IÑUPIAT COMMUNITY OF THE ARCTIC SLOPE

Regional Comprehensive Economic Development Strategy

CEDS 2025-2030

Version: 1.0, November 2024

NORTH SLOPE CEDS Stakeholder Organizations

Inupiat Community of the Arctic Slope
Native Village of Barrow
Native Village of Point Hope
Native Village of Wainwright
Native Village of Nuiqsut
Native Village of Anaktuvuk Pass
Native Village of Atqasuk
Native Village of Kaktovik
Native Village of Point Lay
Ukpeagvik Iñupiat Corporation
Arctic Slope Regional Corporation
North Slope Borough
City of Utqiaġvik
Iḷisaġvik College

Funded by the US Economic Development Administration Grant Award #07-86-077831

VERSION CONTROL

VERSION	DATE	AUTHOR	NOTES
0.1	March 1st, 2022	A. Tziolas	CEDS template created
0.2	January 1st, 2023	A. Tziolas	LRTP, Environmental, Logistics sections
0.3	March 3rd, 2023	A. Tziolas, M. Boas	Early draft presentation to ICAS leadership. Maps, GIS assets and visualizations added.
0.4	January 8th, 2024	A. Tziolas, M. Boas	Roundup all CEDS SWOT materials. Environmental, power and childcare sections.
0.5	June 30th, 2024	A. Tziolas, M. Boas, A. Thomas	Completed CEDS SWOT meetings. All data compiled. Regional snapshots at 90% completion. Final review and compilation of final draft underway.
0.6	August 30th, 2024	A. Tziolas, A. Thomas	Completed SWOT Analysis, determination of investment categories
0.7	September 20th, 2024	M. Boas D. Hardy	Update transportation, airports, gravel mines, natural sources sections.
0.8	October 2nd, 2024	A. Tziolas M. Boas A. Thomas	Strategic Direction, Goals and Objectives, Updated Climate, Geography, Gravel, Airports sections. Cleaned up document. First complete draft.
0.9	October 10th, 2024	A. Tziolas	Released for Public Review, Facebook, ICAS website
0.9a	November 21st, 2024	A. Tziolas	Compile stakeholder feedback to final draft. Prepare grant closeout operations.
1.0	February 6th, 2025	A. Tziolas M. Boas A. Thomas	CEDS presented and adopted by ICAS Tribal Council.

For questions, feedback or printed copies of this plan please contact Andreas C. Tziolas, ICAS CEDS Program Director, andreas.tziolas@tribn.pro at (907) 301-2160 or call ICAS directly at (907) 852-4227.

TABLE OF CONTENTS

This work was designed and executed by ICAS
in close collaboration with:

TRIBN

a 100% Alaska Native owned company.
Andreas C. Tziolas, PhD | COO • TRIBN LLC • Anchorage Office
P.O. Box 1782, Barrow, AK 99723 | Andreas.Tziolas@TRIBN.pro

1. EXECUTIVE SUMMARY

The Inupiat Community of the Arctic Slope (ICAS) is responsible for developing the region-wide Comprehensive Economic Development Strategy (CEDS) for the Arctic Slope Region of Alaska. ICAS is a Regional Alaska Native tribal government governed by the Indian Reorganization Act of 1934 and the ICAS Constitution, as amended, that represents and is selected by the Inupiat people of the Arctic Slope region.

Most of the people in ICAS's jurisdiction live in eight communities: Anaktuvuk Pass, Atqasuk, Kaktovik, Nuiqsut, Point Hope, Point Lay, Utqiaġvik (formerly Barrow), and Wainwright. The largest community is Utqiaġvik, which also serves as the North Slope Borough's seat of government.

The intention of this CEDS is to create a framework for an actionable plan for fostering opportunities for economic growth and for strengthening economic resilience through the collaboration of regional stakeholders.

The ICAS Department of Economic Development, towards achieving this goal, formed a CEDS Advisory Committee comprised of the ICAS, Arctic Slope Regional Corporation (ASRC), Ukpeagvik Iñupiat Corporation (UIC), City of Utqiagvik (City), Iḷisaġvik College, North Slope Borough (NSB), all 8 Alaska Native Corporations (ANCs), and a number of small business representatives.

Meetings were conducted in each community between May 2023 and June 2024, with 78 total participants and 931 inputs received across all meetings, to determine Strengths, Weaknesses, Opportunities and Threats (SWOT) affecting each community and the region as a whole. The SWOT and strategic advisory meetings included discussions on:

A. Economic Resilience, defined as "the ability of an economic region to prevent, withstand, and quickly recover from major disruptions to its economic base", and

B. Vision, Goals, and Objectives towards achieving those goals which leverage strengths and address areas of concern, while working towards the creation of new opportunities.

The SWOT analysis was weighed against the highest risks to the economic base. The resulting Action Plan represents the strategic priorities for the region, and includes the following goals:

GOAL 1: Village Sustainability and Resilience

Focus Areas: Construction (Physical Infrastructure Development)
Housing
Utilities
Emergency Preparedness
Community Cohesion
Tribal Representation

GOAL 2: Economic Growth and Infrastructure Development

Focus Areas: Economic Development
Oil and Gas
Workforce Development
Telecommunications and Broadband
Tourism
Transportation and Logistics

GOAL 3: Community Health and Wellbeing

Focus Areas: Children and Elder Services
Healthcare and Mental Health
Public Safety
Food Security
Recreation
Culture and Traditions

GOAL 4: Environmental Stewardship

Focus Areas: Climate Change
Natural Resources
Environmental
Subsistence and Wildlife
Tribal Lands

The overall goal of this ICAS Comprehensive Economic Development Strategy is to respect our rich culture and traditions and act on opportunities for economic development to create new revenue streams, grow a diverse workforce, and improve the safety and wellbeing of all ICAS residents.

Iñupiat Values:

Iñupiat Value	Explanation
Paaqŀaktautaiññiq **Avoidance of Conflict**	The Iñupiaq way is to think positive, act positive, speak positive and live positive.
Nagliktuutiqaġniq **Compassion**	Though the environment is harsh and cold, our ancestors learned to live with warmth, kindness, caring and compassion.
Paammaaġigñiq **Cooperation**	Together we have an awesome power to accomplish anything.
Iļagiigñiq **Family and Kinship**	As Iñupiat people, we believe in knowing who we are and how we are related to one another. Our families bind us together.
Qiñuiññiq **Humility**	Our hearts command that we act on goodness. We expect no reward in return. This is part of our cultural fiber.
Quvianġuniq **Humor**	Indeed, laughter is the best medicine.
Aŋuniallaniq **Hunting Traditions**	Reverence for the land, sea, and animals is the foundation of our hunting traditions.
Iñupiuraallaniq **Knowledge of Our Language**	With our language, we have an identity. It helps us to find out who we are in our mind and in our heart.
Piqpakkutiqaġniq suli Qiksiksrautiqaġniq Utuqqanaanun Allanullu **Love and Respect for our Elders and One Another**	Our Elders model our traditions and ways of being. They are a light of hope to younger generations. May we treat each other as our Elders have taught us.
Qiksiksrautiqaġniq Iñuuniaġvigmun **Respect for Nature**	Our Creator gave us the gift of our surroundings. Those before us placed ultimate importance on respecting this magnificent gift for their future generations.
Aviktuaqatigiigñiq **Sharing**	It is amazing how sharing works. Your acts of giving always come back.
Ukpiqqutiqaġniq **Spirituality**	We know the power of prayer. We are a spiritual people.

The Iñupiat Cultural Values were used as a guide throughout the development of this CEDS.

2. SUMMARY BACKGROUND

In this section, we provide an abridged look at the ICAS Region's economic state and potential. We refer the reader to the 2019 - 2039 North Slope Borough (NSB) Comprehensive Plan[1] and the 2019 NSB Economic Profile and Census Report[2], along with the NSB Comprehensive Plans for each North Slope community, and the Voice of the Arctic Iñupiat (VOICE) 2023 Community Needs Assessment[3], all of which has been referenced throughout this document.

2.1 DEMOGRAPHIC DATA

2.1.1 Location Description

Bordered by the Brooks Range to the south, the Arctic Ocean on the north and west, and Canada to the east, the ICAS area encompasses 89,000 square miles. A majority of the villages are coastal with the exception of Atqasuk, 60 miles south of Barrow, and Anaktuvuk Pass, 258 miles southeast of Barrow.

The North Slope Borough is 90% wetlands and is disconnected from the road system. Residents rely on daily air-freight for basic food and goods and predominantly utilize small plane travel to reach other north slope communities or to travel outside of the region. The extreme high cost of living encourages the locals to engage in subsistence hunting and gathering, both as a way of life and for survival.

Utqiaġvik (Barrow), Alaska is the northernmost city in the United States and the nerve center for government and oil exploration operations in the region. Historical evidence shows the area inhabited by Iñupiat Eskimos for 4,000 years with archaeological findings dating back 50,000 years.

Point Hope is the second largest community in the North Slope, located 248 miles southwest of Utqiaġvik on a triangular spit which juts 15 miles out into the Chukchi Sea. It is considered to be one of the longest continuously inhabited areas in North America.

72 miles southwest of Utqiaġvik, Wainwright, is located on a coastal bluff, situated between Wainwright Inlet and the Chukchi Sea to the West. Wainwright's Iñupiat name is Ulġuniq.

Nuiqsut is located almost 20 miles south of the Colville River headwaters at the Beaufort Sea and 136 miles southeast of Utqiaġvik. The Colville River Delta traditionally served as a gathering place for the Iñupiat.

[1] NSB 2019 - 2039 Comprehensive Plan
[2] NSB 2019 Economic Profile & Census Report
[3] Voice of the Arctic Inupiat Community Needs Assessment 2023

Anaktuvuk Pass lies about 250 miles northwest of Fairbanks and about the same distance southeast of Utqiaġvik, between the Anaktuvuk and John rivers in the central Brooks Range. Anaktuvuk Pass is the most inland and most mountainous community in the North Slope, being situated at the top of the Gates of the Arctic National Park and Preserve.

Point Lay is 300 miles southwest of Utqiaġvik on the Chuckchi Sea coast, protected from the open ocean by a lagoon. While the village is incorporated as an IRA Native Village by the Bureau of Indian Affairs, it is not incorporated with the state as a municipality.

Kaktovik is located on Barter Island, 280 miles southeast of Utqiaġvik, 90 miles from the Canadian border, and on the northern edge of the Arctic National Wildlife Refuge. The native people who live there are known as the Kaktovikmiut.

The smallest community, Atqasuk, is located inland on the Meade River about 60 miles southwest of Utqiaġvik, and has long been established as a frequented hunting and fishing area.

