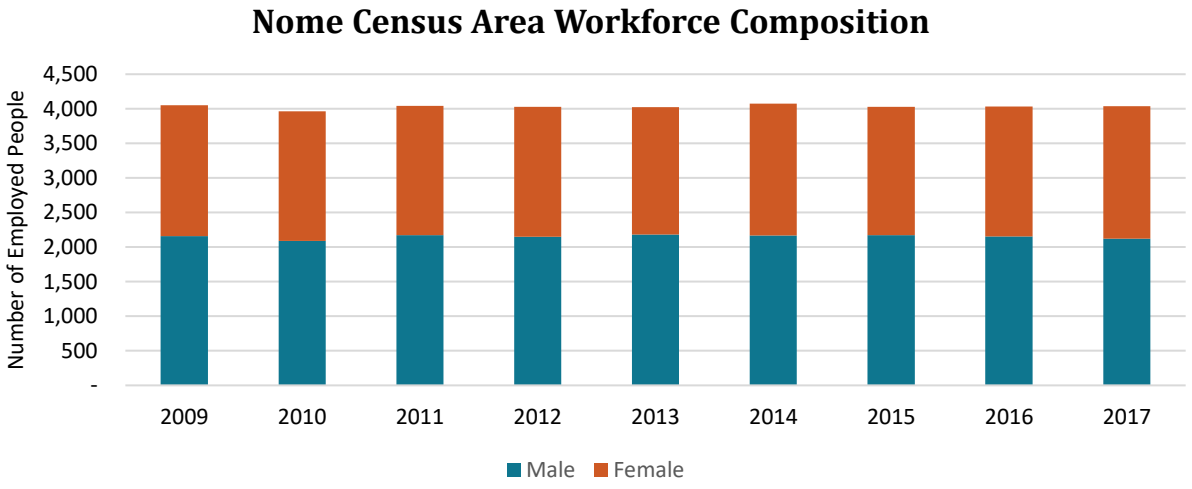

Figure 11: Nome Census Area Workforce Composition, 2009 - 2017
Source: US Census Bureau, American Communities Survey

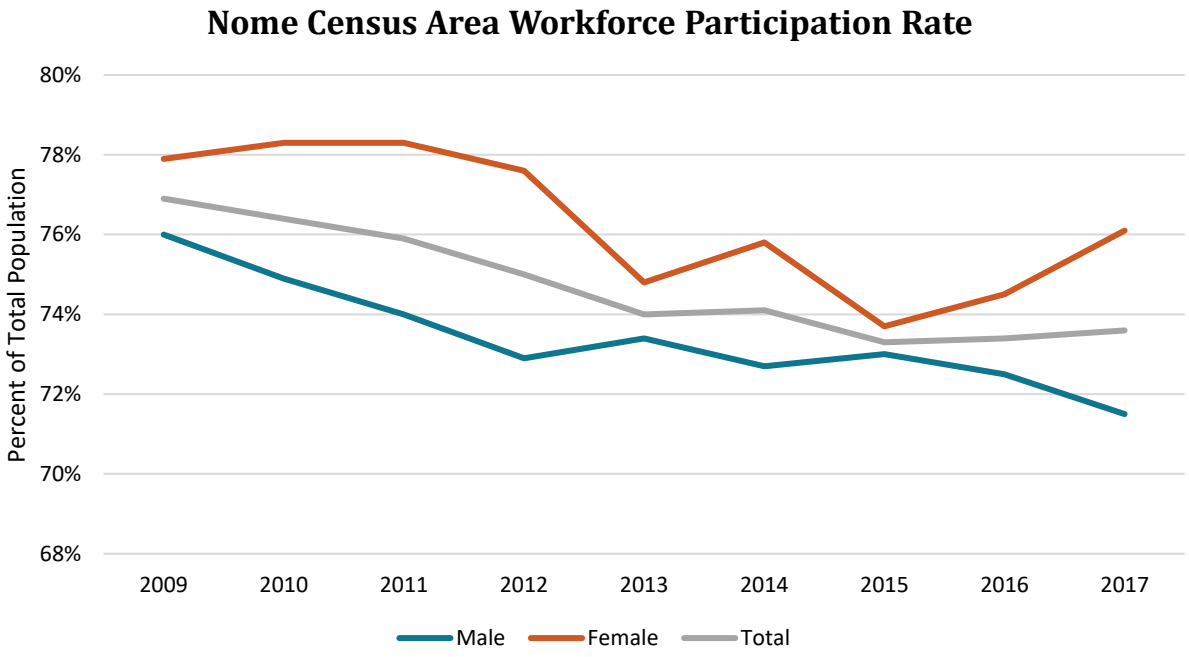

Figure 12: Nome Census Area Workforce Participation Rate, 2008-2017
Source: US Census Bureau, American Communities Survey

Income, on the other hand, steadily rose in the Bering Strait region between 2008 and 2017. Nominal growth averaged 3.8% annually over that period. Real growth was approximately 1.9% over the same period. The highest annual growth was 8.98% in 2010, and the lowest was -5.54% in 2016.[128]

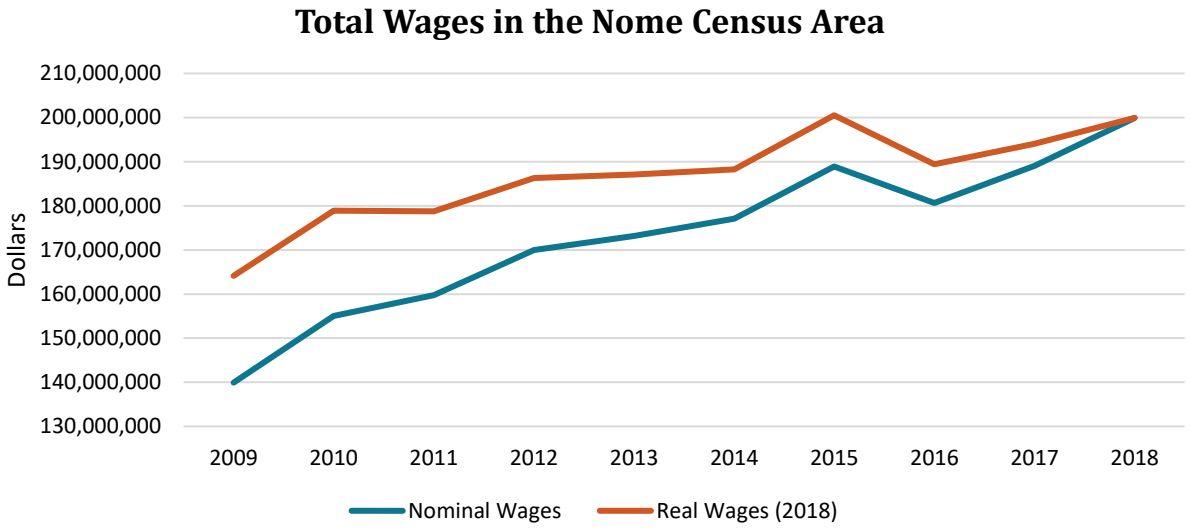

Figure 13: Total Wages in the Bering Nome Census Area, 2009-2018
Source: AK Dept. of Labor and Workforce Development

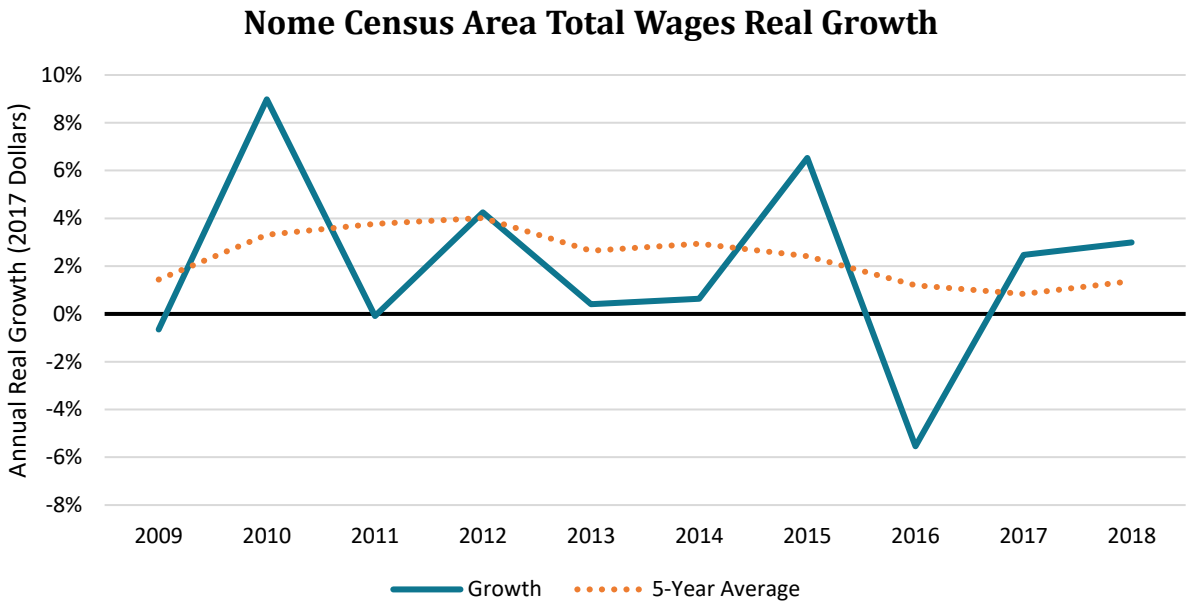

Figure 14: Nome Census Area Total Wages Real Growth, 2009 - 2018
Source: AK Dept. of Labor and Workforce Development

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 on 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 purposes. Examples of such products are jewelry, mittens, hats, mukluks, ivory carvings, masks, dolls, grass baskets, dolls, dance accouterments, kayaks, and slippers.

Arts and crafts transactions in the Bering Strait region occur primarily in person. Artists travel to a location of potential sales (e.g., Nome, or the Alaska Federation of Natives Convention in Anchorage) with their products. The price paid for the artist's products does not only reflect the artistic skill of the individual artist; rather, it also 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 to access larger markets, though most are Nome-based. Facebook pages such as Alaska Barters 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 gather 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 most of the employment opportunities throughout the region. Major employers in the region include Bering Strait School District, Norton Sound Health Corporation, and Kawerak, Inc.[129] Each of these organizations either directly employs or supports staff in each of the region's villages. Tribal and City governments make up most of the remaining employment opportunities in the region's villages. Business and other professional services provide employment in Nome.

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."[130] 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.

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.[131]

The mining cluster itself accounts for 70 jobs within the region, with total wages of $5,977,145. 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 show less concentration, though it 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.[132]

As discussed in the opportunities section, 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. Seventy-two transportation and logistics companies see benefits in the increased volume of equipment and people moving into and out of the region.[133]

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. Several air passenger and freight carriers move products and people through Nome to the regional villages. Likewise, during the summer ice-free months, a few 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. The highest levels of national unemployment are similar to the lowest levels of unemployment in the Nome Census Area. However, 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.[134]

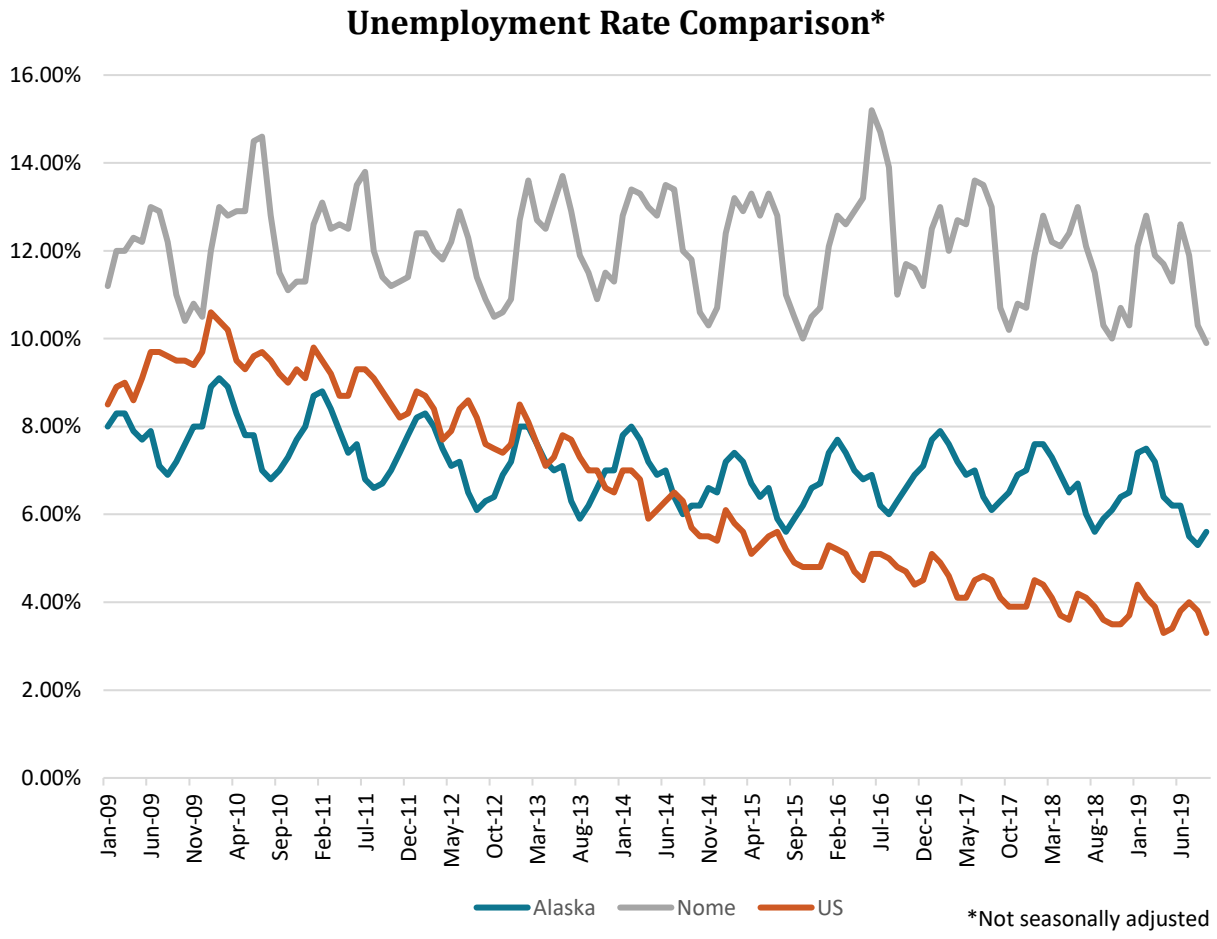

Figure 15: Unemployment Rate Comparison, 2009-2019 Mid-Year
Source: BLS, AK Dept. of Labor and Workforce Development

As discussed above, there are fewer employment opportunities in rural Alaska than there are elsewhere in the United States due to low population densities, remoteness, and high costs of living and doing business. 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 the Bering Strait region to be higher than the official numbers published by the Alaska Department of Labor and Workforce Development.