2.1.2 Maps

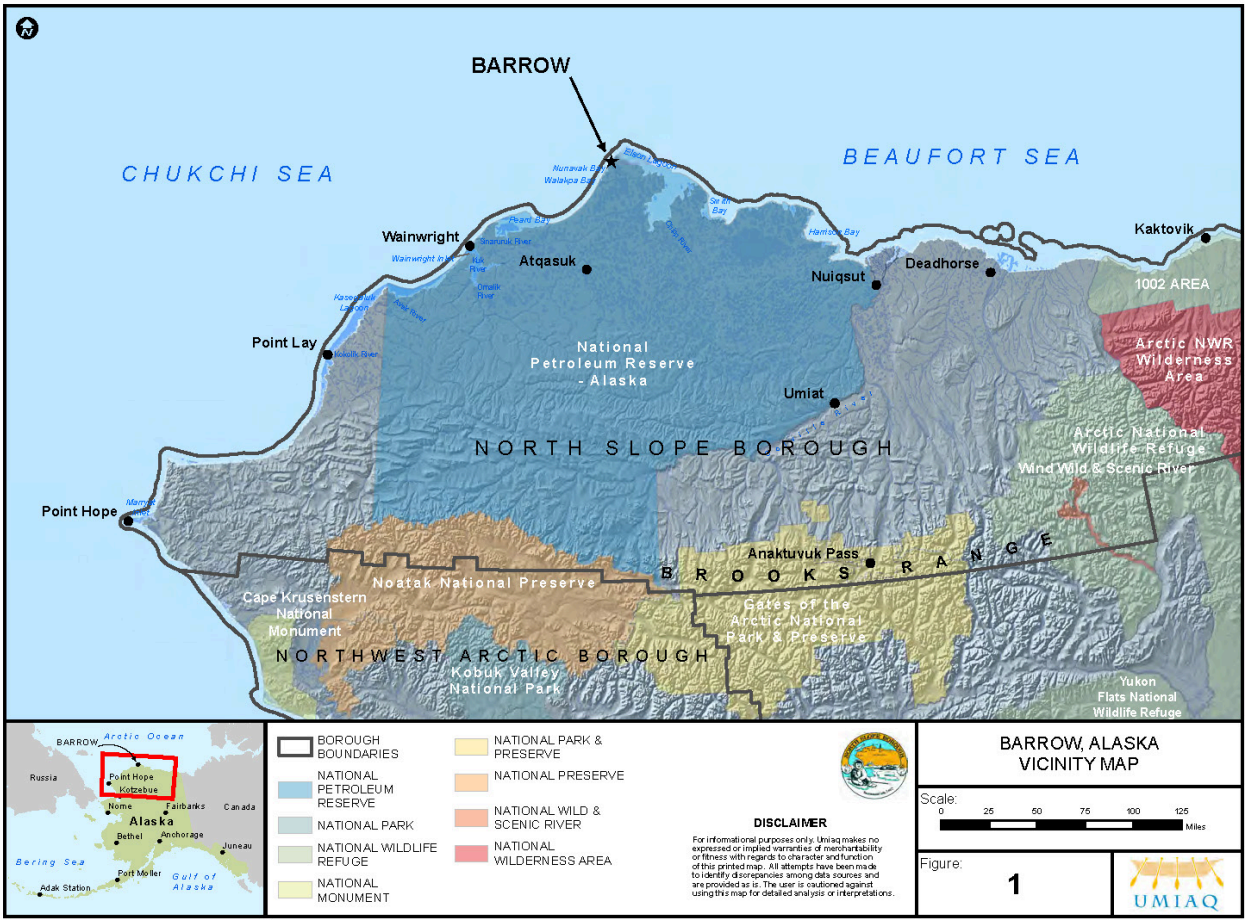


Image 1: *Utqiagvik (Barrow), Alaska is the northernmost city in the United States.*

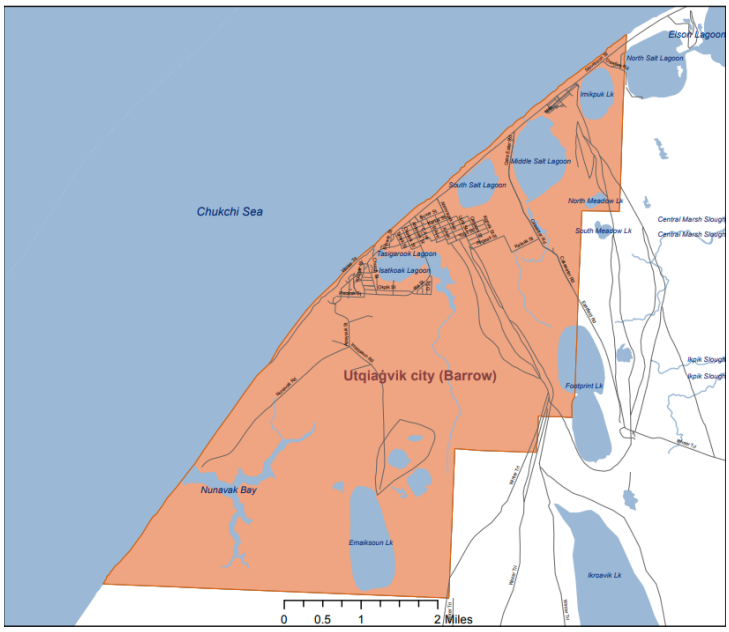


Image 2: (Left) *Three distinct areas make up the City of Utqiaġvik, from South to North: Barrow (commercial), Browerville (residential), and NARL (Naval Arctic Research Lab).*

Image 3a: (Right, Top) *Bowhead jaw bones and skin boats provide a dramatic photo opportunity for tourists.*

Image 3b: (Right, Bottom) *Utqiaġvik City (Barrow) Area map. The majority of land (220,000 acres) is owned by the Ukpeagvik Iñupiat Corporation (UIC), the ANCSA designated village corporation for Barrow*[4]
.

Image 4: *Typical summer view of Barrow, showing packed dirt roads, single and double story construction homes and commercial spaces. There are a number of abandoned vehicles in a state of disrepair, with no place for them to go, as there is no road access to Barrow.*

[4] Alaska State Labor Statistics

2.1.3 Governance

Alaska's tribal landscape is distinct from that of the Lower 48 due to the Alaska Native Claims Settlement Act (ANCSA). Unlike the typical reservation system, ANCSA established a unique framework where Alaska Native tribes do not own traditional reservation lands but are integrated into a system involving Tribal governments, local cities, and state Boroughs without designated reservations.

While tribes largely do not hold land, they play a pivotal role in governance, administering social programs, housing, and tribal transportation. Additionally, local Alaska Native village corporations, which are for-profit entities, own the land around villages, with regional corporations holding subsurface rights. This structure places tribes and Alaska Native Corporations (ANCs) at the heart of nearly all social, economic, and cultural activities in the state.

ICAS is the Regional Federally Recognized Tribal Government of the North Slope. It operates under its Constitution, which mandates the use of its sovereign rights for the welfare of its tribal members. ARTICLES II Sections 2.01 and 2.02, and ARTICLE VI Sections 6.01 and 6.02, ratified by the Bureau of Indian Affairs Alaska Regional Director in 2008, authorize ICAS to represent North Slope tribes and manage grants and programs akin to other Federally Recognized Tribal Governments.

Image 5: *Subsistence activities, such as hunting and berry picking are both a cultural way of life and a necessity for many families in Barrow. The high cost of living makes hunting and fishing for whale, seal, walrus and caribou necessary for many to provide food for their families.*

2.1.4 Demographics

Table 1: *Snapshot of ICAS Population*

	Utqiaġvik	Point Hope	Wainwright	Nuiqsut	Anaktuvuk Pass	Point Lay	Kaktovik	Atqasuk	NSB
Population	4,927	830	628	512	425	330	283	276	11,031
Median Age	30.7	24.7	40.8	23.5	24	23.8	27.8	23.6	36.3
Under 5 years	6.50%	14.60%	4.80%	16.60%	14.60%	8.10%	7.50%	10.20%	5.60%
5 to 19 years	27.10%	31.50%	27.40%	30.30%	31.20%	36%	26.60%	28.50%	19.20%
20 to 64 years	56%	45.30%	59.90%	42.40%	50.10%	52.50%	60.40%	54.50%	67.60%
Older than 65	10.40%	8.60%	7.90%	10.70%	4.10%	3.40%	5.50%	6.80%	7.60%
Unemployment	7.60%	13.80%	5.60%	22.70%	9.80%	4.40%	9.80%	4.90%	5.40%
Housing Units	1,550	255	177	157	136	90	91	79	2,619

The North Slope Borough is the northernmost borough in the state of Alaska, making it the northernmost county or equivalent entity in the United States. The majority of people living in the North Slope region are Iñupiat, but the area is ethnically diverse. The ICAS region incorporates 8 communities (Anaktuvuk Pass, Atqasuk, Kaktovik, Nuiqsut, Point Hope, Point Lay, Utqiaġvik, and Wainwright), along with anyone living outside of these communities. The median age in the North Slope Borough is 36. The 2020 US Census reports that 37.4% of people in the North Slope speak a language other than English at home[5].

Table 2: *Snapshot of ICAS Population*

Ethnicity	Percent
Iñupiat or other Alaska Native	57%
Caucasian	31%
Asian	6%
Pacific Islander	3%
Other	3%

US Census and US Labor Statistics information are notoriously unreliable when calculating total tribal population throughout the villages and across the region. To remedy this certain organizations such as the Native Village of Barrow and TNHA have conducted their own population, employment, education and housing surveys. As most federal funding is derived based on population served, government organizations must challenge these counts by presenting their own verifiable data (eg. Treasury, HUD NAHASDA and BIA).

[5] U.S. Census American Community Survey 5-Year Data (2009-2022)

2.1.4 Labor Force Characteristics

The majority of people employed in the North Slope have jobs in the public sector, often finding work in city, Tribal, and local governments. Another significant portion of workers are employed in education related work or through health provision in the region.[6] Other jobs are obtained through private businesses related to natural resource development and through state and federal employment[7].

Table 3: *Snapshot of 2024 North Slope Borough Labor Force. This is a good example of a discrepancy between Labor Force totals reported Federally, State and locally. US Census data reports 6,911 people in the labor force in 2022, whereas the State's totals have been around 3,000 for many years.*

North Slope Borough 2024	JAN	FEB	MAR
Labor Force	3,310	3,357	3,257
Employment	3,150	3,176	3,088
Unemployment	160	181	169
Unemployment Rate	4.80%	5.40%	5.20%

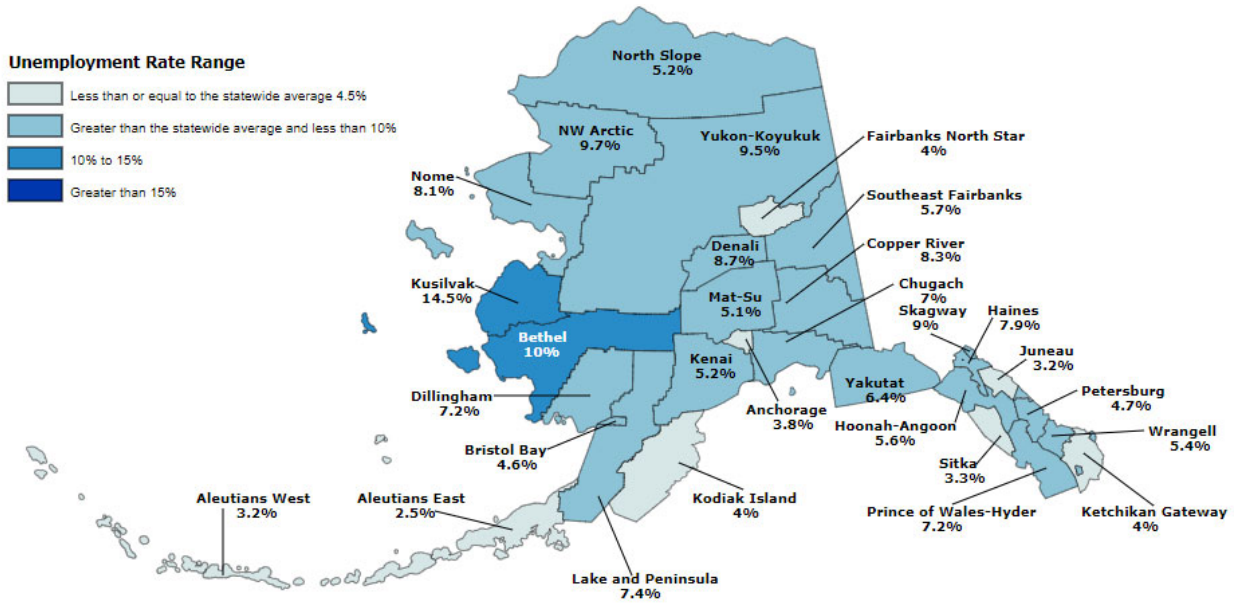


Image 6: *Alaska April 2024 Unemployment Rates. The Aleutians and Juneau are the lowest, while the NSB is 5.2% compared to Alaska's statewide rate of 4.5%.[8] In comparison, the 2020 Census reports a 7.6% unemployment rate for Utqiaġvik.[9]*

[6] NSB 2019 - 2039 Comprehensive Plan
[7] North Slope Borough, Utqiagvik, 'Our Communities'
[8] Alaska statewide unemployment rate for August 2024
[9] 2022: ACS 5-Year Estimates Data Profiles, North Slope Employment

Residents in the North Slope have expressed concerns about their local economy and the availability of job opportunities in the region. The Unemployment Rate reported by the State of Alaska for the North Slope region in March 2024 was 5.2%. For comparison, the The Bureau of Labor Statistics (BLS) seasonally adjusted unemployment rate in the United States in March 2024 was 3.8%. According to the U.S. Census Bureau Community Survey 2017-2021, the median household income in the North Slope ranged from $62,321 in Point Hope to $94,661 in Utqiaġvik. The same community survey reported that non-Hispanic white householders receive a median income which is more than $100,000 higher than the reporting population identifying as American Indian and Alaska Native[10].

[10] Voice of the Arctic Inupiat Community Needs Assessment 2023

2.1.5 Educational Attainment

Image 7: *Iḷisaġvik College is the only tribal college in Alaska and a strong supporter of workforce development and cultural preservation. It is currently located at the Naval Arctic Research Laboratory (NARL) and is running out of room to grow. The college is working on constructing a new campus.*

Sophisticated schools can be found in each community on the North Slope, which often serve as emergency gathering centers. The North Slope Borough School District operates eleven (11) schools, with one school per community, excepting Utqiaġvik, which has four (4) schools. Some of the school district's FY23 priorities included improving literacy and numeracy outcomes for students, immersion education and culturally responsive instruction, and increased CTE and vocational opportunities.[11]

Alternative or supplemental high school level education is also available through ICAS's Education Department via Qargi Academy. Qargi Academy is a culturally appropriate learning program where North Slope students of all ages can receive academic support, social-emotional support, community connection, and learn more about Iñupiaq language and culture. Qargi also provides consultation services to the school district, coordination with the tribal college, career development, behavioral health support, training for teachers, and business entrepreneurship training.

Utqiaġvik also hosts two post-secondary schools, detailed below:

Post-Secondary Education

- **Ilisagvik College:** Established in 1995, Ilisagvik College, the only tribal college in Alaska, offers post-secondary academic, vocational, and technical education aimed at matching workforce needs. They are dedicated to perpetuating and strengthening Iñupiat (Eskimo) culture, language, values and traditions. (268 students)

[11] NSBSD SY2022-2023 Annual Report

- **ICAS Vocational Rehabilitation Program:** This program helps those Alaska Natives and American Indians whose physical and mental disabilities substantially impede their ability to get or keep a job, or be productive in subsistence activities.

Table 4: *Educational Institutions in the North Slope*

Higher Education	Column 1	Level	Enrollment
Ilisagvik College	Utqiaġvik	Post-secondary	268
ICAS Vocational Rehabilitation Program	Utqiaġvik	Post-secondary	N/A
North Slope Borough School District			
Barrow High School	Utqiaġvik	9-12	276
Eben Hopson Middle School	Utqiaġvik	6-8	247
Fred Ipalook Elementary	Utqiaġvik	PK-5	541
Kiita Learning Community	Utqiaġvik	9-12	54
Tikigaq School	Point Hope	PK-12	268
Alak School	Wainwright	PK-12	168
Nuiqsut Trapper School	Nuiqsut	PK-12	161
Nunamiut School	Anaktuvuk Pass	PK-12	98
Kali School	Point Lay	PK-12	83
Harold Kaveolook School	Kaktovik	PK-12	68
Meade River School	Atqasuk	PK-12	85
Alternative Schooling			
Qargi Academy	ICAS Region	9-12	18

Table 5: *Sample Graduation Rates and Spending*[12]

	Graduation Rate	Spending Per Pupil
Barrow High School	77.78%	$42,078
Tikigaq School	71.43%	$44,376
Alak School	92.31%	$49,568
Anchorage SD	80.97%	$16,689

North Slope communities strive to find a balance between mainstream American schooling and traditional Iñupiat culture. Areas of consideration include the fostering of subsistence skills, values, history, and language. Historically, boarding schools and other state and federal initiatives around education have been culturally insensitive, and at worst deeply traumatic, for Alaskan Native students and their communities.

Across the State of Alaska many communities, especially in rural areas, rank high for adults reporting Adverse Childhood Experiences (ACEs).[13] Connections between low school

[12] State of Alaska Report Card To The Public
[13] Epidemiology of Adverse Childhood Experiences in Alaska

performance and community data around proliferation of ACEs is well established.[14] The National Rural Education Association reports that rural Alaska's graduation rate is more than 10 percentage points lower than the non-rural graduation rate in Alaska - the largest disparity in any state.[15] The NREA also reports that student access to psychologists or school counselors in Alaska is reported to be about 443 per professional, reflecting a critical need for more student support for learning and development.

Teacher and staff retention is another challenge faced by rural Alaskan schools, including the North Slope. Many teachers staffed by schools in rural Alaska come from the lower 48, where finding candidates with teaching certification is easier to come by. Although pay averages for teachers in Alaska are much higher than the rest of the nation, to assist with the high cost of living, many teachers who move up north do not stay in their positions long, increasing the rate of turnover for school districts.[16]

The Voice of the Arctic Iñupiat (VOICE), a non-profit advocacy organization within the North Slope, has compiled a 2023 Community Needs Assessment report consisting of various regional quantitative and qualitative datasets, including information pulled from 110 interviews of community members from the eight North Slope villages.[17] One main action area for the report, compiled from community member's responses, prioritizes better quality education, vocational training, and job opportunities for young people.

Adequate Yearly Progress[18] (AYP) is based on tests that all public school students take each year, and measure their proficiency in reading, writing, and math. Three out of four schools did not pass the AYP in Utqiaġvik, and the North Slope Region's (all villages) dropout rate has been steadily increasing. A study is needed to understand these results and correct them.

[14] Adverse Childhood Experiences and Education Outcomes among Adolescents: Linking Survey and Administrative Data
[15] Why Rural Matters 2023: State-by-State Results
[16] Alaska's Rural Schools Struggle to Attract Teachers Despite High Salaries
[17] Voice of the Arctic Inupiat Community Needs Assessment 2023
[18] Adequate Yearly Progress Background

Table 6(a) and 6(b): *2022-2023 State School Performance Evaluation Information*[19]

2022-2023 AKSTAR Assessment for English Language Arts									
	Advanced		Proficient		Approaching Proficient		Needs Support		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Total Tested
Barrow High School	1	1.43%	7	10.00%	18	25.71%	44	62.86%	70
Tikigaq School	0	0.00%	3	2.65%	24	21.24%	86	76.11%	113
Alak School	1	1.18%	2	2.35%	14	16.47%	68	80.00%	85
Anchorage SD	2511	12.36%	4887	24.05%	6082	29.94%	6837	33.65%	20,291

2022-2023 AKSTAR Assessment for Math									
	Advanced		Proficient		Approaching Proficient		Needs Support		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Total Tested
Barrow High School	1	1.67%	6	10.00%	8	13.33%	45	75.00%	61
Tikigaq School	0	0.00%	5	4.35%	16	13.91%	94	81.74%	115
Alak School	0	0.00%	5	5.88%	6	7.06%	74	87.06%	85
Anchorage SD	2257	11.16%	5277	26.09%	3850	19.03%	8842	43.72%	20340

[19] State of Alaska Report Card To The Public

2.2 ENVIRONMENTAL DATA

The North Slope is 99% wetlands, with permafrost permeating down to bedrock at 70-100 feet, essentially a triple threat to all development, as

A. Damage to wetlands needs to be mitigated,
B. Disruptions to permafrost needs to be minimized and
C. High quality gravel sources are few and far apart.

This makes housing, road construction, and commercial development incredibly costly in the ICAS Region. Managing and overcoming these challenges also presents opportunities for economic development and fostering resilience in the region.