Poverty

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

Distressed Communities

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 the average income of a community to full-time minimum wage earnings and a measure of the percentage of the population engaged in year-round wage and salary employment." Any community that meets two or three of these criteria is classified as "Distressed." It is important to note that, while the Census Bureau and Alaska Department of Labor and Workforce Development both show real wages increasing in the Nome Census Area, the Denali Commission shows a noticeable decline in real wages between 2013 and 2018. The most significant decline was in Wales (32%). This discrepancy can likely be attributed to a difference in data collection methods. In addition to using PFD data instead of Census data, the Denali Commission incorporates CFEC total fish value data to arrive at their estimation average market income in each community. [135]

Distressed Community Criteria

- The community has an average market income that is lower than the threshold.
- The community has more than 70% of residents, ages 16 and older, earning less than the threshold.
- Fewer than 30% of community residents, ages 16 and older, worked all four quarters in the previous year.

Distressed Community Threshold		
	2013	**2018**
Threshold	$16,120	$20,384

Table 36: Distressed Community Threshold
Source: 2013 & 2018 Denali Commission Distressed Communities Report

2013 List of Distressed Communities (2012 Wages)					
Community	**Status**	**Nominal Earnings**	**Real Earnings (2017 $)**	**Individuals Below Threshold**	**Employed All 4 Quarters**
Brevig Mission	Distressed	$ 10,475	$ 11,222	77%	37%
Diomede	Non-Distressed	16,142	17,294	65%	32%
Elim	Distressed	13,387	14,342	71%	40%
Gambell	Distressed	9,514	10,193	79%	28%
Golovin	Non-Distressed	23,209	24,865	46%	60%
Koyuk	Distressed	13,885	14,876	71%	41%
Nome	Non-Distressed	34,260	36,705	44%	52%
Savoonga	Distressed	8,733	9,356	81%	24%
Shaktoolik	Non-Distressed	20,408	21,864	64%	43%
Shishmaref	Distressed	11,761	12,600	74%	41%
St. Michael	Non-Distressed	11,087	11,878	67%	45%
Stebbins	Distressed	9,781	10,479	78%	30%
Teller	Non-Distressed	12,646	13,548	69%	39%
Unalakleet	Non-Distressed	22,785	24,411	59%	38%
Wales	Non-Distressed	16,887	18,092	56%	56%
White Mountain	Non-Distressed	17,472	18,719	65%	46%

Table 37: 2013 List of Distressed Communities (2012 Wages)
Source: 2013 Denali Commission Distressed Communities Report

2018 List of Distressed Communities (2017 Wages)					
Community	**Status**	**Earnings**	**Real Earnings Growth (Since 2013)**	**Individuals Below Threshold**	**Employed All 4 Quarters**
Brevig Mission	Distressed	$ 10,324	-8%	82%	23%
Diomede	Non-Distressed	16,788	-3%	66%	55%
Elim	Distressed	14,830	3%	75%	41%
Gambell	Distressed	8,144	-20%	86%	18%
Golovin	Non-Distressed	22,844	-8%	57%	53%
Koyuk	Distressed	12,706	-15%	80%	38%
Nome	Non-Distressed	36,176	-1%	50%	48%
Savoonga	Distressed	10,102	8%	82%	30%
Shaktoolik	Distressed	17,756	-19%	77%	35%
Shishmaref	Distressed	10,569	-16%	80%	28%
St. Michael	Distressed	12,679	7%	80%	33%
Stebbins	Distressed	10,013	-4%	82%	31%
Teller	Distressed	13,932	3%	76%	36%
Unalakleet	Non-Distressed	26,479	8%	62%	41%
Wales	Distressed	12,262	-32%	81%	39%
White Mountain	Distressed	16,090	-14%	73%	41%

Table 38: 2018 List of Distressed Communities (2017 Wages)
Source: 2018 Denali Commission Distressed Communities Report

Another means of assessing the economic distress in the region is through the Alaska Department of Commerce, Community, and Economic Development's Lien Watch. This semi-monthly report shows which communities in rural Alaska are in trouble by keeping track of liens placed on small communities.[136]

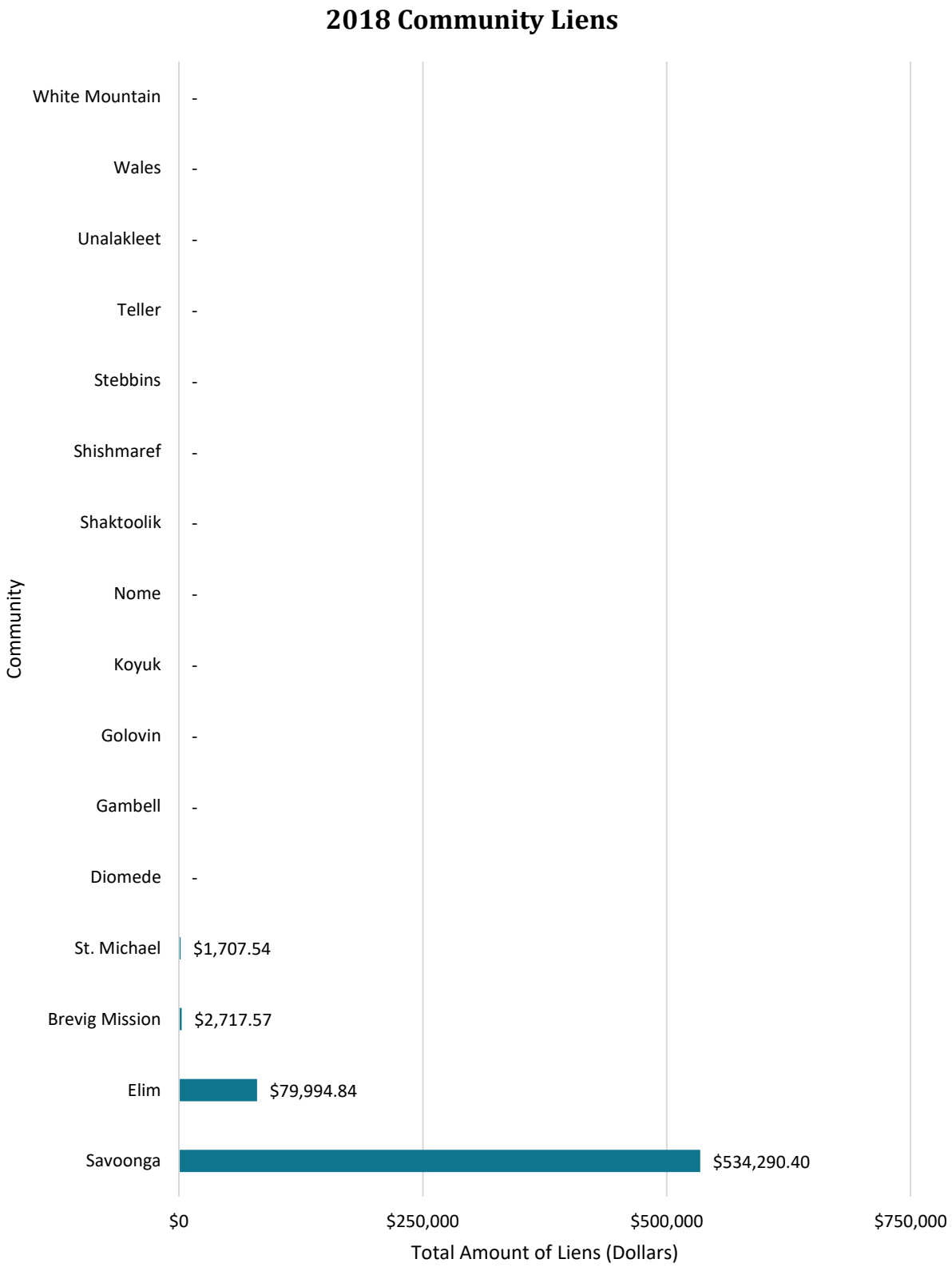

Figure 16: Community Liens in 2018
Source: AK Dept. of Commerce

Workforce Experience and Educational Attainment

Number of Workers with Experience in Industries 2012–2016			
Accommodation and Food Services	530	**Management of Companies and Enterprises**	263
Administration and Support and Waste Management	221	**Manufacturing**	700
Agriculture, Forestry, Fishing, and Hunting	4	**Mining**	108
Arts, Entertainment, and Recreation	272	**Professional, Scientific and Technical Services**	155
Construction	631	**Real Estate and Rental and Leasing**	390
Educational Services	18	**State Government**	517
Finance and Insurance	71	**Trade**	841
Health Care and Social Assistance	1,580	**Transportation and Warehousing**	346
Information	120	**Utilities**	93

Table 39: Number of Workers with Experience in Industries, 2012-2016
Source: AK Dept. of Labor and Workforce Development

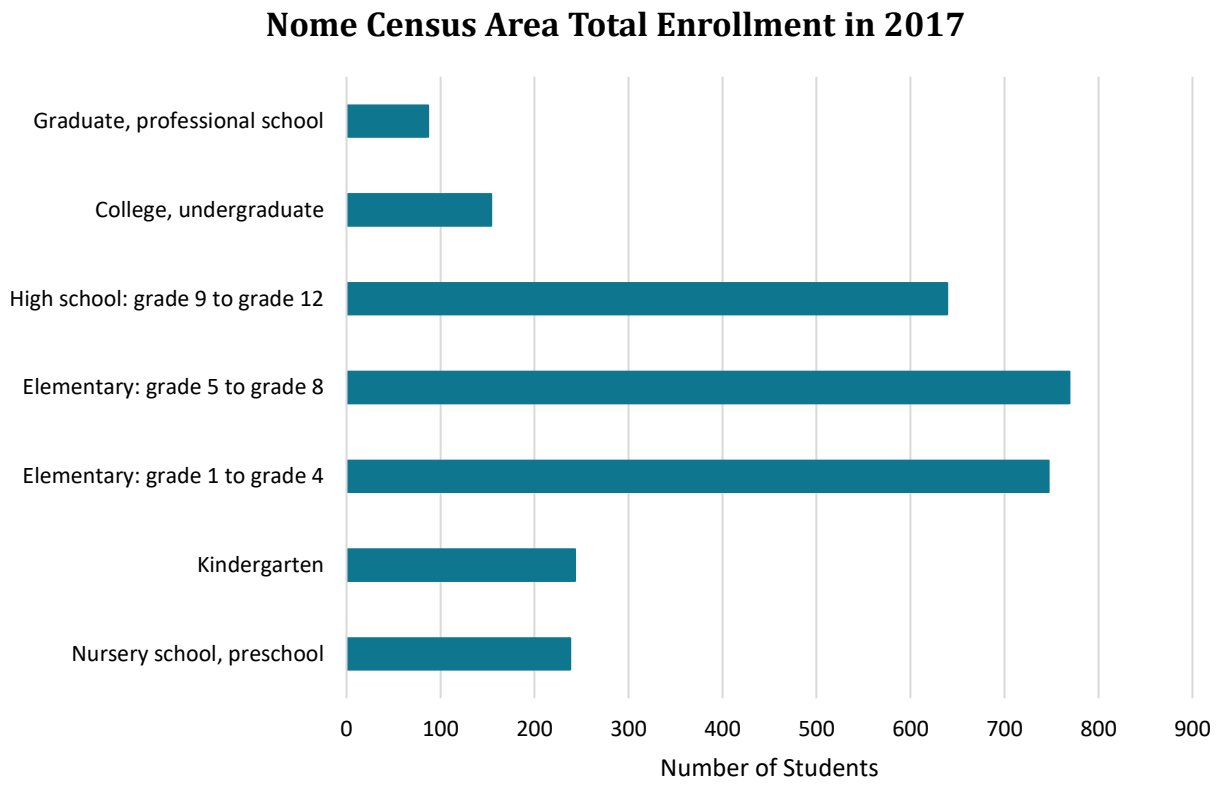

Figure 17: Nome Census Area Total Enrollment in 2017
Source: US Census Bureau, American Communities Survey