2.2.1 Wetlands

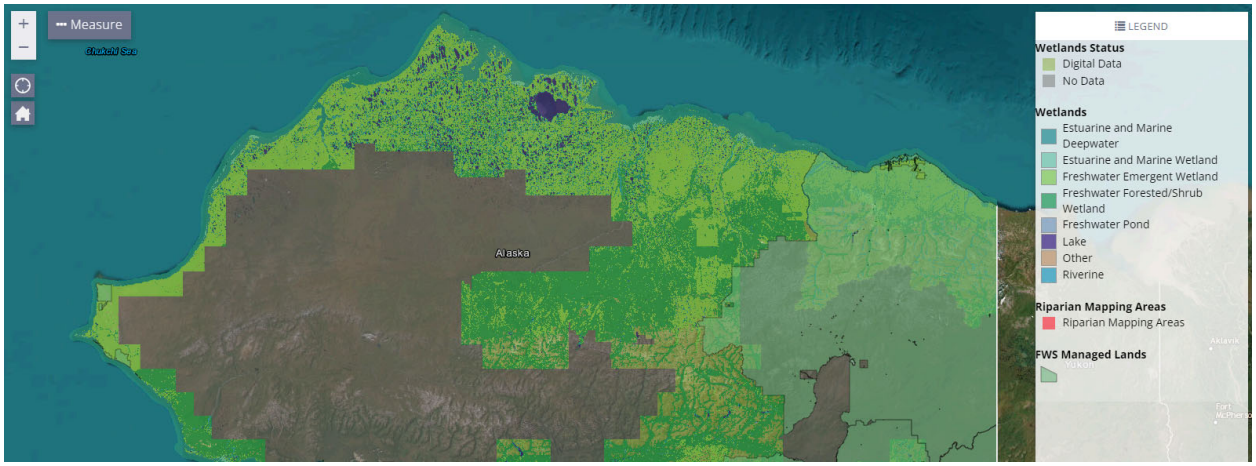


Image 8. *The Fish and Wildlife Service Wetlands Mapper[20] shows areas of the North Slope categorized as wetlands. The sections in the central and western North Slope with no designation are also wetlands, however have not been designated due to their remoteness.*

Some 98% of the land in the North Slope are designated wetlands. Comparatively, Alaska as a whole has 43% wetlands and is a significant environmental asset to plant and animal species which depend on such environments and which are an essential part of subsistence activities. At the same time, the communities in the North Slope can be said to be disproportionately affected by wetlands regulations where commercial and road construction is needed.

The Army Corps of Engineers (USACE) determines the mitigation or compensation rates on a case-by-case basis and has the authority to block development of certain parcels. Wetland mitigation/compensation is in the form of:

[20] https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

1. **Mitigation Banks**, where land of equal value is set aside elsewhere to compensate for the proposed loss of wetlands. Currently, no Alaska District Approved Mitigation Banks are available to serve Barrow, although UIC UMIAQ is in the process of developing such an instrument.
2. **In-Lieu Fee for Mitigation,** where the developer pays an up-front monetary cost and funds are used by the USACE to improve wetlands elsewhere. The Conservation Fund Alaska outlines typical costs[21].
3. **Permittee-Responsible Mitigation,** where the developer commits to wetlands improvements on or near the surrounding area. In this case the developer gains credits for improving low performing wetlands, creating new wetlands or preventing future damage by creating walkways, paths and roads which preserve the arctic tundra.

Table 7: Table showing the %wetlands throughout the United States. The North Slope clearly deserves and requires special consideration when any infrastructure, wildlife and people are considered:

State	% Wetlands
North Slope	98%
Alaska	43%
Georgia	20%
Minnesota	19%
North Carolina	14%
Mississippi	13%
Connecticut	5%
New Hampshire	5%
Virginia	4%
Hawaii	3%
Illinois	2%

[21] Alaska In-Lieu Fee Compensatory Mitigation Program Instrument

2.2.2 Permafrost

Permafrost consists of soil and rocks which have remained frozen for over 2 years. Permafrost in the arctic can date back thousands of years and reaches depths of hundreds to thousands of feet.[22] While the top layers thaw and refreeze annually, if permafrost is disturbed this active layer can begin to penetrate deeper and deeper into the ground causing the surface to lose its load bearing capacity. Ice-Rich permafrost is soil which has absorbed significant amounts of water and loses its cohesion much more dramatically during thaw-freeze cycles.

To avoid damaging the permafrost, construction activities in the Arctic which require tundra access (installation of pilings, placement of gravel pads, etc.) are often conducted during the winter. Thermosiphons are installed where possible, especially on structures which produce a significant amount of heating.

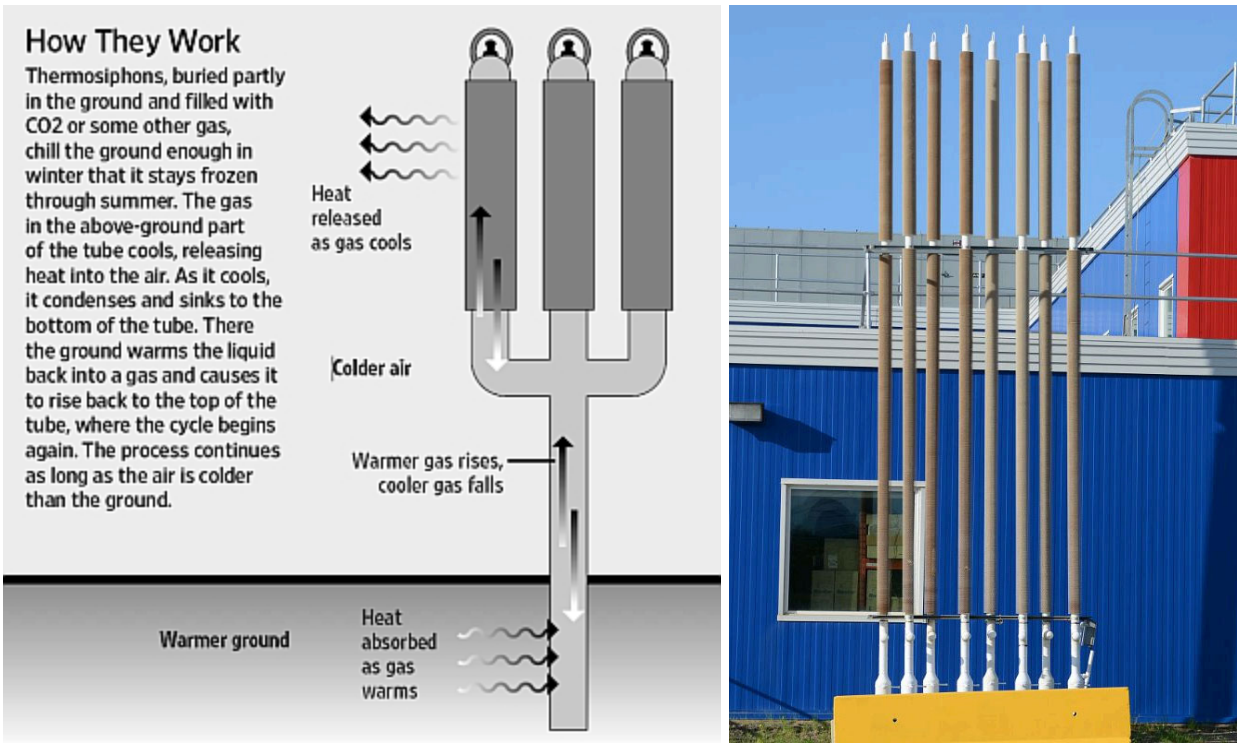


Image 9: *Passive thermosiphons are used to keep the permafrost frozen when a building needs to be placed on grade. Alternatively, the building is placed on pilings to avoid heat penetrating the tundra.*

Culverts and surface drainage paths have complex interactions with permafrost, especially around city limits. Addressing snow drifts, storm drains, and overflows due to coastal erosion require detailed engineering hydrological assessments with technical expertise combined with indigenous knowledge of local conditions.

[22] McCarthy, K.A., Solin, G.L. and Trabant D.C., "Assessment of the Hydrologic Interaction Between Imikpuk Lake and the Adjacent Airstrip Site Near Barrow, Alaska, 1993", USGS (1994)

2.2.3 Climate

2.2.3.1 Climate Monitoring

The North Slope experiences some of the most extreme climate conditions in the world, with temperatures remaining below freezing from early October through late May. On average, the region sees freezing temperatures for 324 days a year. The sun sets on November 18 or 19, plunging the area into darkness for about 65 days before it reappears on January 22 or 23. The Arctic climate is undergoing significant changes, and monitoring these shifts has become increasingly important in understanding global environmental trends.

Atmospheric sensors and research stations in the North Slope play a critical role in tracking climate changes. The **Barrow Environmental Observatory (BEO)**, established in 1992, set aside 7,400 acres of private land for scientific research. The BEO is managed by the Ukpeaġvik Iñupiat Corporation (UIC) and is one of the longest-running atmospheric and environmental monitoring locations in the United States. This site supports numerous national and international research initiatives and houses advanced equipment for studying Arctic climate dynamics, including permafrost and atmospheric changes.

Sandia National Laboratories and the **National Oceanic and Atmospheric Administration (NOAA)** are among the key organizations monitoring atmospheric constituents in the Arctic. Sandia's atmospheric sensors track greenhouse gasses and other harmful emissions, contributing to a broader understanding of industrial impacts on the global climate. **NOAA** operates a Climate Monitoring Lab in Utqiaġvik (formerly Barrow), which plays a significant role in observing changes in atmospheric conditions, such as trace gasses and aerosols that affect climate patterns. Additionally, the **National Science Foundation (NSF)** supports ongoing research at the BEO, focusing on the impacts of climate change on Arctic ecosystems.

The **Permafrost Laboratory** at the University of Alaska Fairbanks has been conducting long-term monitoring of the permafrost in the North Slope. Data from the **Permafrost Observatory** near Utqiaġvik has revealed the warming of near-surface permafrost layers, which threatens infrastructure and ecosystem stability across the Arctic. This research, in combination with data from NOAA's meteorological stations and other partners, provides invaluable insights into the changing climate and its far-reaching effects.[23]

The **Barrow Arctic Research Center (BARC)**, a state-of-the-art facility, continues to support studies on wildlife, atmospheric changes, and permafrost. Weather observations dating back to the late 1800s help scientists compare historical data with current climate trends, deepening our understanding of the rapid changes occurring in the Arctic today.