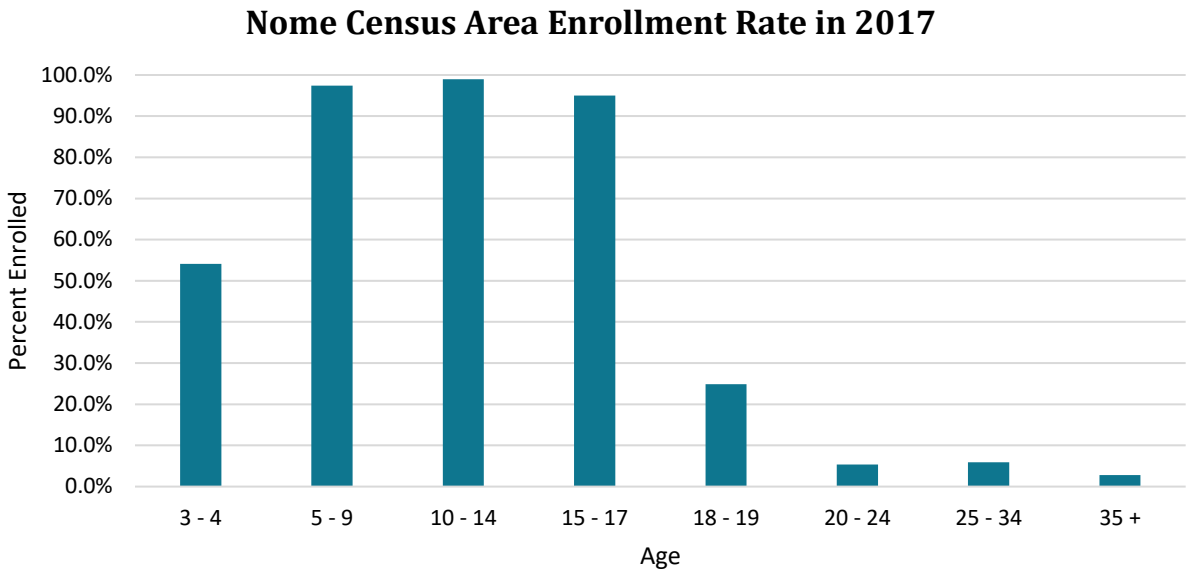

Figure 18: Nome Census Area Enrollment Rate in 2017
Source: US Census Bureau, American Communities Survey

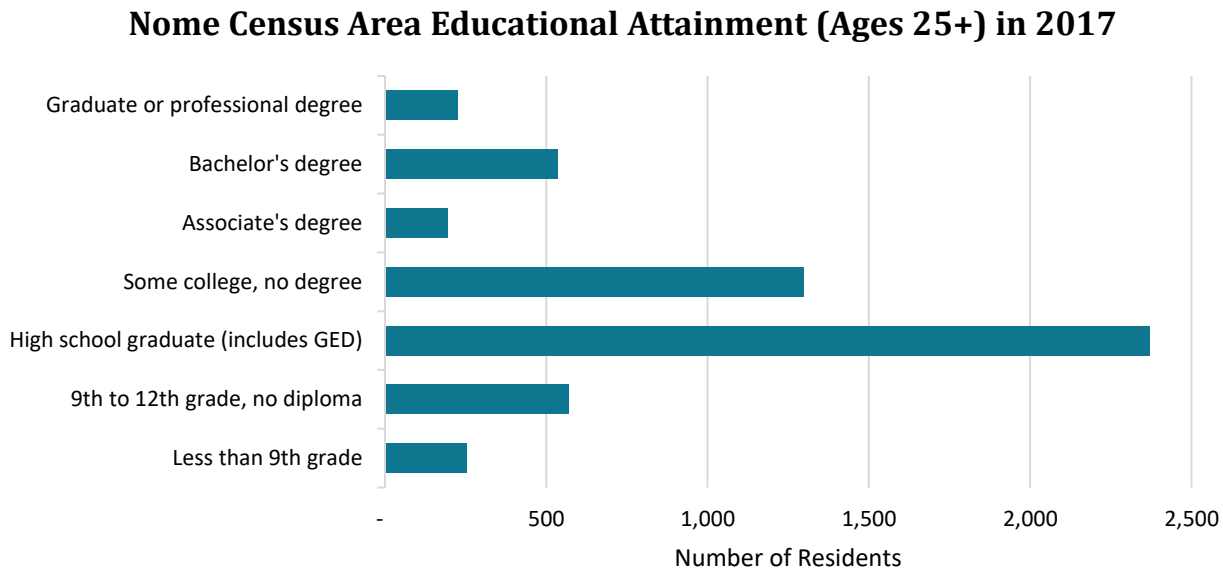

Figure 19: Nome Census Area Educational Attainment (Ages 25+) in 2017
Source: US Census Bureau, American Communities Survey

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.[137] NSDC provides fisheries-related training, as well as scholarships for university and vocational training.[138] 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.[139]

Transportation Access

Air travel and freight transportation are the only means to efficiently access the Bering Strait year-round. During the ice-free months between June and November, barges can deliver freight to the region. There are several hundred miles of roads in the region. Many 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. [140]

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.

Apart from 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.[141]

Nome Census Area Air Travel Infrastructure in 2017

	Primary Runway	
	Size (ft)	**Surface**
Brevig Mission	2,990x100	Gravel
Council	3,000x60	Turf
Diomede	64x64 (helipad)	Concrete
Elim	3,401x60	Gravel/Dirt
Gambell	4,499x96	Asphalt/Concrete
Golovin	4,000x75	Gravel
Koyuk	3,002x60	Gravel/Dirt
Nome	6,176x150	Asphalt
Savoonga	4,400x100	Gravel
Shaktoolik	4,001x75	Gravel/Dirt
Shishmaref	4,997x73	Asphalt
St. Michael	4,001x75	Gravel
Solomon	1,150x35	Gravel/Dirt
Stebbins	2,999x60	Gravel/Dirt
Teller	3,000x60	Gravel
Unalakleet	5,900x150	Asphalt
Wales	3,990x75	Gravel
White Mountain	3,000x60	Gravel

Table 40: Nome Census Area Air Travel Infrastructure in 2017
Source: Federal Aviation Administration

Water and Sewer Infrastructure

Significant needs remain in terms of water and sewer infrastructure in the region. Except for teacher housing, there is no water and sewer service available in the communities of Diomede, 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.[142]

Nome Census Area Community Water and Sewer Infrastructure				
	Water		**Sewer**	
Brevig Mission	Circulating	Buried	Gravity	Buried
Diomede	Washateria	None	Honey-bucket	None
Elim	Circulating	Buried	Gravity	Buried
Gambell	Circulating	Buried	Gravity	Buried
Golovin	Circulating	Buried	Gravity	Buried
Koyuk	Circulating	Buried	Gravity	Buried
Nome	Circulating	Buried	Gravity	Buried
St. Michael	Circulating	Above	Vacuum	Above
Savoonga	Circulating	Above	Vacuum	Above
Shaktoolik	Circulating	Buried	Gravity	Buried
Shishmaref	Haul	None	Haul	None
Solomon	Individual Haul	None	Honey-Bucket	None
Stebbins	Washateria	None	Honey-Bucket	None
Teller	Washateria	None	Honey-Bucket	None
Unalakleet	Circulating	Buried	Gravity	Buried
Wales	Washateria	None	Honey-Bucket	None
White Mountain	Circulating	Buried	Gravity	Buried

Table 41: Community Water and Sewer Infrastructure
Source: AK Division of Community and Regional Affairs

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.

IV. Resiliency Framework

Persistent Economic Challenges

The Bering Straits region has thrived for millennia through the subsistence lifestyle and the resiliency of the Yup'ik and Inupiaq cultures. To this day, cultural ties remain a strength for the region, and subsistence continues to exist as a vital supplement to a Western cash economy. That cash economy rests on health care, mining, fisheries, tourism, and local government.[143] In the last century, the people of the Bering Straits have withstood the depletion of some game, disease, famine, and economic busts.[144] Today, hazards continue to exist. This section describes some of the major hazards and develops a framework to address them.

Major Hazards

Housing

As in most of rural Alaska, housing in the Nome Census Area is expensive, and the supply is limited. More than a quarter of homes in the region meet the HUD definition of overcrowding. In the villages, overcrowding rates are even higher.[145] The high cost of construction increases the difficulty of building more homes.

Energy

Villages in the region pay as much as $.50 per kWh for electricity, compared to less than $.20 in Southcentral Alaska.[146] Heating oil often exceeds $5.00 per gallon, generating a heavy burden on cash-constrained households.[147] High energy costs also make it difficult for residents to start businesses.

High rates of unemployment

Like other rural parts of Alaska, unemployment in the Nome Census Area is persistently higher than the state and national averages. In December 2018, the Nome Census Area had an unemployment rate of over 10%, compared to a statewide level of 6.4%. The rural villages almost always have even higher rates than Nome.[148] Limited employment opportunities translate into lower incomes for households and high rates of out-migration.

Skills shortages

A shortage of trained locals often means that jobs in mining, health care, education, and other fields are often held by non-locals who relocate to the region. Employers often struggle to find qualified applicants, even as unemployment remains stubbornly high.

Geography and distance

The Bering Straits region depends on air and seasonal barge transportation for the movement of people and goods. The region's isolation from other parts of Alaska and the Lower 48 raises the costs of basic supplies like groceries, consumer goods, energy, and building materials. This also increases the difficulty of doing business in the region.

Infrastructure limitations

Many communities in the region lack the funds to build or update water/wastewater systems, electrical infrastructure, and community facilities. The region also has limited access to cellular telephone service and broadband internet.

How CEDS Addresses the Hazards

Housing

- Case studies on own-home construction & financing.
- Increase NAHASDA and HIP Funding.
- Potentially work with nonprofit groups like Habitat for Humanity.

Energy

- Improve energy efficiency to reduce the burden of power costs.
- Explore the potential for local natural gas for power plants and/or renewable energy technologies to reduce dependence on imported diesel.
- Partner organizations such as Alaska Village Electric Cooperative (AVEC) and Alaska Native Tribal Health Consortium (ANTHC) are working on alternative energy projects to reduce the amount of heating oil that has to be imported.

High rates of unemployment

- Support entrepreneurs with training and resources to create jobs in diverse industries.
- Continue to research and promote tourism, and support residents to start or grow their business in the industry.
- Work with Graphite One to train employees from the region to work for the company if it gets permits to mine.

Skills shortages

- Develop apprenticeship and technician programs in priority industries.
- Assist those with documented disabilities to improve job-related skills.
- Coordinate with local organizations to provide residents with scholarships.

Geography and distance

- Scale up the accessibility of reliable and affordable broadband in villages.
- Develop MOA's between Nome EMS and village entities to improve emergency care.
- Improve and maintain transportation infrastructure (seaport, airport, roads).

Infrastructure limitations

- Improve best practice scores with ANTHC and VHS to reach the minimum standard to obtain funding and technical assistance for water and sewer infrastructure.
- Support local utility in creation, implementation, and O&M plans for water and sewer in villages that do not have them.
- Review of current tech around microgrids and self-contained toilets to see if they could be implemented.

Disruptions and Early Warning Tools

In addition to ongoing efforts to address persistent challenges, the Bering Strait region must be prepared for sudden shocks and disasters. These might be economic in nature or relate to natural disasters, fisheries, or subsistence resources. This section discusses some of these hazards and the strategies in place to mitigate them.

Major Hazards

Commodity price swings

Commodity price swings have periodically created economic pain for Alaskans, and the Bering Straits region is no exception. With a history of mining, the regional economy has seen booms and busts related to the price of gold. Although no oil or gas is produced in the Nome Census Area, the region still feels the effects of oil price shocks when they result in cuts to state spending. Conversely, high oil prices may be good for state coffers, but they cause home heating costs to skyrocket.

Fisheries disasters

Weak salmon runs can harm commercial fishing communities and subsistence uses. The status of king salmon stocks forces shutdowns of other fisheries in Norton Sound. The region also has some exposure to Bering Sea groundfish through the CDQ program, which experiences cycles in the biomass and markets.

Subsistence threats

In addition to fluctuations in seafood stocks, game populations are also subject to declines due to natural or anthropogenic causes. Access to fish and game is central to the maintenance of subsistence economies in the Bering Straits. Moose, caribou, muskoxen, seals, walruses, and other animals have seen their numbers rise and fall, from human predation or natural factors. State regulations limiting the amount of subsistence by-products that can be traded or sold to $500 are an economic barrier; they also reduce the ability of local native communities to share and keep up with the demand for traditional foods.

Climate change impacts

These take a variety of forms, not all of which are well understood. Coastal erosion, ocean acidification, floods, sea ice changes, and other disruptive phenomena have been tied to climate change. Many of these occurrences have important implications for subsistence and cash economies.

Natural disasters

The Bering Straits is known for extreme storms that sometimes erode the shoreline and damage homes and buildings. This type of erosion is a major reason for communities like Shishmaref to consider relocation.

Environmental contamination

Soils contaminated from fuel tanks buried decades ago have been a health and environmental hazard on St. Lawrence Island, Unalakleet, and other communities in the Nome Census Area. Resource development activities in the region and shipping through the Bering Straits carry additional risks of fuel spills and other pollutant discharges. They can also introduce invasive species that harm existing flora and fauna.

How CEDS Addresses the Hazards

Commodity price swings

- Research alternative energy to reduce dependence on imported diesel and vulnerability to power cost swings.
- Protect subsistence resources as a reliable food source when imported food products are expensive and often unavailable.
- Reduce dependence on resources coming in from outside the region; encourage import substitution within the region whenever possible.
- Work with our state and federal legislators and local telecommunication providers to reduce the cost of broadband in the villages.

Fisheries disasters

- Explore the possibility of salmon enhancement programs.
- Monitor the impact of rising ocean temperatures and increased ocean acidity on fish populations and crab stock.

Subsistence threats

- Develop a plan to protect subsistence resources as industry and shipping increase in the region.
- Monitor climate impacts like changes in sea ice and ocean temperatures on subsistence resources like fish and seals.