[23] Permafrost Observatory at Barrow, Permafrost Laboratory

2.2.3.2 The Warming Arctic

Recent reports confirm that Arctic temperatures have been increasing more rapidly than the global average, a phenomenon known as **Arctic Amplification**. Specifically, the **2023 Arctic Report Card** indicates that annual air temperatures in the Arctic have consistently exceeded the 1991-2020 mean for 14 consecutive years. The 2023 year ranks as the **6th warmest** since records began in 1900, with the eight warmest years in the Arctic all occurring since 2016.[24,]

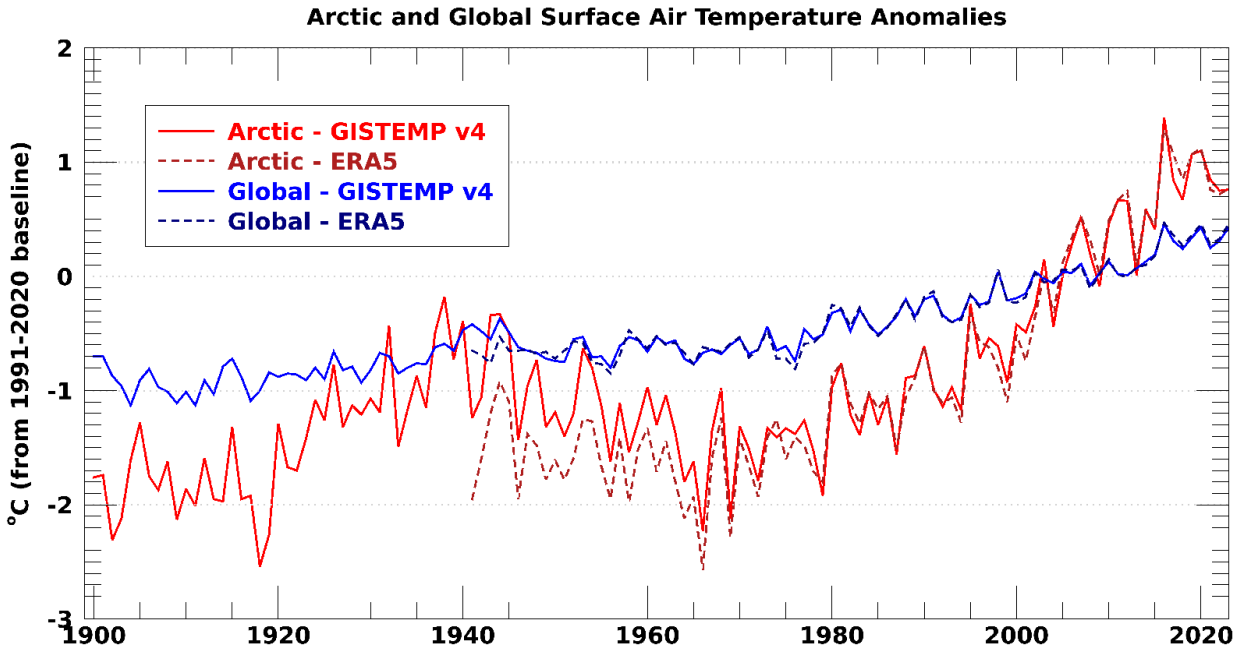


Image 10: *Fig. 1. Arctic (60-90° N) and Global (90° S-90° N) surface air temperature anomalies (in °C) averaged across land and ocean areas. Each year's air temperature reflects the water year average (e.g., October 2022-September 2023 represents the 2023 SAT value). Source: NASA GISTEMP v4 data are obtained from the NASA Goddard Institute for Space Studies and ERA5 data are retrieved from the Copernicus Climate Change Service.*

Recent measurements show a clear warming trend. For example, **summer 2023** recorded the warmest air temperatures over parts of the northern Canadian provinces and southern Barents and Kara Seas, setting records for surface air temperatures since at least 1900. This ongoing warming trend has broad impacts on permafrost, sea ice loss, and broader environmental systems.[25]

For the most accurate data, you can reference the **NOAA Arctic Report Cards** and temperature anomaly graphs from sources such as NASA's GISTEMP and the ERA5 reanalysis data from Copernicus Climate Service.

[24] https://arctic.noaa.gov/report-card/report-card-2023/surface-air-temperature-2023/
[25] https://zacklabe.com/arctic-temperatures/

2.2.3.3 2023 Arctic Report Card

We present the NOAA 2023 Arctic Report Card summary here, as it provides a perfect scientific summary of the changing arctic, which we compare to the arctic experienced by the citizens of the North Slope:[26]

In the Air

- Average surface air temperatures for the Arctic in the past year were the sixth warmest since 1900.
- Summer surface air temperatures were the warmest on record.
- Summer high-pressure systems brought warm temperatures, widespread melting, and exceptional rainfall volumes across the Greenland Ice Sheet.

In the Ocean

- Sea ice extent continues to decline, with the last 17 September extents (2007-23) as the lowest on record. Sea ice extent was 6th lowest in the satellite record, since 1979.
- August mean sea surface temperatures show continued warming trends for 1982-2023 in almost all Arctic Ocean regions that are ice-free in August. Mean sea surface temperature over regions between 65° N and 80° N is increasing at a rate of ~0.9°F (~0.5°C) per decade.
- Arctic regions, except for the Chukchi Sea, Beaufort Sea, and Canadian Archipelago, continue to show increased ocean phytoplankton blooms, or ocean primary productivity, with the largest percent change in the Eurasian Arctic and Barents Sea.
- Since the end of the Last Glacial Maximum, rising sea levels have inundated terrestrial permafrost surrounding the Arctic Ocean, resulting in nearly 1 million square miles (~2.5 million square km) of subsea permafrost that is at risk of thawing. International research collaboration is needed to address critical questions regarding the extent and current state of subsea permafrost and to estimate the potential release of greenhouse gasses (carbon dioxide and methane) as it thaws.

On the Land

- North American snow cover extent set a record low in May 2023, while snow accumulation during the 2022/23 winter was above average across both North America and Eurasia.
- Heavy precipitation events broke existing records at various locations across the Arctic and the Pan-Arctic precipitation for 2022-23 was the sixth highest on record.
- On 26 June 2023, Summit Station, Greenland reached 32.7°F (0.4°C) and experienced melt for only the fifth time in its 34-year observational history.

[26] https://arctic.noaa.gov/report-card/report-card-2023/

- The Greenland Ice Sheet lost roughly 350 trillion pounds (156 ± 22 Gt) of mass from 1 September 2022 to 31 August 2023 because discharge and melting exceeded accumulation.
- The 2023 circumpolar average peak tundra greenness, which represents the productivity of Arctic vegetation including shrubs and trees that are expanding into tundra, was the third highest in the 24-year satellite record.
- In Finland, peatland restoration and rewilding demonstrate a globally relevant climate solution of carbon sinks and point to a need for replication across impacted sites. Rewilding requires partnership, recognition of Indigenous and community rights, and the use of Indigenous knowledge alongside science to succeed and avoid replication of past inequities.

Nunaaqqit Savaqatigivlugich: Working with communities to observe the Arctic

- The Alaska Arctic Observatory and Knowledge Hub (AAOKH) works with a network of coastal Indigenous observers to document long-term and holistic observations of environmental change and impacts in northern Alaska.
- Recently, Indigenous observers have noted sea ice loss, warmer air and ocean temperatures, changing wind patterns, and increased intensity and frequency of coastal storms that contribute to flooding and erosion.
- Indigenous observers also document local-scale impacts of environmental changes to community and cultural infrastructure, traditional harvests and activities, and travel safety across the land and sea.
- Applying and centering Indigenous perspectives and observations of Arctic change in decision-making can lead to more inclusive, equitable, and community-led responses.

Divergent responses of western Alaska salmon to a changing climate

- Western Alaska salmon abundance reached historic extremes during 2021-22, with record lows for Chinook and chum salmon (81% and 92% below the 30-year mean, respectively) and record highs for sockeye salmon (98% above the 30-year mean).
- Salmon are maturing at smaller sizes. Since the 1970s, Yukon River Chinook salmon have decreased an estimated 6% in mean adult body length and 15% in fecundity, or number of eggs per female spawner, likely exacerbating population declines.
- Salmon population declines have led to fishery closures, worsened user conflicts, and had profound cultural and food security impacts in Indigenous communities that have been tied to salmon for millennia.
- Changes in salmon abundance and size are associated with climatic changes in freshwater and marine ecosystems and competition in the ocean. Changes in predators, food supply, and disease are also likely important drivers.

2.2.4 Geographical Considerations

The North Slope region of Alaska is characterized by its remote location, extreme climate, and unique geography, which present both challenges and opportunities for the communities living there. Stretching from the Brooks Range to the Arctic Ocean, the North Slope encompasses over 88,000 square miles of largely untouched tundra, permafrost, and coastline. This area is not only geographically diverse but also plays a significant role in global environmental and economic systems due to its vast energy resources and sensitive ecosystems.

2.2.4.1 The Impact of Climate Change and Receding Sea Ice

One of the most critical geographical changes affecting the North Slope is the rapid retreat of **sea ice**, which has altered both the physical and economic landscape of the Arctic. Sea ice plays a central role in the region's climate, wildlife, and traditional subsistence activities. Historically, the Arctic Ocean's thick, multi-year ice served as a protective barrier, limiting human access to the northern seas and preserving the delicate balance of marine ecosystems. However, over the past few decades, there has been a sharp decline in sea ice extent, with 2023 continuing the trend of warmer-than-average temperatures and record-low ice levels.[27,28]

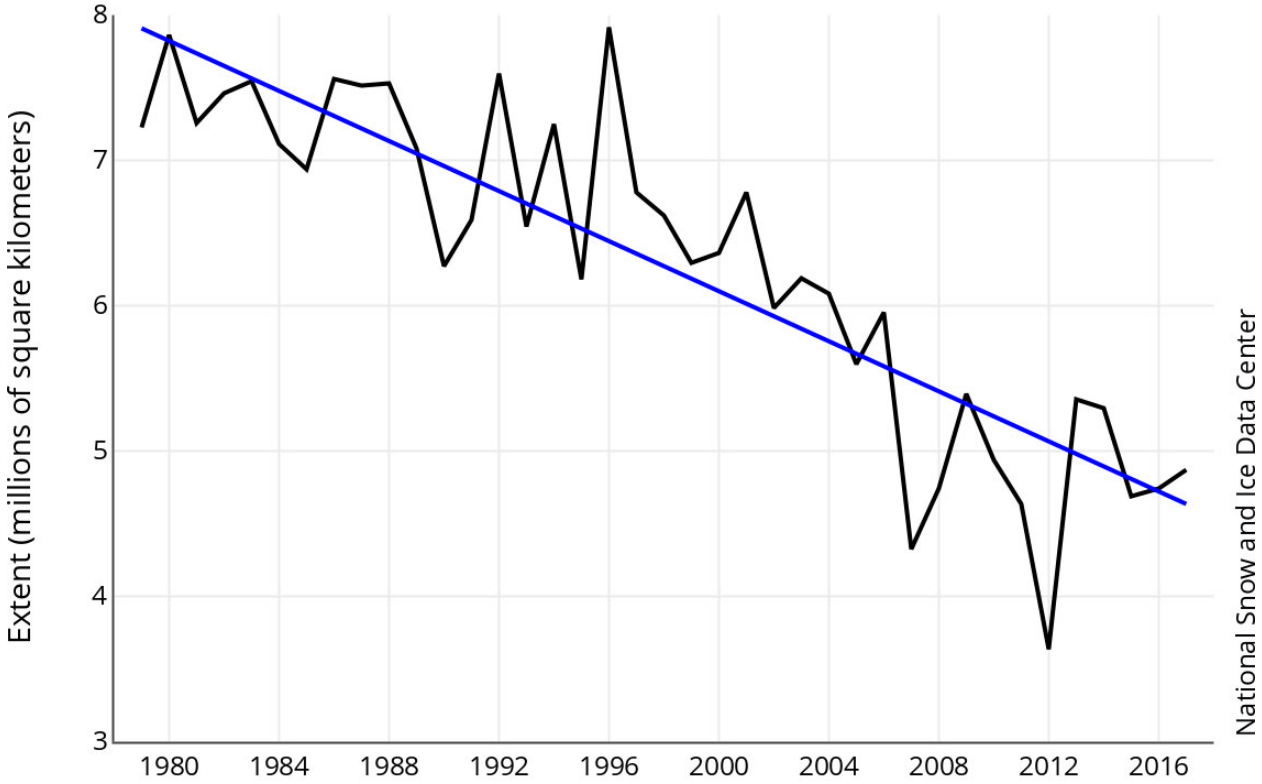


Image 11: *The National Snow and Ice Data Center provides updated data on the sea ice extent as measured through satellite images. Average Monthly Arctic Sea Ice Extent (September 1979 - 2017).*[29]

[27] https://www.climate.gov/news-features/features/2022-arctic-report-card-image-highlights
[28] https://arctic.noaa.gov/report-card/report-card-2023/surface-air-temperature-2023/
[29] Arctic sea ice 2017: Tapping the brakes in September

This decline has wide-reaching effects:

- **Traditional Subsistence Activities:** The Iñupiat people rely heavily on the sea ice for hunting marine mammals such as whales, seals, and walruses. As ice conditions become more unpredictable, the window for safe hunting narrows, threatening food security and the cultural practices that revolve around subsistence hunting.
- **Wildlife Displacement:** As the ice recedes, species such as polar bears and walruses are forced to migrate, leading to declining populations and shifts in local ecosystems. This not only affects biodiversity but also the local food chain that many communities depend on.
- **Economic Development:** The opening of the Arctic waters, particularly the **Northwest Passage**, presents new opportunities for commercial shipping, tourism, and resource extraction, while also creating new risks, such as environmental degradation and increased maritime accidents.

2.2.4.2 Permafrost and Coastal Erosion

Another critical geographical factor in the North Slope is the presence of **permafrost**, a layer of permanently frozen ground that underlies much of the region. With rising temperatures, permafrost is increasingly thawing, leading to severe consequences for infrastructure and ecosystems:

- **Infrastructure Damage:** As the permafrost thaws, it weakens the ground, causing buildings, roads, and pipelines to shift or collapse. This poses a significant risk to critical infrastructure, such as oil pipelines and public buildings, particularly in coastal areas like **Utqiaġvik** (Barrow), where land subsidence and coastal erosion are accelerating.
- **Coastal Erosion:** The North Slope's coastline is highly vulnerable to erosion, especially as the protective sea ice cover disappears and allows for more frequent and severe storm surges. Coastal villages like Kaktovik and Point Hope are experiencing rapid land loss, threatening homes, infrastructure, and cultural heritage sites. Relocating vulnerable communities will require significant investment in planning, logistics, and resources.

2.2.4.3 The Brooks Range and Inland Geographical Considerations

Further inland, the **Brooks Range** forms a natural barrier that influences the North Slope's climate and hydrology. The mountains intercept moisture from the south, resulting in relatively dry conditions on the northern slope and a tundra environment characterized by minimal vegetation. However, the mountains also create logistical challenges for transportation and communication between the North Slope and the rest of Alaska:

- **Limited Transportation Infrastructure:** The **Dalton Highway** is the main land route connecting the North Slope to southern Alaska, but its remote location and maintenance challenges make it difficult to transport goods and people. Winter snow and summer thaw cycles often damage the road, further complicating supply chains.

- **Air and Sea Access:** Due to the lack of reliable road infrastructure, most communities rely on air and seasonal maritime transport for food, medicine, and other supplies. The region's **airports** and **ports** are lifelines for residents and industries, but the increasing volatility of weather patterns adds further strain on these essential services.

2.2.4.4 Energy Resources and Environmental Protection

The North Slope is also home to some of the world's largest oil and gas reserves, particularly within the **Prudhoe Bay** oil field. The extraction of these resources has brought economic development to the region, providing jobs and revenue for local communities. However, it also presents environmental risks:

- **Oil and Gas Extraction:** Prudhoe Bay and other oil fields on the North Slope are critical to the U.S. energy supply, but the extraction process must be carefully managed to avoid environmental degradation. Oil spills, methane emissions, and other pollutants pose threats to the delicate Arctic environment, where ecosystems are slow to recover from disturbances.
- **Environmental Stewardship:** As energy exploration expands into previously inaccessible areas, balancing development with environmental conservation becomes increasingly important. The North Slope Borough, in collaboration with federal agencies, has implemented various measures to protect the land, water, and wildlife from the impacts of resource extraction. Programs such as the **Barrow Environmental Observatory (BEO)** and **National Oceanic and Atmospheric Administration (NOAA)** monitoring stations continue to play an essential role in tracking the effects of industrial activities on Arctic ecosystems.

2.2.4.5 National Security and Arctic Sovereignty

As the Arctic becomes more accessible, the North Slope's strategic significance is also increasing. The region's proximity to Russia and its importance as a potential shipping route through the **Arctic Circle** means that the United States must reinforce its presence in the area to maintain sovereignty and respond to geopolitical challenges. The **U.S. Coast Guard** and **Department of Defense** are expanding their operations in the Arctic to ensure safe navigation and protect U.S. interests in the region. **Deep-sea ports** and **Coast Guard bases** will become vital for staging search and rescue operations, responding to emergencies, and supporting increased commercial activity.

Preparing for the future will require significant investment in infrastructure, environmental protection, and collaboration between local communities, scientists, and government agencies. Balancing economic development with cultural and environmental preservation will be critical in ensuring that the North Slope remains a sustainable and resilient for generations to come.

2.2.5 Wildlife

Image 12: *Typical and unique wildlife found in the North Slope, Polar Bears, Arctic Fox, Bowhead Whales, and King Eider ducks.*

Lying north of the tree line, the dominant vegetation types are grass, moss, and sedge. Polar bears, arctic foxes, and lemmings are native to the region along with many other types of mammals. Endangered species such as the Polar Bear, Steller Eider, and Spectacled Eiders, also call the North Slope home, with migrations during the warmer months.

During the spring, bowhead whales migrate close to shore, and both gray and beluga whales are often sighted during the summer. Whale, seal, polar bear, walrus, waterfowl, caribou, and fish are harvested from the coast, or nearby rivers and lakes.

Polar Bear Management: A treaty between Iñupiat Natives, United States, and Russian officials was signed in 2000 due to the need for coordinated management of the shared Alaska-Chukotka polar bear population that inhabits the Chukchi and northern Bering seas.[30]

Whaling Management: The Inupiat and Siberian Yupik Eskimos living in the coastal villages in northern and western Alaska have been hunting the bowhead whale for thousands of years. The International Whaling Commission[31] (IWC) coordinates quotas, information, and safety notices.

[30] U.S. and Russia Polar Bear Accord
[31] The International Whaling Commission

2.2.6 Caribou / Reindeer Herds of the Arctic

Image 12: *Caribou, like all wildlife species, need to be managed at the population level.*

Oral history interviews have been conducted with most of the former reindeer herders living in Barrow, providing a rich set of stories about the role of reindeer herding in Barrow's history.

The University of Alaska Fairbanks, Reindeer Research Program[32] develops and promotes the reindeer industry throughout Alaska and works closely with producers to develop and conduct research projects that can be applied directly to their operations. Outreach is a significant part of their program and they have strong ties to communities and schools across Alaska.

Table 8: *Alaska Department Fish and Game's 2022 Population Estimates*

Herd	Estimate
Western Arctic	164,000 animals
Teshekpuk	61,500 animals
Central Arctic	34,000 animals
Porcupine	~218,457