Climate change impacts

- Monitor changes in sea ice and how it impacts seal hunting and fishing.
- Scale-up search and rescue capacity due to increasing safety risks from the unpredictability of sea ice.
- Develop flood protection for coastal communities impacted by rising sea levels.

Natural disasters

- Explore resilient micro-grid technologies to maintain energy security if fuel imports are delayed due to disaster.
- Implement disaster-resilient infrastructure when developing water and sewer systems in villages.

Environmental Contamination

- Work with Graphite One to develop an environmental protection strategy if they are granted permits to mine.
- Develop a strategy to protect against the threat of invasive species impacting the environment from increased shipping traffic.

Natural Disaster Planning

Disaster Preparedness

As the Bering Strait region faces impacts from climate change, increased ship traffic, coastal erosion, severe storms, and other disasters, preparedness takes on high importance. The ability to respond to these types of events is a key aspect of the region's resiliency.

In 2017 Kawerak received funding from the Pipeline and Hazardous Materials Safety Administration (PHMSA) to work with communities throughout the region on developing their Small Community Emergency Response Plans (SCERP). In addition to SCERPs, it is important for the communities in the region to complete and maintain their Hazard Mitigation Plans (HMP), which provide guidelines for responding to natural or hazardous disasters.[149] The completion of Hazard Mitigation Plans is useful in two ways:

- They provide for a planned response to hazardous disasters or events,
- Having one on file makes the community eligible to receive pre-disaster planning funds from the U.S. Federal Emergency Management Administration (FEMA) for further response planning efforts.

In 2019, the Kawerak Emergency Preparedness Specialist has been able to provide information and guidance on SCERP development by phone or in person, in Diomede, Gambell, Golovin, Koyuk, St. Michael, Savoonga, and Shishmaref. The table below shows the status of each community's progress in completing these plans.

Status of Natural Disaster Response Plans in Nome Census Area Communities

	SCERP	HMP	HMP update
Brevig Mission	In Process	2014	2019
Diomede	Developing		
Elim		2016	
Gambell		2012	2019
Golovin	In Process	2015	
Koyuk		2014	
St. Michael	Complete	2013	2019
Savoonga		2012	2019
Shaktoolik	Complete	2015	
Shishmaref	Complete	2015	
Stebbins		2013	
Teller		2018	
Unalakleet		2015	
Wales	Complete		
White Mountain	Complete		

Table 42: Status of Natural Disaster Response Plans in Nome Census Area Communities
Source: Kawerak, Inc.

V. 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).[150] 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-by-2 matrix delineating internal and external, as well as positive and negative factors.

SWOT Matrix		
	Internal	**External**
Positive	Strengths	Opportunities
Negative	Weaknesses	Threats

Table 43: SWOT Matrix

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. Like 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 EDA 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.[151] 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. Considering 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 distance 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.

Strengths:

- Culture: friendly people,respect
- Youth
- Resource-rich (ex. reindeer, timber)
- Community participation-especially in the local planning process
- Local EMS
- Volunteer community
- Regional organizations-regional collaboration
- Best food
- Subsistence
- Fiber optic line
- School spaces (such as the gym) are open to the community for other events in Nome and some villages
- Population growth
- Citizen-Led Public Safety Advisory Committee
- Day shelter and overnight facility/resources for the homeless population
- Nome is a hub community
- Local arts and artisans

Weaknesses:

- Transportation
- Community participation in meetings/decisions
- Lack of Housing
- Lack of justice system (local police force, VPO/TPO)
- Systemic educational issues, particularly for Alaska Native students
- Unorganized borough
- Lack of public services (high-speed internet in villages, sewer and water, waste management) and high cost
- Limited local control in village schools and school resources (gym as community space)
- No reservations (like in the lower 48)-barrier to federal funding for infrastructure projects
- Lack of financial services and management
- Not enough professionals from local region (ex. educators, management, health care)
- Unequitable political power
- Sustaining village economies

Opportunities:

- Potential for a borough
- Transportation
- Re-design public systems (ex. tribal courts, justic system, education system)
- Development (Mining, fish products, renewable energy)
- Human Capital
- Natural resources (dredging, drilling)
- Tourism (Cruises, Native tourism)
- Continuing education (Trade school, apprenticeship program, leadership programs)
- Waste management
- Safe and healthy places for youth
- Funding (EDA) to help maintain infrastructure
- Funding for energy audits
- Financial management education
- Natural resources
- Opportunity Zone

Threats:

- Location
- Lack of local police force
- Climate change
- Development- invasive species from increased shipping traffic
- Increasing dependence on a “digital” world
- High cost of living and energy
- State’s financial climate
- Inequitable political power
- Political leveraging of funds (ex. PCE)
- Legacy of trauma (homelessness, mental health, suicide rates)
- Diminishing subsistence resources (Pollock, Whale)
- Foreign investment
- Dependence on federal aid
- Human migration
- Loss of elders
- Inadequate infrastructure to sustain population growth and economy

Figure 20: Kawerak SWOT 2019-2023

The following section is an analysis of the economic development challenges and opportunities in the 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 a narrative format.

Opportunities and Strengths

Mineral Development

The Seward Peninsula has a long history of mineral development. From a colorful gold rush over a century ago to modern suction dredging operations, mining remains a major factor in the Nome Census Area economy. The figure below illustrates the abundance of resources and the long history of resource extraction in the region.

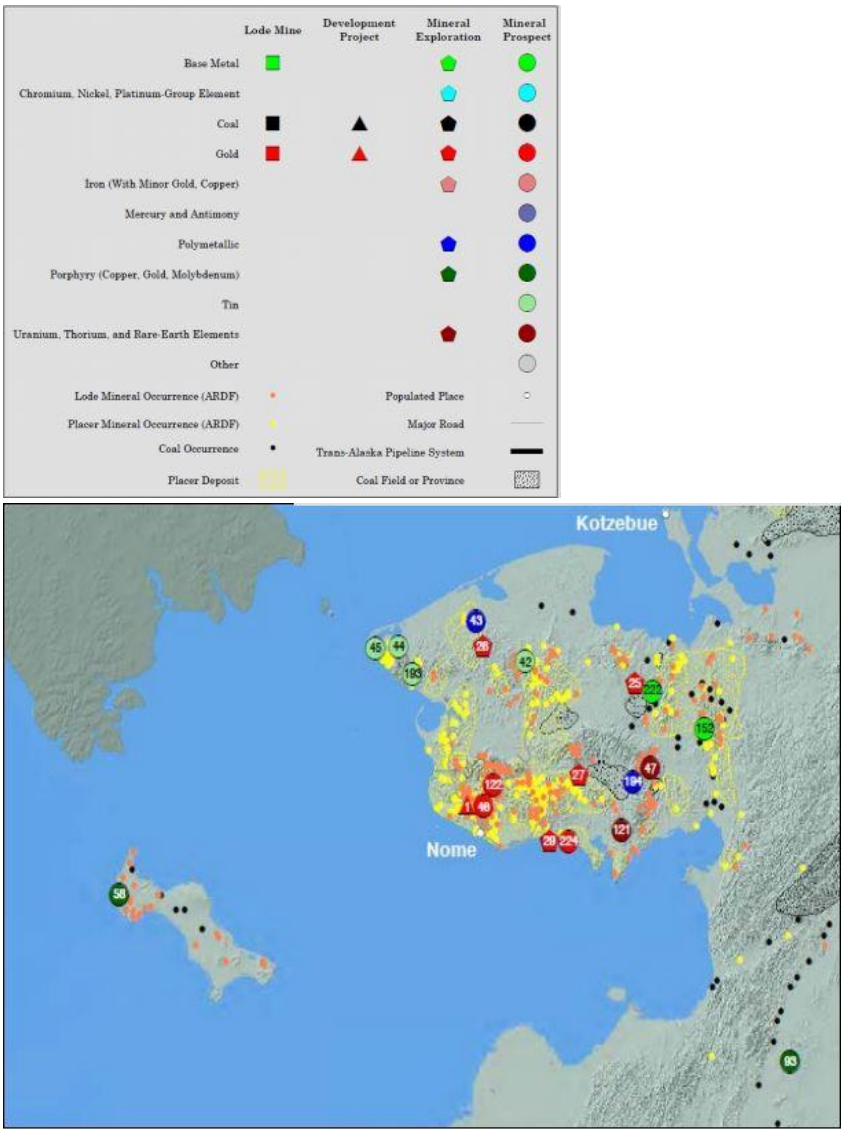

Figure 21: Bering Straits Natural Resources
Source: Kawerak, Inc.

Beginning in the late 19th 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 20th 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.[152] Many of the dredges or remnants of the dredges still dot the landscape today.

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. [153]

The increase in miners working the offshore waters represents some opportunity for the local economy. Hardware stores' sales are up, landlords and hotels see fewer vacancies, and the city can 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 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.

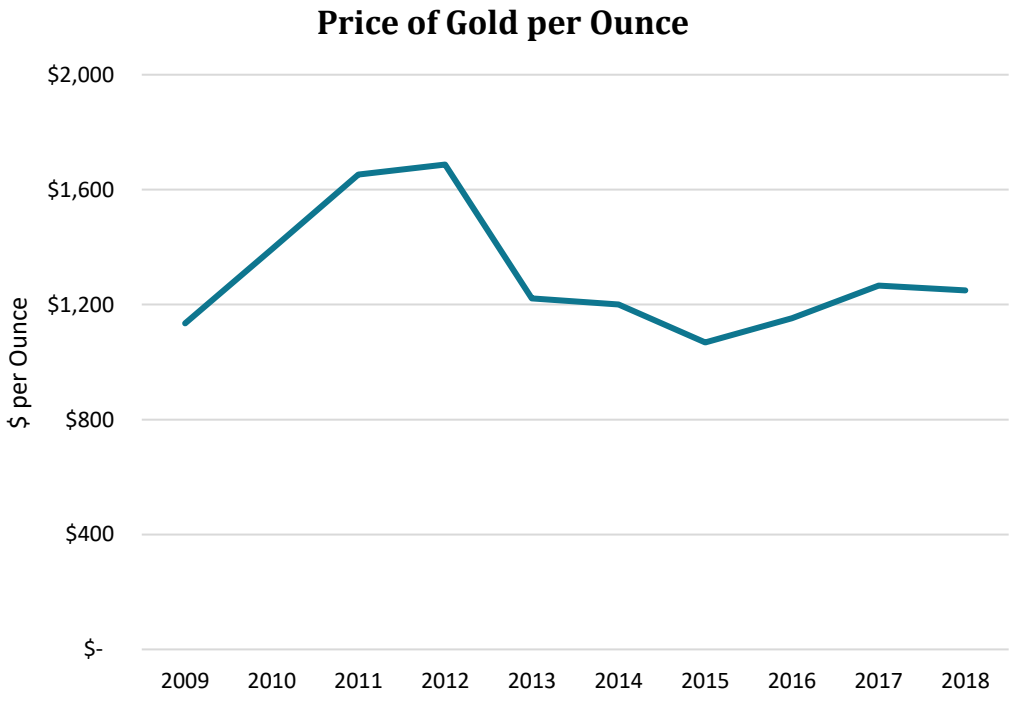

Figure 22: Price of Gold
Source: Data Hub

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

One potential development is the Graphite Creek deposit near Nome, being pursued by Graphite One. The company is currently undertaking a Preliminary Economic Assessment and completed summer fieldwork in 2018. The development could have a 40-year project life for the mine and processing facilities for high-grade coated spherical graphite, a key material in manufacturing lithium-ion batteries. Graphite is listed on the US Critical Mineral List, making Graphite Creek a potentially significant new source of supply for decades to come. One preliminary study shows that the project could create between 250 and 300 jobs.[154]

The Graphite One prospect is controversial, however. Some Nome Census Area residents are concerned about the mine infrastructure's impact on the Imuruk Basin and its watershed. The area is home to moose, salmon streams, berries, and other subsistence resources, and some from Teller and Brevig Mission have voiced that the mine could threaten the land and subsistence way of life.[155] Some residents of the region are also concerned that Graphite One will bring in its own external staff and that the potential 250-300 jobs created would not benefit residents.

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 has been significant growth in the smaller-scale operations coinciding with recent television programming featuring offshore dredge-style mining. Graphite One could also bring significant growth but remains years away from development, and the risks must be understood.

Tourism

The Bering Strait Region's Native culture, natural resources, sporting events, and unique history provide excellent tourism opportunities with Nome serving as a 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 several sightseeing and recreational opportunities for tourists.[156] Many communities recognize tourism, as well as the qualities of the region that attract tourists, as an existing strength or a potential opportunity.

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 Nome Census Area 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 residents' daily economic activities. Nome has begun collecting data from surveys taken at the airport to determine tourists' motivations for visiting the region, and to determine what they did/plan to do during their stay. The survey results thus far indicate that visitors are most interested in experiencing Alaska Native culture and enjoying nature-related activities in the region.

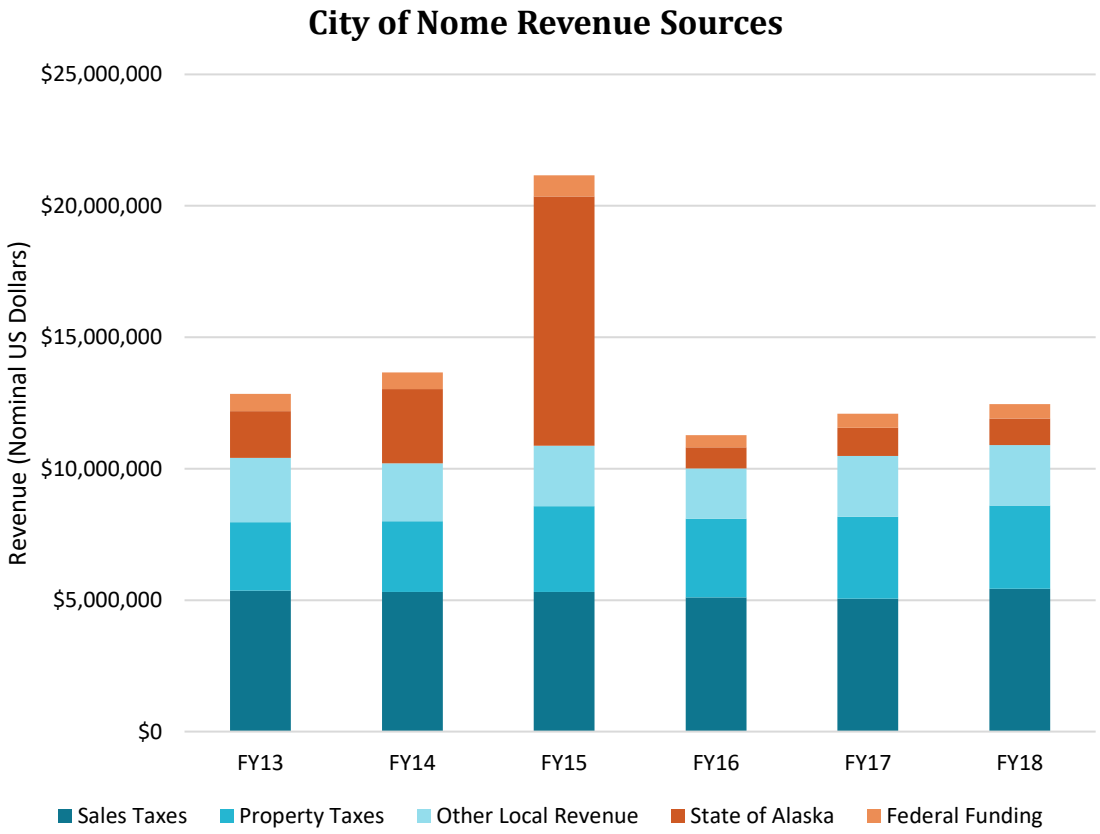

Figure 23: City of Nome Revenue Sources, 2013-2018
Source: City of Nome

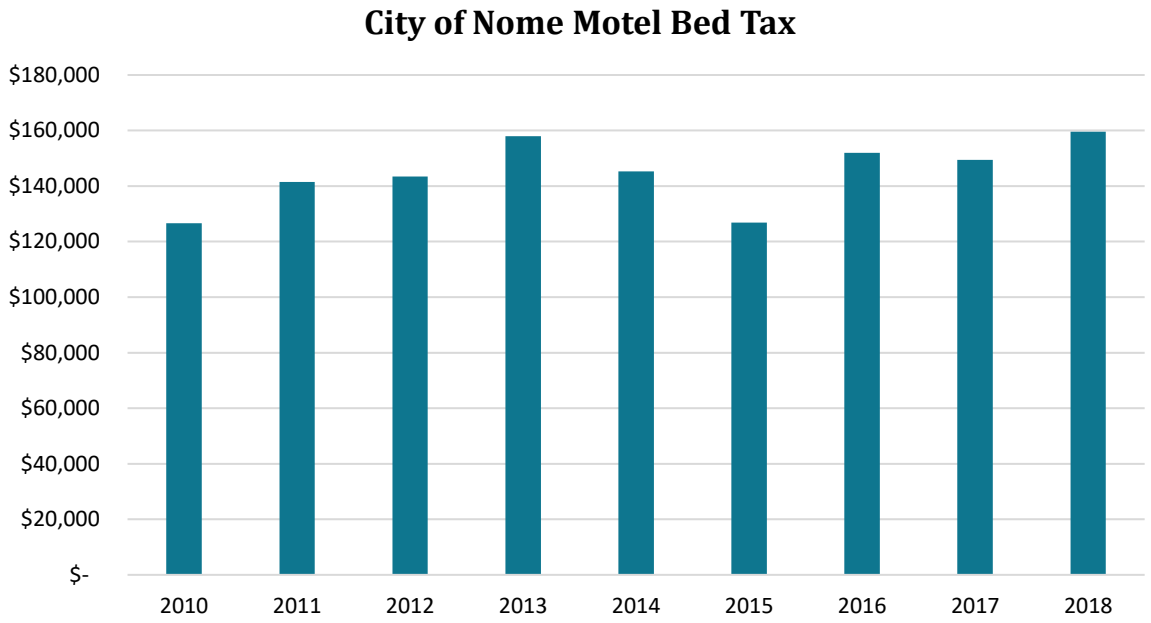

Figure 24: City of Nome Hotel Bed Tax, 2010 - 2018
Source: City of Nome

Yet another indicator of tourism activity is the number of cruise ships passing through the region each summer. In 2019, 11 cruise ships were scheduled to stop at Nome—the highest number in recent history (see figure below).[157] The 2018 summer season Nome expected to see six cruise ships; however, two that were due to arrive in September were blocked by ice. There were six stops in Nome by arctic research vessels, as well as two port stops by the USCG Cutter. A new cruise line, the Silversea, has added the Port of home to their summer schedules for one stop in 2019 and three stops in 2020.

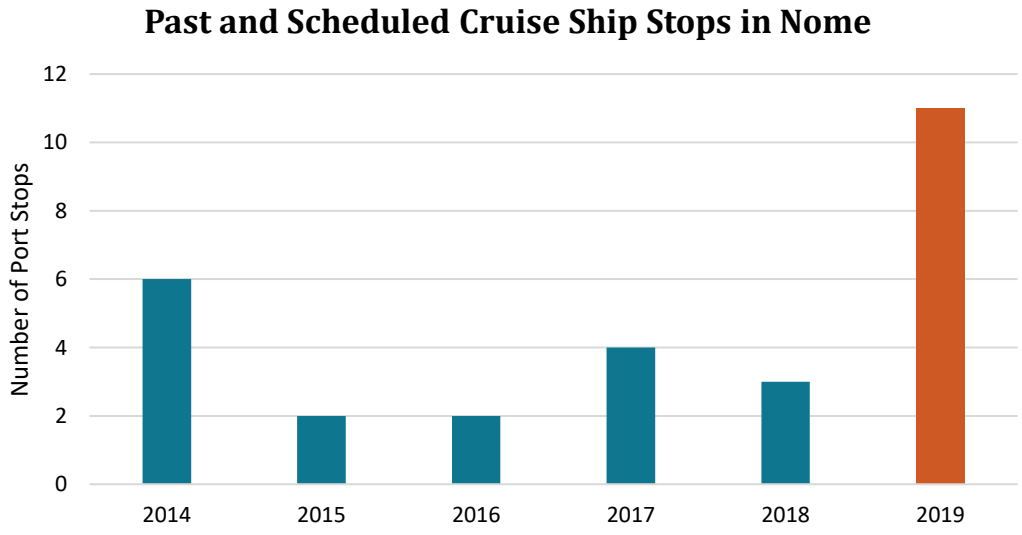

Figure 25: Past and Scheduled Cruise Ship Stops in Nome, 2014-2019
Source: Kawerak, Inc., and Cruise Lines International Association Alaska

The Bering Straits region offers several assets and attractions for visitors. Some of these are listed below.

- Birding
- Camping
- Hiking
- History
- Alaska Native culture
- Hunting and fishing
- Iditarod Sled Dog Race
- Hot Springs

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
- Ravn 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 the time of year, e.g., Iditarod and during bird migrations)

Growth

Likely increasing due to more frequent cruise ship stops and greater interest in the Arctic.

Fisheries (Opportunity and Threat)

Another important set of natural resources is the region's fisheries. The Bering Strait has limited commercial fisheries opportunities compared to the southern coastal parts of the state. All five species of salmon found in Alaska are found in the Bering Strait region; however, Chinook and Sockeye runs are relatively small. The primary species harvested commercially 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 does not 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 present challenges to connecting with outside markets.

Since 2004, Sub-districts 5 (Shaktoolik) and 6 (Unalakleet) king salmon runs in southern Norton Sound, have been classified as stocks of concern by the Alaska Board of Fisheries. In 2018, because of a projected weak run of king salmon, the Alaska Department of Fish and Game closed sport fishing for king salmon and the use of bait for all hook-and-line fishing in the southern Norton Sound.[158] The department did not allow directed king salmon commercial fishing periods and restricted subsistence fishing in Subdistricts 5 and 6 to approximately one 24-hour fishing per week in the marine waters and closed the Unalakleet River to subsistence gillnet fishing in June 2018.

Following an exceptional 2018 season, the 2019 salmon season saw significantly above average runs of chum, pink, sockeye, and coho salmon. King salmon remained closed to commercial fishing in the region but saw a better than expected run, and the harvest of 1,400 fish was the best in 20 years. Pink salmon, despite an excellent run for an odd-numbered year, faced issues on the market with depressed interest from buyers. The harvest of sockeye salmon was the highest in recorded history at nearly 7,000 fish.[159]

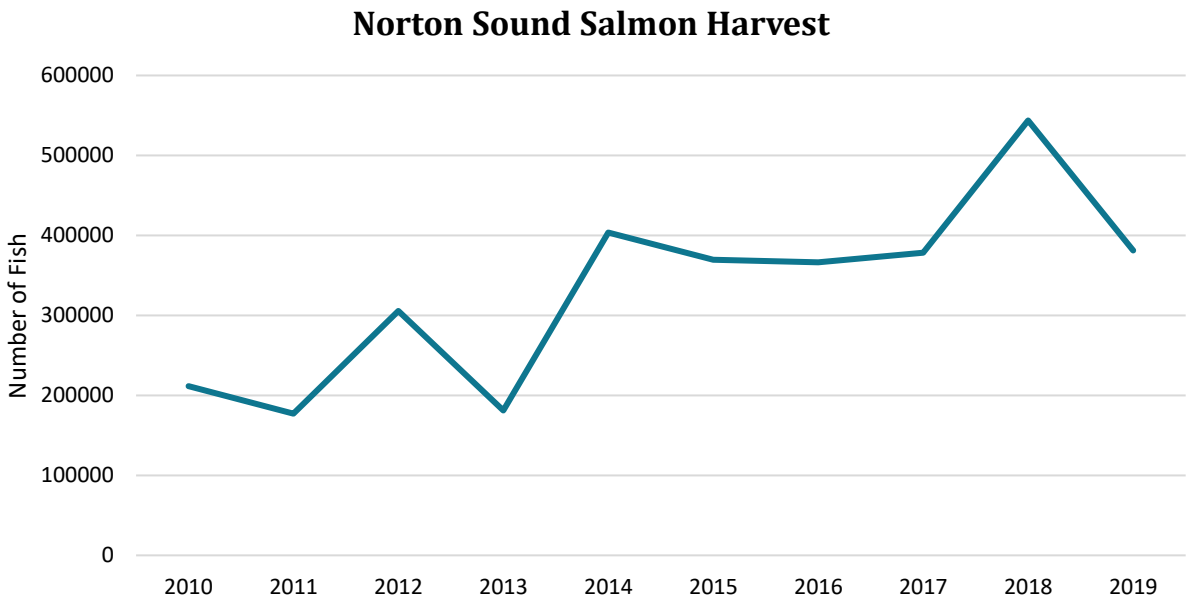

Figure 26: Norton Sound Salmon Harvest, 2010-2019
Source: AK Department of Fish and Game

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

- Pollock fishery bycatch impacts on Bering Strait Salmon runs
- Late season ice impeding herring fishery

Growth

Low stocks of king salmon are a threat to other salmon fisheries in the region and limit the growth of fisheries.

Traffic through the Bering Strait (Opportunity and Threat)

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 presents an opportunity for new infrastructure and business development. Conversely, more shipping brings an increased risk of an oil spill, marine mammal disturbance, and the potential for invasive species. Residents approach the issue with caution. 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 27: 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 to start using the Northern Sea Route across the north of Russia as the water opens. Smaller recreational vessels are also starting to travel the Northwest Passage through the Canadian Arctic.[160] Some scientists and subsistence hunters have predicted an ice-free summer for the Arctic in the decades ahead.

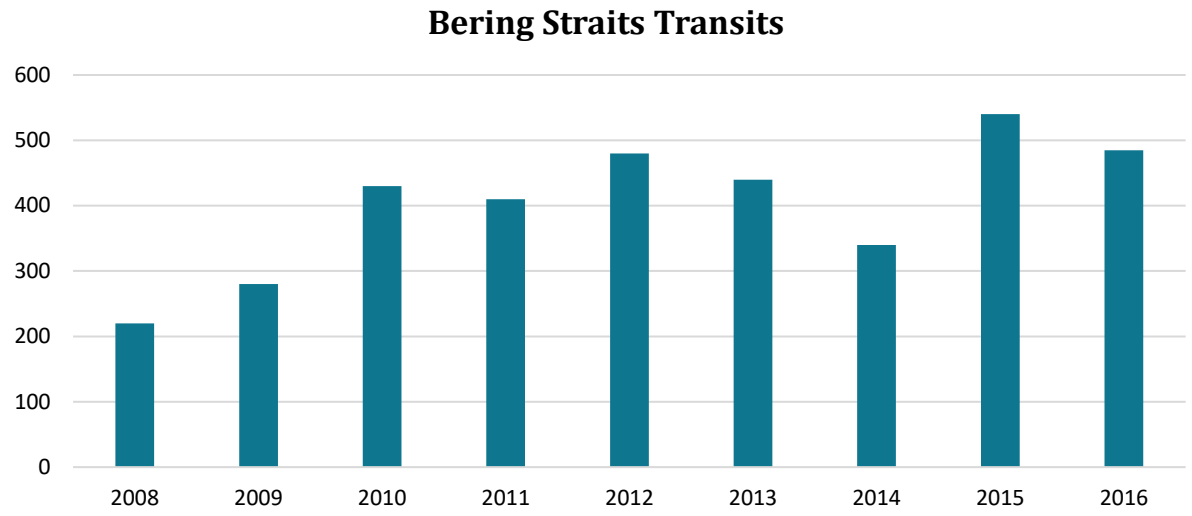

Figure 28: Bering Straits Ship Transits
Source: Marine Exchange of Alaska

Key Regional Actors

- City of Nome
- United States Coast Guard
- FEMA

Key Regional Resources

- Tax revenues
- Port and harbor infrastructure

Key Issues

- Oil spill response preparedness
- Impact on natural resources
- Infrastructure to meet the needs of traffic
- National security

Growth

High growth in the number of vessels passing through the 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, insufficient healthcare (including a lack of culturally appropriate medical and behavioral services), longstanding cultural trauma, and the region's isolated geography.