[32] UAF Reindeer Research Program

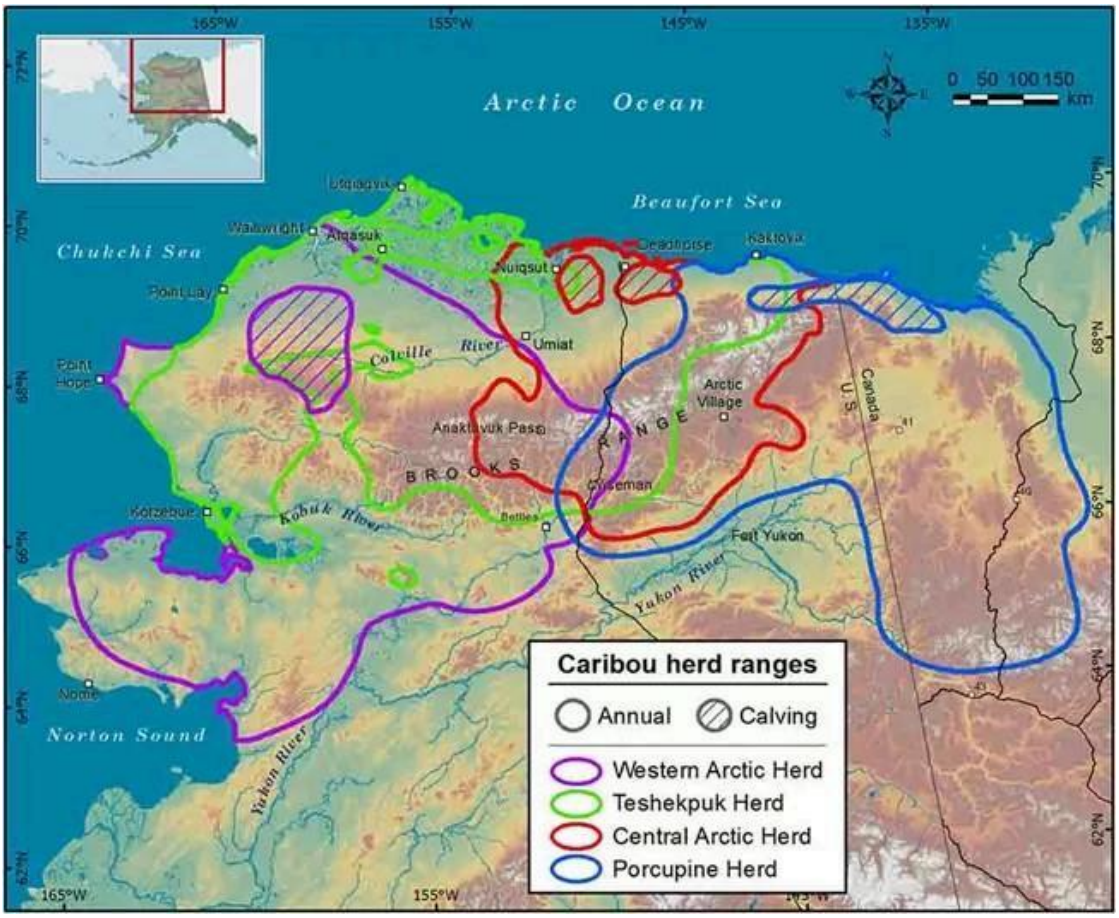


Image 13: *Caribou herd ranges. Image source:* National Park Service

2.2.7 Subsistence Resources Per Community

Subsistence foods and traditional ways of food gathering and sharing are an integral part of many Native Alaskan communities throughout Alaska, including the ICAS region. Subsistence activities provide cultural, spiritual, and nutritional benefits to the communities of the North Slope. A culture of hunting, fishing, gathering, and processing of traditional foods inform residents' way of being and relating to the world.[33]

The cost of living, and in particular food prices and availability, are a major concern in rural Alaska. The North Slope receives the large part of its food via air freight, which greatly increases the cost and decreases the quality of food available. Subsistence activities are an essential way to offset the cost of food and to provide a nutrient rich diet for one's family.

Table 9: *Subsistence Foods in North Slope Communities*[34]

	Utqiaġvik	Point Hope	Wainwright	Nuiqsut	Anaktuvuk Pass	Point Lay	Kaktovik	Atqasuk
Whale	X	X	X	X		X	X	X
Walrus	X	X	X			X	X	
Seals	X	X	X	X		X	X	
Fish	X	X	X	X	X	X	X	X
Birds	X	X	X	X	X	X	X	X
Waterfowl	X	X	X	X	X	X	X	X
Plants			X	X	X	X	X	X
Berries	X	X	X	X	X	X	X	X
Caribou	X	X	X	X	X	X	X	X
Polar Bear	X	X	X	X		X	X	
Dall Sheep		X		X	X		X	
Moose	X	X	X	X	X	X	X	
Wolf	X		X	X	X	X	X	X
Squirrels			X		X	X	X	X
Wolverine	X			X		X	X	X
Fox	X	X	X	X		X	X	X
Brown Bear					X	X		

[33] NSB Comprehensive Plan 2019-2039

[34] Bacon, J, NSB DWM, et al, Estimates of Subsistence Harvest for Villages on The North Slope of Alaska, 1994-2003

2.2.7 Cultural Resources and Historic Preservation

Image 14: *Artifacts from Walakpa, left to right: (1) Cellar entrance, (2) Mummified Seal (found in cellar), (3) Ornate Toggle Spearhead and (4) Toy Umiaq (Skin Boat) are a few of the thousands of artifacts uncovered at Walakpa and Point Barrow, now threatened by coastal erosion.*

People have lived for thousands of years in the North American Arctic. The archaeological sites they left behind are spectacular, with artifacts in nearly as good of shape as the day their owner last set them down. The cold of the region has kept sites in pristine shape for hundreds, in some cases thousands, of years.

These sites are important heritage repositories for indigenous people who have cultural ties to them. They are important for our understanding of the human past, not just in the Arctic, but worldwide. Early New World inhabitants passed through the Alaskan Arctic to reach the rest of North America. There have been two separate migrations of hunting peoples across the cold North American Arctic, which by cross cultural analogy can help us understand how human hunters first migrated out of Africa, and how they adapted to the much colder regions that they reached in Europe and Asia. Sites with a number of occupations layered above each other (like Walakpa) are the most informative. By allowing us to compare the different periods they eliminate the worry that some differences over time are due to groups being in different locations, since all of the sites (one on top of another) are in the same place.

Traditional archaeological studies of structures and artifacts are now amplified by new techniques, more of which come online almost annually. Today the refuse (midden) preserved at these sites can be used to study everything from ancient DNA (aDNA), to stock structures of important Arctic animals, to changes in locations where different species fed, to long-term stresses on individuals, and to associated environmental conditions. Walakpa's archaeological expeditions are coordinated through UIC Science at the Barrow Arctic Research Center (BARC).

2.3 INFRASTRUCTURE ASSETS

2.3.1 Water, Sanitation Utilities, and Energy

2.3.1.1 Water & Sewer

The North Slope Borough provides water and wastewater services to the communities of Anaktuvuk Pass, Atqasuk, Kaktovik, Nuiqsut, Point Hope, Point Lay, and Wainwright. The NSB owns water and wastewater treatment systems in Utqiaġvik as well, but they are operated by the Barrow Utilities and Electric Cooperative, Inc. (BUECI). All North Slope communities, except for Anaktuvuk Pass, which uses well water, receive their water from nearby freshwater lakes.

All North Slope communities use a combination of truck haul/storage tank and underground piping systems to deliver water to residents. Utqiaġvik distributes much of its piped water through the heated utilidor system, while in other communities water treatment facilities maintain water temperatures so looped systems avoid freezing. Treatment methods vary by community. Utqiaġvik and Anaktuvuk Pass are the only communities which are able to produce potable water year round - all other communities must make and store an adequate supply of water during the warmer months to last through the winter. Varied systems across communities, vs utilizing a standardized system, can increase logistical and financial issues related to maintenance. In particular, Point Lay has experienced issues maintaining potable water for residents in recent years due to environmental factors and system failures.

In the North Slope, wastewater is collected using a combination of below grade pipe, tank and truck haul, and honey bucket. Utqiaġvik's utilidor pipes wastewater as well. Buried wastewater systems are heat traced to avoid freezing, increasing maintenance needs for these systems. Each community has a Wastewater Treatment Plant (WWTP), though the methods of treatment and capacity vary for each community. The North Slope Borough has identified that many of the communities' plants will not be adequate to handle projected flow over the course of the predicted 20 year timeline. System additions to increase capacity will have to be made once funding is acquired.

The Voice of the Arctic Iñupiat (VOICE) 2023 Community Needs Assessment reflects many residents' need for clean water and functional sewer systems and states these as infrastructure priorities for the region.

2.3.1.2 Energy

Most power utilized by communities in the North Slope is generated by diesel generated electricity or natural gas generated electricity. Heat is provided through natural gas or through diesel systems. The North Slope Borough provides light, power, water, sewer, and fuel delivery services to all communities except Utqiaġvik, whose services are managed by BUECI. Many utility services in the region are highly subsidized by the borough.

Utqiaġvik and Nuiqsut both utilize natural gas for power generation and household use. Utqiaġvik utilizes gas from nearby gas fields, greatly lowering the cost of energy in the community. Nuiqsut has free gas piped in from a ConocoPhillips site, based on an agreement to compensate the village for nearby oil exploration.[35]

Table 10 -18: Power Generators in North Slope Communities[36]

Anaktuvuk Pass			
Unit	Make/Model	Capacity	Installed
1	Caterpillar 3412	330 kW	1994
2	Caterpillar 3412	330 kW	1994
3	Caterpillar 3412	330 kW	1994
4	Caterpillar 3512	910 kW	2003
5	Caterpillar 3512	910 kW	2003

Atqasuk			
Unit	Make/Model	Capacity	Installed
1	Caterpillar 3508C	450 KW	2012
2	Caterpillar 3508STD	425 KW	2012
3	Caterpillar 3512STD	550 KW	2012
4	Caterpillar 3512	910 KW	2012
5	Caterpillar 3512	910 KW	2012

Utqiaġvik			
Unit	Make/Model	Capacity	Installed
1	Centaur 40	2500 kW	1974
2	Centaur 40	2500 kW	1979
3	Centaur 40	2800 kW	1982
4	Taurus 60	4750 kW	1995
5	Taurus 60S	5300 kW	1999

[35] NSB Comprehensive Plan 2019-2039
[36] North Slope Borough Community Comprehensive Plans

Nuiqsut			
Unit	Make/Model	Capacity	Installed
1	Caterpillar 3512	910 kW	2000
2	Caterpillar 3512	910 kW	2000
3	Caterpillar 3508	450 kW	2000
4	Caterpillar G3512	525 kW	2012
5	Caterpillar G3516	820 kW	2008
6	Caterpillar G3516	820 kW	2008

Kaktovik generator information needed

Point Hope			
Unit	Make/Model	Capacity	Installed
6	Caterpillar 3512	520 kW	2005
7	Caterpillar 3512	520 kW	2005
8	Caterpillar 3512	910 kW	2005
9	Caterpillar 3512C	965 kW	2015

Point Lay			
Unit	Make/Model	Capacity	Installed
1	Caterpillar 3508C	633 kW	2013
2	Caterpillar 3508C	633 kW	2013
3	Caterpillar 3508C	633 kW	2013
4	Caterpillar 3508C	633 kW	2013

Wainwright			
Unit	Make/Model	Capacity	Installed
1	Caterpillar 3508	430 kW	1988
2	Caterpillar 3508	430 kW	1988
3	Caterpillar 3508	430 kW	1988
4	Caterpillar 3512	950 kW	2002
5	Caterpillar 3512	950 kW	2001

2.3.1.3 BUECI & Utilidor Operation in Utqiaġvik

Barrow Utilities & Electric Co-op Inc. is a non-for-profit organization member-owned cooperative which provides electricity, natural gas, water, and sewer services. BUECI has an average of 55 full-time permanent employees.

The Barrow Utilidor System (BUS) is a unique 3.2 mile wood tunnel, which runs below Barrow like an underground road system and allows the Co-op to transport water, sewer, and other utilities through the permafrost to homes, schools and businesses. The Utilidor went into operation in 1984.

The Utilidor is constructed of a trapezoidal wood structure, which is 6 feet high, 6 feet wide at the base and tapers to 5 feet wide at the top. The individual sections are spliced together to form the straight portions of the Utilidor. At each intersection a metal frame with a wooden skin is installed. The wood sections and metal frame boxes are bolted together to form one continuous system. Power, Lighting, Ventilation, and Instrumentation (Telemetry) are provided throughout the system for safety, operation, and maintenance. Air temperatures are monitored as well. The cold arctic air must be heated to roughly 48 degrees Fahrenheit before it can be pumped into the Utilidor and replaced six (6) times per hour.