From a community and economic development perspective, the infrastructure throughout the Bering Strait Region presents significant challenges. Water and sewer, housing, communications, and

transportation infrastructure all present challenges to communities in the region. This section outlines some of those challenges.

Water and Wastewater

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.

Nome Census Area Community Water and Sewer Infrastructure				
	Water		**Sewer**	
Brevig Mission	Circulating	Buried	Gravity	Buried
Diomede	Washateria	None	Honey-Bucket	None
Elim	Circulating	Buried	Gravity	Buried
Gambell	Circulating	Buried	Gravity	Buried
Golovin	Circulating	Buried	Gravity	Buried
Koyuk	Circulating	Buried	Gravity	Buried
Nome	Circulating	Buried	Gravity	Buried
St. Michael	Circulating	Above	Vacuum	Above
Savoonga	Circulating	Above	Vacuum	Above
Shaktoolik	Circulating	Buried	Gravity	Buried
Shishmaref	Haul	None	Haul	None
Solomon	Individual Haul	None	Honey-Bucket	None
Stebbins	Washateria	None	Honey-Bucket	None
Teller	Washateria	None	Honey-Bucket	None
Unalakleet	Circulating	Buried	Gravity	Buried
Wales	Washateria	None	Honey-Bucket	None
White Mountain	Circulating	Buried	Gravity	Buried

Table 44: Nome Census Area Community Water and Sewer Infrastructure
Infrastructure Source: Department of Community and Regional Affairs

Key Regional Actors

- Norton Sound Office of Environmental Health
- City governments
- Norton Sound Economic Development Corporation
- Norton Sound Health 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
- Denali Commission
- USDA Rural Development

Key Issues

- Cost of installation and system maintenance costs
- Permafrost restrictions in construction
- Freeze ups during winter months
- Availability of funding

Growth

Progress in replacing honey-buckets with wastewater systems has been slow and dependent upon outside (usually federal) funding. However, USDA Rural Development, the Denali Commission, and others do provide funding for water and wastewater systems in the region, often in partnership with Kawerak, the Alaska Native Tribal Health Consortium, and the Norton Sound Health Corporation.

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 2018 and 2017 were Nome, Shishmaref, Savoonga, and Unalakleet.[161] The Bering Strait Regional Housing Authority (BSRHA) is the primary developer of new housing in the villages outside Nome. 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.

These high costs discourage new housing from being developed, which contributes to a major issue with overcrowding. In the Bering Strait region, 27% of total households are overcrowded or “severely” overcrowded by HUD’s standards, with 14% of total households being overcrowded and 13% being “severely” overcrowded. This compares to a statewide average of 4% overcrowded and 3% severely overcrowded. [162]

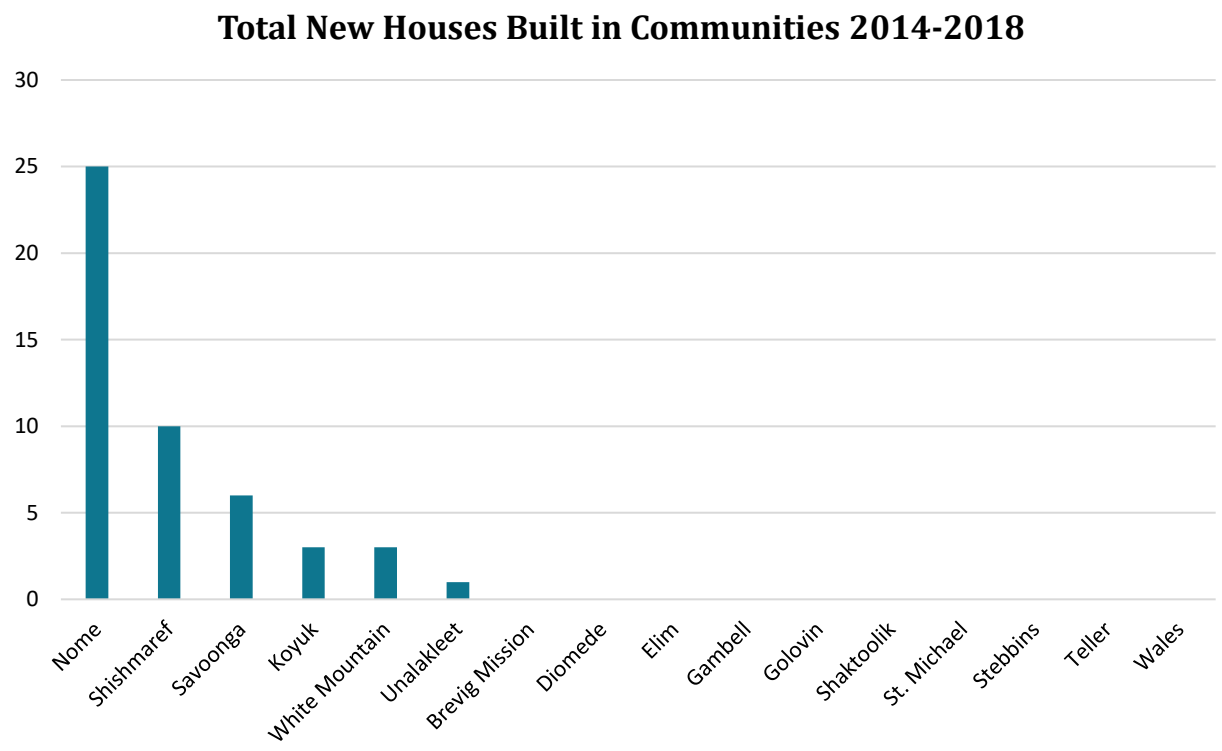

Figure 29: Total New Houses Built in Communities, 2014-2018
Source: AK Department of Labor and Workforce Development

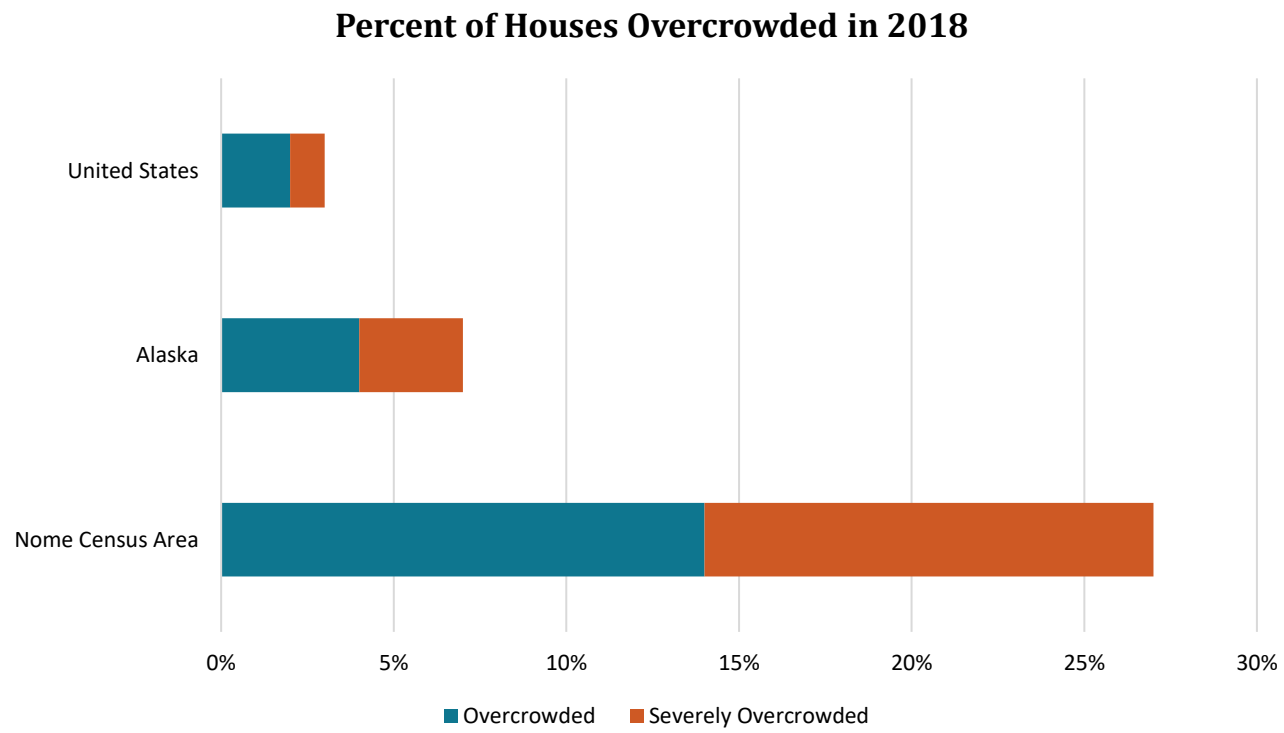

Figure 30: Percent of Houses Overcrowded in 2018
Source: Alaska Housing Finance Corporation

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.

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
- Cold Climate Housing Research Center (CCHRC)

Key Issues

- High costs of new construction
- Overcrowding in single-family homes
- Energy inefficient homes
- The high cost of home heating and maintenance, difficulty financing new construction

Growth

There is potential for growth in this sector. New funding opportunities and partnerships could enable new construction of housing units, providing income to residents, improving living conditions, and reducing overcrowding.

Telecommunications

The current infrastructure allows for speeds and bandwidth capacity well below that of communities on the Alaska road system and the Lower 48. Coupled with the geographic isolation and associated high costs of freight and travel, low telecommunications capacity serves as a barrier to economic development. The low speeds do not allow the 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 more data-intensive aspects of social media and video streaming services. Users who exceed the bandwidth quota are assessed fees on top of regular monthly subscription fees.

The Quintillion undersea fiber optic cable project was completed in December 2017, but the parent company is not yet selling internet service to customers–whether residential or commercial–in Nome or nearby communities. Quintillion built the infrastructure for the fiber optic connection and plans on working with regional or state internet service providers like GCI or Alaska Communications System (ACS), to establish rates for the faster, higher capacity internet connection now available in western Alaska. Planned projects include linking the City of Nome, Nome Joint Utilities System, and the Nome Police Department to Quintillion once rates and fees can be negotiated.[163]

GCI's TERRA project has been expanding through the region. GCI is heading the construction of a hybrid terrestrial fiber-optic and microwave network in Alaska's remote and rural regions. Northwest Phase 1, 2, and 3 were completed in 2014, providing service from Shaktoolik to Unalakleet and Nome.[164]

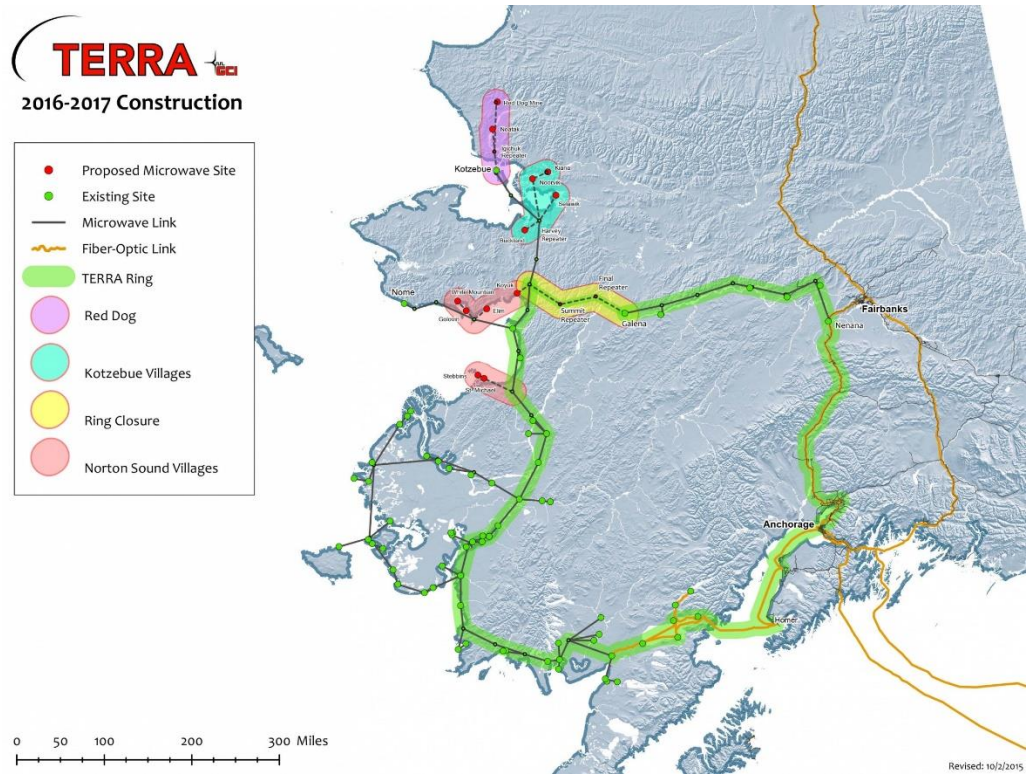

Figure 31: Proposed and Existing TERRA Infrastructure
Source: GCI, Inc.

Key Regional Actors

- GCI
- TelAlaska
- Hughesnet
- Quintillion

Key Regional Resources

- Alaska Department of Commerce, Community, and Economic Development
- Universal Service Fund
- USDA Rural Development

Key Issues

- Lack of broadband penetration in the region
- Slow upload/download speeds
- The high cost of internet service narrows market to affluent residents of the region

Growth

High potential for growth given rapidly changing technologies and opportunities.

Transportation

The communities of the Bering Strait region are isolated from Southcentral Alaska and the Lower 48, depending on air and sea transportation. However, a road system does connect Nome to Teller and other destinations like Pilgrim Hot Springs seasonally. The transportation assets of each community are described below.[165]

Brevig Mission

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.

Diomede

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 floatplane pilots attempt to land on the rough and often foggy open sea during summer. Regular flights are scheduled from Nome, weather permitting. There are 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.

Elim

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.

Gambell

Gambell's isolated location on an island with no seaport results in heavy dependence upon air transport. The state-owned airport has a 4,499' long by 96' wide asphalt runway. Regular flights from Nome and charters from Unalakleet are available. Lighterage services bring freight from Kotzebue and Shishmaref.

Golovin

Since there are no roads connecting the city with other areas, access to Golovin is limited to air and sea. Both scheduled and charter 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.

Koyuk

There are no roads connecting Koyuk with other villages. Access is limited to air and sea. There is a state-owned 3,002' 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.

St. Michael

St. 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. St. Michael receives at least one annual shipment of bulk cargo. A 10.5-mile road exists to Stebbins.

Savoonga

Savoonga's isolated location with no seaport and iced-in conditions during the winter means 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.

Shaktoolik

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 in from Nome, then lightered to shore.

Shishmaref

Shishmaref's primary link to the rest of Alaska is by air. A state-owned 4,997' long by 73' wide paved runway is available for charter and freight services from Nome. Most people use boats for trips to the mainland.

Stebbins

Stebbins is accessible by air and sea. There is a state-owned 2,999' 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.

Teller

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.

Unalakleet

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.

Wales

Wales is accessed by air and sea only. There is a state-owned 3,990' 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 a 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.

White Mountain

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.

Key Regional Actors

Bering Air, Ravn Air, 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, particularly through port infrastructure.

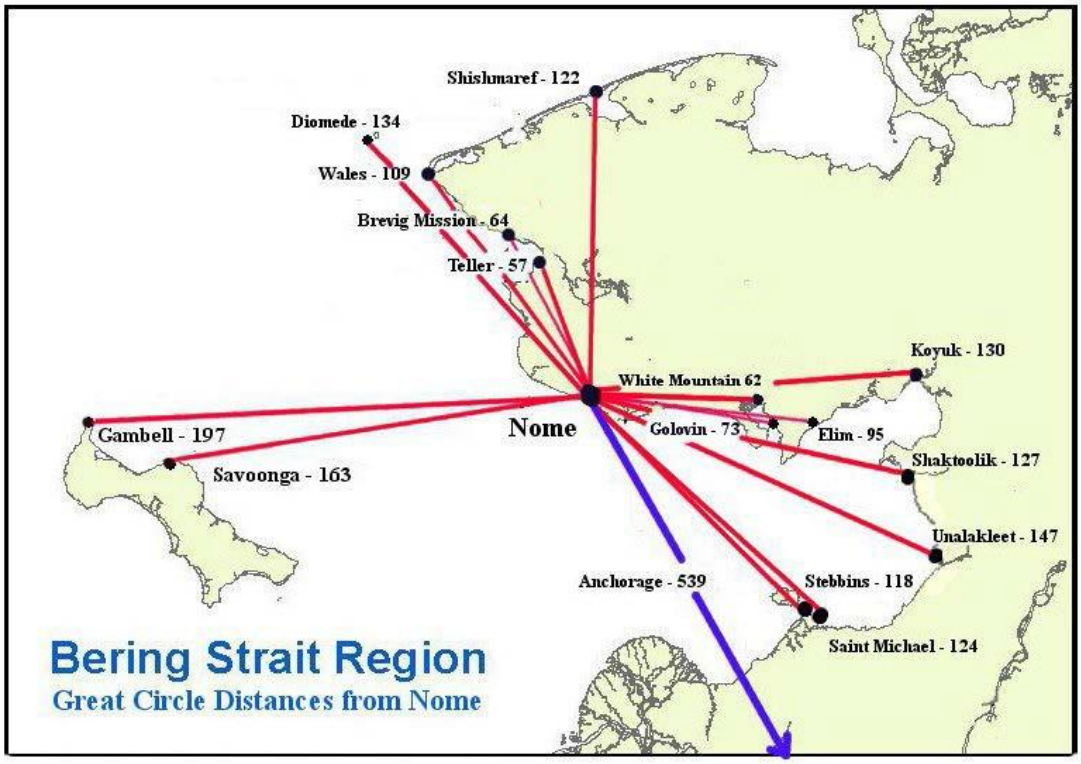

Figure 32: Travel Distances Within the Nome Census Area
Source: Kawerak, Inc.

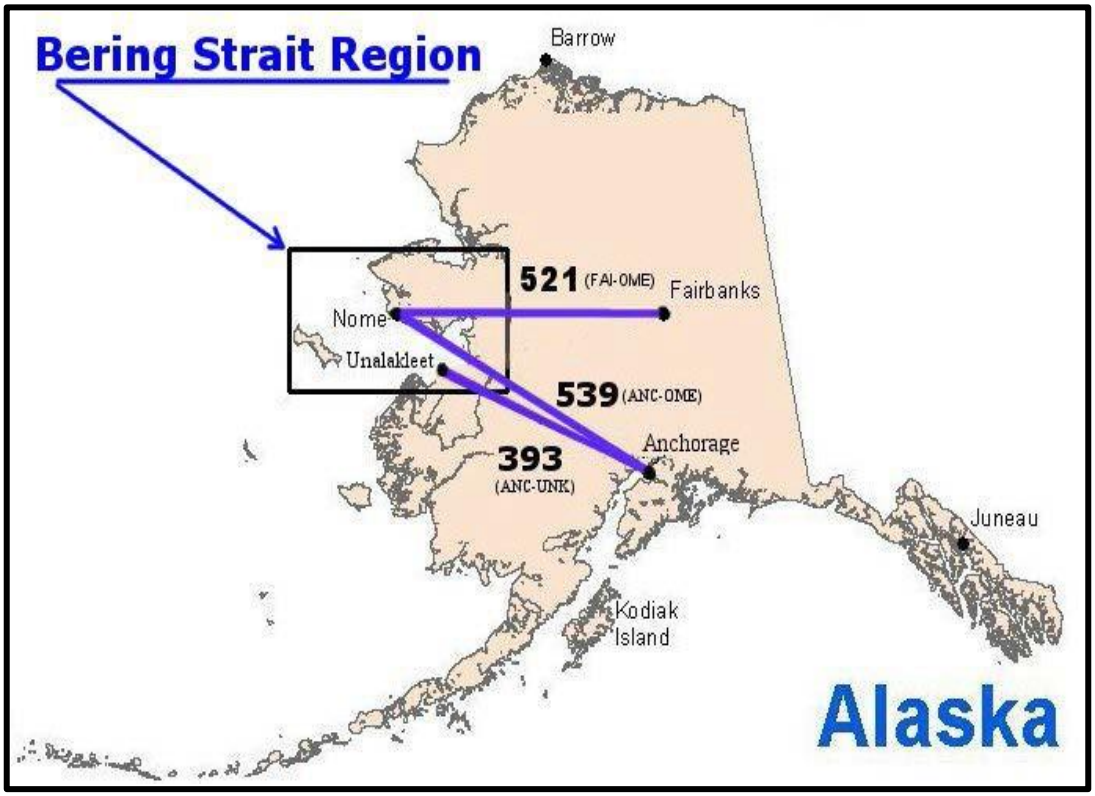

Figure 33: Travel Distances Between the Nome Census Area and International Airports
Source: Kawerak, Inc.

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 outside of your own party. However, the increased distance from the population center and connecting transportation networks result in high transportation, energy, and broadband costs. The high costs of transportation, energy, and broadband are 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, to education and water and sewer system maintenance. The long-distance to hospitals also results in long, often life-threatening wait times for emergency medical services and an additional social and financial burden for long-term medical care for those who need to leave their communities to receive treatment.

Energy Costs

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.[166] Diomede, isolated, and difficult to access in the Bering Sea, has the highest electricity prices in the region.

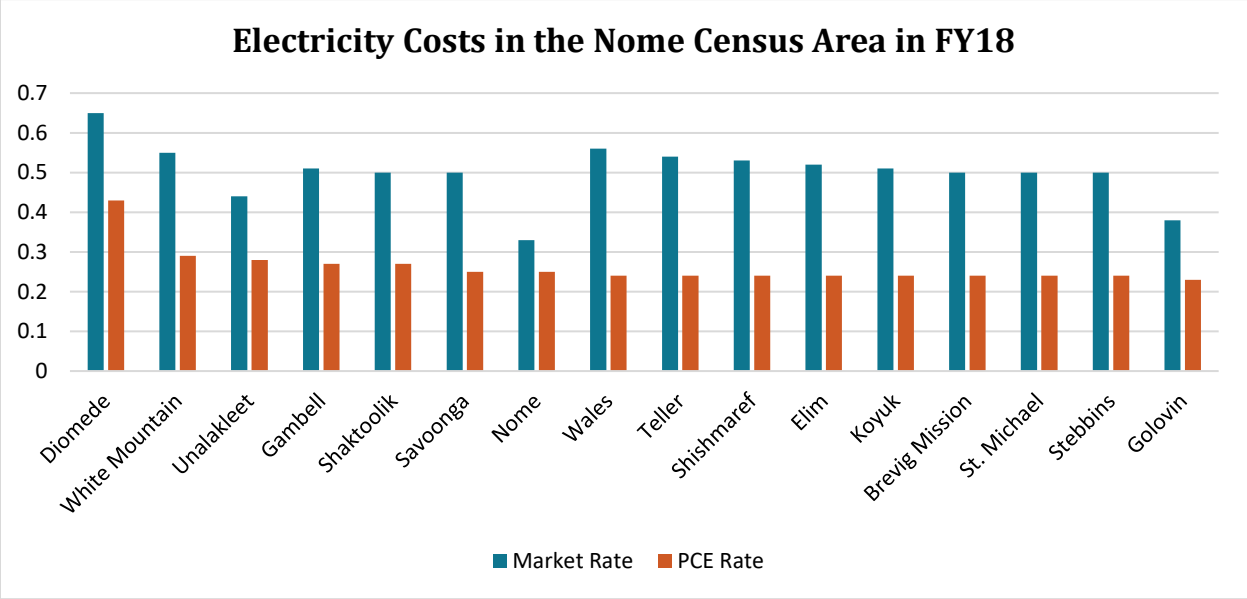

Figure 34: Electricity Costs in the Nome Census Area in FY18
Source: AEA

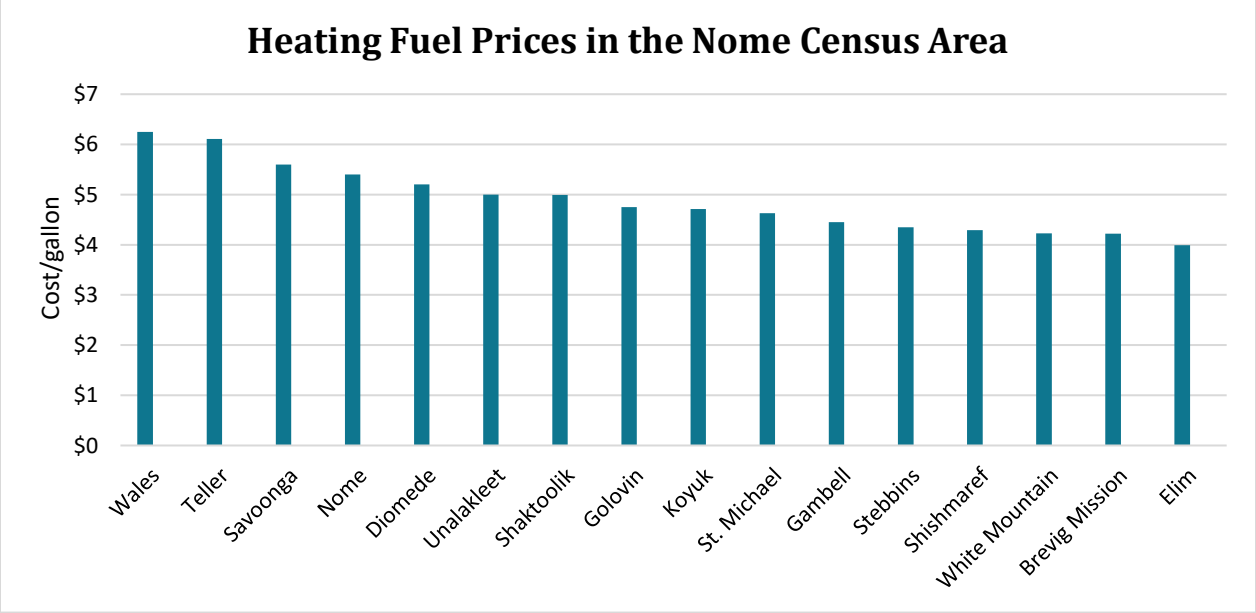

Figure 35: Fuel Prices in the Nome Census Area
Source: Kawerak Phone Survey, September 2019.

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

The high and fluctuating cost of energy for electrification, transportation, and space heating.

Growth

Due to the rising costs of fossil fuel energy, alternative energy development growth potential is high.

Goals and Objectives

Goal #1

Strengthen our economy in ways that preserve and enhance our quality of life while ensuring our environment is not harmed.

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
- Alaska Village Electric Cooperative
- Tribes

Activities and Tasks

1. Provide region-wide and village-based training opportunities.
2. Assist residents of the region with documented disabilities in improving job-related skills.
3. Explore and promote collaboration on apprenticeship and technical-level type programs for priority industries. Such as:
    a. diesel engine mechanics
    b. electrician
    c. maritime industry
    d. engineer
    e. carpentry
    f. heavy equipment operations
    g. fisheries
    h. plumbing
4. Coordinate among entities to provide scholarships for regional residents.

Performance Measures

- Number of trainings offered
- Number of certified technicians/completions of programs
- Number jobs secured because of the training
- Number of residents assisted in gaining job-related skills

- Number of scholarships provided

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
- Small Business Administration
- UAF Northwest Campus
- UAA Business Enterprise Institute

Champion

Kawerak Business Planning Specialist

Activities and tasks

1. Promote tuition assistance to individuals interested in new or expanding businesses.
2. Seek new partners and funding to conduct and promote general business startup workshops covering areas such as business planning, marketing, and accounting principles.
3. Promote an environment in which small businesses 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 promote e-commerce.
5. Promote Norton Sound Economic Development small business seed money competitions and provide technical assistance.

Performance Measures

- Number of individuals completing business-related classes
- Number of businesses workshops held in the region
- Amount of investment in new or expanding businesses
- Number of business starts
- Number of jobs created
- Continued visitor surveys

Objective #3

Capitalize on natural resources in environmentally responsible ways.

Partners

- Kawerak, Inc.
- Norton Sound Economic Development Corporation (NSEDC)

- Bering Strait Native Corporation
- Bering Strait village corporations
- Tribal councils
- The City of Nome
- Alaska Department of Natural Resources
- Alaska Department of Fish and Game
- Private Sector
- Regional Aquaculture

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. Work with NSEDC to explore the feasibility of salmon enhancement programs and new salmon enhancement technology.
3. Explore the feasibility of seismic work (like what is being done in Kotzebue) toward finding enough natural gas to run a power plant and for residential use.
4. Identify and provide support services for the gold mining industry.

Performance Measures

- Tax revenue
- Gold production and price
- Fisheries harvest #'s and price
- Other mineral production and price
- Number of tribes interested in starting a fish hatchery in Norton Sound

Goal #2

Promote economic stability by creating, maintaining, and upgrading infrastructure and regional collaboration to adequately meet our current and anticipated needs.

Objective #1

Improve and increase access to water and sewer infrastructure.

Partners

- Kawerak, Inc.
- Norton Sound Health Corporation
- Norton Sound Economic Development Corporation
- Rural Utility Business Advisor
- Alaska Native Tribal Health Consortium
- Alaska Department of Commerce Community, and Economic Development
- Denali Commission
- USDA Rural Development

Activities and Tasks

1. Complete local water and sewer plans for Bering Strait communities, including assessments of the current systems. Also, provide training on how to perform maintenance.
2. Support utilities and municipalities with pricing and management.
3. Creation of utility O&M plans and follow through.
4. Review of current tech around microgrids and self-contained toilets to see if they could be implemented.
5. Improve best practice scores with ANTHC and VHS to reach the minimum standard to obtain funding and technical assistance for water and sewer infrastructure.

Performance Measures

- Number of communities with completed local plans
- Number of communities with sufficient sewer and water systems
- Percent of homes served in each community
- Price/fee structure for water and sewer service by community
- Number of communities following O&M plans
- Amount invested in water/sewer infrastructure

Objective #2

Increase internet speeds and decrease costs.

Partners

- Kawerak, Inc.
- Alaska Broadband Task Force
- GCI
- TelAlaska
- Quintillion, LLC.

- Alaska Regional Development Organizations

Activities and Tasks

1. Follow the state and national broadband task forces and advocate for Bering Strait community interests.
2. Explore the possibility of a tribal government negotiating government rates with telecom companies.
3. Work with our state and federal legislators and local providers.
4. Be involved in tribal consultation as broadband policies are being developed.
5. Document the costs of broadband in rural communities.
6. Look at the feasibility of a tribally-owned communication system.

Performance Measures

- Price per internet plan
- Upload/download speeds
- Bandwidth capacity
- Number of providers participating in the conversation (GCI, TelAlaska, etc.)
- Percent of homes with access to broadband internet

Objective #3

Explore the feasibility of a regional governance model to capture the benefits of resource development projects.

Partners

- City of Nome
- Tribes
- Regional Municipalities

Activities and Tasks

1. Explore the economic feasibility of a Borough.
2. Explore the economic feasibility of a Port Authority.

Performance Measures

- Measure regional interest levels on collaboration models

Goal #3

Improve community services to increase resiliency and 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
- U.S. Department of Housing and Urban Development (HUD)
- Alaska Housing Finance Corporation (AHFC)
- Intershelter
- Bering Strait Development Corporation
- Norton Sound Economic Development Corporation
- Bureau of Indian Affairs/HIP program

Activities and Tasks

1. Research barriers to financing new construction and land ownership in Rural Alaska.
2. Advocate for increased NAHASDA and HIP funding.
3. Explore establishing a Self-Help Housing program in Nome.
4. Develop case studies of regional individuals that have financed and/or built their own homes.
5. Examine the viability of increasing the amount of transient housing.
6. Explore the possibility of working with non-profit groups such as Habitat for Humanity, to increase housing capacity.

Performance Measures

- Decreased persons per household in communities and region
- Increased construction projects year over year
- Number of construction jobs created
- Number of 5-star energy homes that have been built
- Number of building permits (Nome only)

Objective #2

Improve public safety and community resiliency.

Partners

- Kawerak, Inc.
- Alaska State Troopers
- Alaska Division of Homeland Security and Emergency Management
- Alaska Red Cross
- Norton Sound Health Corporation

- Municipal governments
- Norton Sound Economic Development Corporation
- Volunteer Fire/Search & Rescue/EMT Departments
- Local emergency planning committee (LEPC)

Activities and Tasks

1. Review and update HMP plans, EOP plans, and SCERP plans.
2. Support communities in actively developing plans through research and advocacy.
3. Assist grant writers region-wide in obtaining funding for public safety projects.
4. Documenting/tracking “outside of Nome” EMS services provided.
5. Develop MOA’s between Nome EMS and village entities.
6. Support the development of community adaptation plans.
7. Inform communities about the power of forming a public safety commission.
8. Attend the Local Emergency Planning Committee (LEPC) meetings bi-monthly.

Performance Measures

- Number of completed plans
- Number of projects implemented at the regional and community level
- Number of MOA’s in place between Nome EMS and village entities that want them
- Number of communities with VPSO’s or other public safety presence

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
- Nome Eskimo Community

Activities and Tasks

1. Facilitate with communities and work with individuals in preparing tax returns.
2. Provide telephonic assistance year-round on tax matters.

Performance Measures

- Number of households assisted
- Dollars in returns to communities

Goal #4

Decrease the cost of energy.

Objective #1

Conduct ongoing 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
- Bering Straits Regional Housing Authority
- Municipal governments
- Alaska Native Tribal Health Consortium
- Denali Commission
- National Renewable Energy Laboratory
- U.S. Department of Energy
- Alaska Department of Commerce, Community, and Economic Development
- Alaska Housing Finance Corporation

Activities and Tasks

1. Find out which buildings were not audited.
2. Identify sources of funding to assist with this work.
3. Make a “Plan of Action” for each community on how to tackle the audits (which buildings should be done first).

Performance Measures

1. Number of audits completed
2. Improvements made to structures
3. Reduced energy consumption measured by kWh and gallons of fuel oil

Objective #2

Improve the 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
- Bering Straits Regional Housing Authority

- Tribal entities
- USDA-Rural Development
- Denali Commission
- Alaska Department of Commerce, Community, and Economic Development
- United Way

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. Provide energy-specific information to regional grant writers.
4. Develop an appliance replacement program.

Performance Measures

- Amount of fuel oil consumption by building and community
- kWh usage by building and community

Objective #3

Explore and evaluate the feasibility of alternative energy 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
- U.S. 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
- Cold Climate Housing Research Center (CCHRC)

Activities and Tasks

1. Review the Bering Strait Energy Plan.
2. Work with local, regional utilities to identify suitable alternative energy sites and sources.

Performance Measures

- Number of community energy action plans completed
- Number of identified community projects

Objective #4

Increase residents' knowledge of ways to reduce the costs of energy use.

Partners

- Kawerak, Inc.
- RurAL CAP
- Norton Sound Economic Development Corporation
- Bering Straits Native Corporation
- Tribal entities
- Municipalities
- KNOM
- KICY
- The Nome Nugget

Activities and Tasks

1. Bring EnergyWise curriculum to schools in the region.
2. Monitor and advocate for new energy efficiency programs.
3. Develop and distribute flyers on energy-saving tips.
4. Develop PSAs on energy efficiency strategies.

Performance Measures

- Number of outreach materials developed and distributed
- Number of residents participating in energy efficiency programs

Action Plan Priorities

Education and Workforce Training

Determine the feasibility of reestablishing an accredited apprenticeship program that certifies individuals in trades. Explore the possibility of designing a program that is broken down into quicker/easier credentials, so trainees and journeymen do not have to make such a long commitment (5+ years). For example, a plumbing apprenticeship program would offer the option to train for 5 years to become a fully certified journeyman, or the option to leave after 2 years as a technician. Technicians can do repairs and maintenance, but they cannot install systems. They serve community needs in a viable career without requiring the trainee and journeyman to commit to a 5-year mentoring relationship and complete the program more quickly with a recognized qualification.

Trades/industries include, but are not limited to:

- Diesel engine mechanic
- Boiler and plumber technician
- Electrician
- Maritime industry
- Engineer
- Carpentry
- Heavy equipment operations
- Fisheries
- Bookkeepers
- Accountant/accounting functions
- Healthcare
- Teachers
- Administrators

Small Business Startup in the Tourism Industry

- Determine the process of getting started in the tourism industry as a small business. Visitor survey data shows that tourists are drawn to Nome and the region because of the land and the people. They want to experience the natural beauty and resources that it has to offer and experience authentic Alaska Native culture, like art, food, performances, and activities such as birding, hunting, and fishing. There needs to be more accessible information on the process of obtaining necessary permits and licenses to do business.
- Educate legislators and regulators in the Lower 48 on the difference between elephant and walrus ivory and advocate for policies and regulations that do not prevent tourists from purchasing Alaska Native art made from walrus ivory.
- Educate tourists on the sustainability of walrus ivory and how to visually recognize the difference between walrus ivory and elephant ivory.

Development and Monitoring of Mining Projects in the Region

- Monitor mining activity and development in the region. New and existing mining could potentially impact the environment, subsistence ways of life, and public health. All mining development and activity should be monitored for environmental protection; for example, in-river mining activity that could be disruptive of salmon streams.
- Mining project development is also a potential opportunity. The region possesses deposits of rare resources that are in high demand in many large industries. Mining projects could provide jobs in distressed areas with high unemployment. However, there is no guarantee these mining projects would hire locally because right now, there is nothing to stop them from bringing in their own workforce. It would be critical to work with any potential mining developments to provide residents with the training required to work on the project. Thereby maximizing the regional benefits of the jobs created. Mining project development could also be a source of revenue if the localities had a way to tax the resource.

Potential revenue from natural resources

- Resources are extracted from the region with limited local benefit or revenue because there is no way to tax them. Look into becoming a borough and/or establishing a port authority in order to tax resources like gold and graphite, leaving the region and increase revenue for the communities. Look at boroughs and municipalities in Alaska that collect tax revenue from natural resource extraction in their region (ex. Fairbanks).

Top Local Priorities

- Transportation was the most commonly identified priority by villages and includes land, sea, and air. Improving transportation would increase the accessibility and affordability of goods and services to rural areas, including food, fuel for energy (diesel and oil), healthcare services (medical and behavioral), other emergency services such as fire and search and rescue, and educational opportunities outside of local villages. Next steps include evaluating seaport and airport infrastructure, to determine where improvements are necessary and exploring the feasibility of establishing a regional cooperation model, such as port authority.
- Infrastructure (i.e., a building or rooms) the community has access to for a variety of social and economic activities was an often mentioned local priority. Examples of the activities to take place at this building include sewing, carving, Air B&B, and a teen center. Next steps include working with local schools to collaborate on the use of their spaces, such as a gym, as a community gathering place.
- A gathering place to allow activities for teens, elders, and the whole community was identified frequently as a top priority. This facility would be a place to help preserve the culture and language of the community. This is a priority for cultural preservation because it provides a space for elders to connect with youth and pass on traditions and native languages, and for youth to have a safe place to spend time with their peers and elders.
- Villages identified public safety improvements third-most frequently as a local priority. This includes improved response times for emergency medical services, increased capacity, and transportation infrastructure for the volunteer fire departments, public safety officers, and

search and rescue departments. Next steps include assisting grant writers region-wide in obtaining funding for public safety projects, tracking emergency services outside of Nome, and developing MOA's between Nome EMS and village entities.

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