The following services are provided or networked within the Utilidor system: Potable water, Sewage collection, Telephone service lines, TV Cable service lines, Fiber optic service (NSB communication network), and Electric service lines. The water in this system is constantly circulating to prevent freezing when the lines exit the Utilidor. The Utilidor supplies water to fire hydrants throughout the town. Hydrants are “dry barrel,” meaning, no water is actually in them until an internal stem is driven down to open them up.

Located 100 feet from the coast, replacement of the Utilitor if it fails due to storm damage or coastal erosion has been estimated at $800M to 1 Billion dollars**.**

2.3.2 Solid Waste Disposal and Landfills

The NSB owns and operates landfills in all 8 communities, providing subsidies for this utility as well. Residents are not charged for trash pickup or disposal and dumpsters are offered freely to a variety of entities in each community. Landfills are permitted with the state and are subject to regular inspection (some of this data is included in the images found below). Utqiaġvik utilizes a Class II landfill, while all other communities utilize Class III solid waste landfills.

Table 19: *North Slope Landfill Inspection Summary*

Landfill	Inspection Score	Main Concerns
Anaktuvuk Pass	77%	Burning, Special Waste Management
Nuiqsut	87%	Landfill Site Control, Litter
Kaktovik	76%	Burning, Special Waste Management
Atqasuk	94%	Burning, Capacity
Wainwright	95%	Special Waste Management, Landfill Site Control
Point Lay	92%	Special Waste Management, Landfill Site Control
Point Hope	95%	Landfill Site Control
Utqiaġvik	98.90%	Erosion Mitigation, Thermal Oxidation System (TOS)

Note: Currently, Utqiaġvik's Thermal Oxidation System (TOS), is not functional. This negatively affects the overall capacity of the landfill.[37]

The Alaska Department of Environmental Conservation (ADEC) Solid Waste Program inspected Anaktuvuk Pass, Nuiqsut, Kaktovik, Atqasuk, Wainwright, Point Lay, and Point Hope over the course of 2022 and 2023. The department also inspected the Utqiaġvik Class II Landfill in 2023, with its findings published in a separate letter. All landfills passed inspection, see the table below for inspection scores and main concerns faced by each facility. In 2024 the State offered clarifications on DEC protocols/requirements/allowances to have lined landfills in Alaska? (SB 175)[38].

Many of the communities have a shortage of landfill capacity at their current sites. Site expansions, survey/development of new landfill sites, and current site infrastructure developments for more efficiently utilizing space, are all courses of action which may need to be taken into the future to mitigate this issue.

The NSB owns a thermal oxidation system (TOS) incinerator facility for municipal waste in Barrow. The facility is located near the old Barrow Landfill on the Middle Salt Lagoon on Stevenson Street. Currently, the TOS facility is not operational and has not been operating steadily for several years. During the time that it has not been operational, the waste is directly landfilled in the Barrow landfill without incineration. The TOS facility incinerators do not produce

[37] Alaska State Solid Waste Information Management System (SWIMS)
[38] https://www.akleg.gov/basis/get_documents.asp?session=33&docid=32701

electricity, but emit directly to a stack exit. It was designed to process 30 tons per day of municipal waste and is currently permitted to process up to 20 tons per day of domestic and commercial waste (State of Alaska Department of Transportation & Public Facilities 2014).

Once the repairs are complete, the NSB will begin incinerating its refuse before depositing directly in the landfill. Incinerating the waste before landfilling results in a 30% reduction in the overall waste footprint.

The current landfill site was placed on land purchased from UIC in 2003. It is located about four miles southeast of Utqiaġvik and is accessed from Eastfield Road. The new Utqiaġvik landfill was opened in 2008 and permitted in 2009. This landfill will ultimately have eleven cells when completely constructed. Currently, the Cell #1 and #2 have been filled and covered with the final closure cap. Cell #3 is operating as a working pad for equipment and daily cover storage. Cell #4 is the current active cell receiving waste.

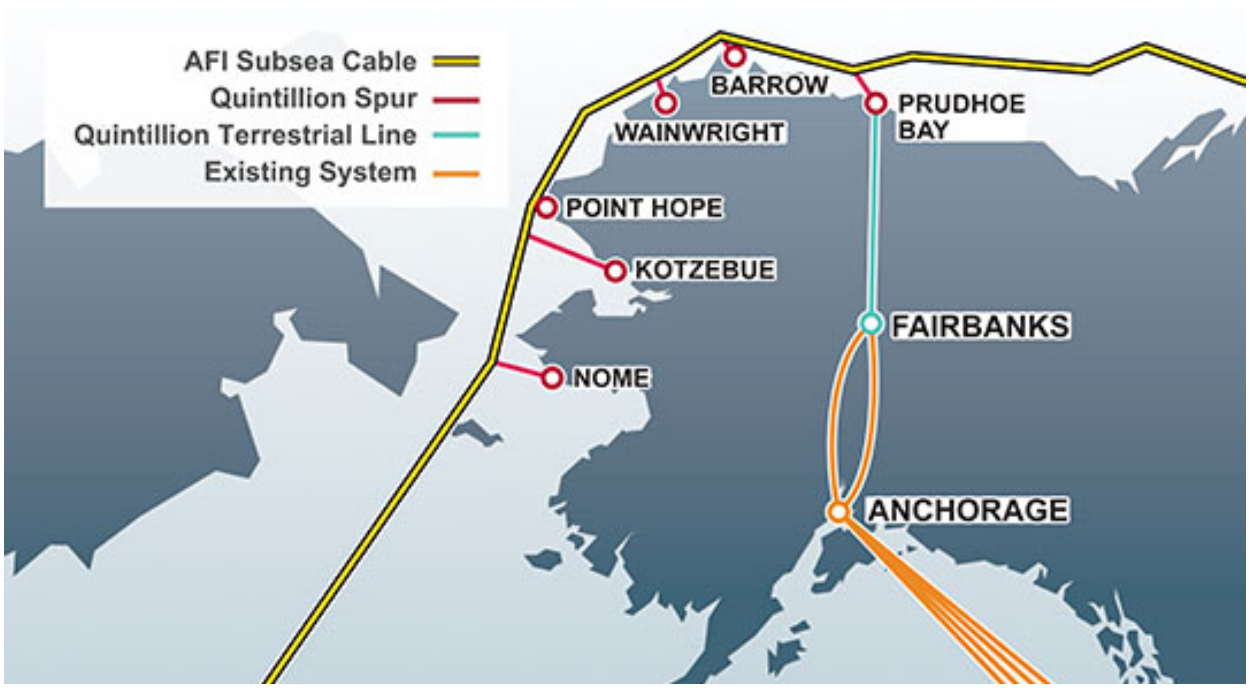
The containment cells in Utqiaġvik have an average storage volume capacity of about 81,000 CY per cell for waste and cover material. The maximum storage capacity of the first cell was about 95,000 CY. The first cell filled more quickly than originally estimated. In part, this happened because the early estimates assumed that 60% of the waste stream destined for the landfill was combustible, thus reducing the waste weights by 85% (North Slope Borough, 2009).

The Alaska Energy Authority produced a document on "Burning Garbage and Land Disposal In Rural Alaska," with a number of useful pointers and methods for residential and municipal solid waste disposal.[39]

More information about North Slope communities' water, sewer, landfill, and energy capacity can be found in the North Slope Borough's Comprehensive Plans, with infrastructure tables found in the appendices.[40]

[39] Burning Garbage and Land Disposal In Rural Alaska
[40] NSB 2019 - 2039 Comprehensive Plan

2.3.3 Telecommunications / Broadband



Locally owned and operated Arctic Slope Telephone Association Cooperative (ASTAC) provides telecommunications services to Anaktuvuk Pass, Atqasuk, Barrow, Deadhorse-Prudhoe Bay, Kaktovik, Nuiqsut, Point Hope, Point Lay, and Wainwright. The cooperative serves about 5,600 access lines. ASTAC offers Internet and cell phone services as well.

Also available in the North Slope is Alaska founded General Communication Inc., or GCI, who introduced long-distance competition in 1979. GCI is the state's largest provider of Internet services with dial-up, cable modem, wireless, digital subscriber line (DSL), and dedicated access. Its cable television services are accessed by 90% of the state's households, with 65% penetration. Digital cable and cable modem service is available to 90% of its subscribers.

Utqiaġvik has 2 registered cell phone towers and now (although at times intermittent) receives signals from most cell phone services. Local radio station KBRW 680 AM, 91.9 FM airs public radio that covers native affairs, popular music, local, and religious programming in the communities of Utqiaġvik, Point Hope, Point Lay, Wainwright, Atqasuk, Nuiqsut, Prudhoe Bay and Kaktovik.

Residents still heavily rely on CB and VHF radio communication to plan their subsistence activities and to make village-wide announcements. Many residents in the villages have VHF radios installed in their homes, as well as in community centers and other community facilities. There is also an emergency radio protocol in place for disaster situations.

Recently, the North Slope benefitted from the completion of the Quintillion Subsea Fiber optic line. The arduous work of installing the cable was finally overcome and service has been

available in communities across the North Slope via ASTAC and GCI since December 2017. This development opens ecommerce and scientific opportunities for the villages.

In June 2023, the Quintillion Subsea Fiber optic line was severed by sea ice out of Oliktok Point west of Prudhoe Bay, causing internet and cell outages in the North Slope communities for months, with regular service returning to previous levels slowly once the line was repaired. This interruption in communications significantly affected life on the North Slope, especially emergency services. Since the fiber optic line was severed, a renewed focus on telecommunications, cybersecurity, and emergency preparedness has featured as a priority for many of the communities.

Table 20: *U.S. Census Bureau 2017-2021 American Community Survey Five-Year Estimates, Internet Data for the North Slope*

Service Area	Percentage of Households with Internet Access	Number of Internet Providers
State of Alaska	90.70%	34
Atqasuk	87.90%	1
Point Lay	82.20%	2
Kaktovik	82.00%	1
Wainwright	80.40%	1
Utqiagvik	73.90%	3
Point Hope	71.40%	2
Anaktuvuk Pass	71.20%	1
Nuiqsut	60.80%	1

2.3.4 Transportation

Communities in the North Slope experience physical isolation due to the fact that there are no roads coming into the villages except for the seasonal ice roads. Within the Voice of the Arctic Iñupiat (VOICE) 2023 Community Needs Assessment, many residents express concerns about air travel expenses and transportation logistics in general.

The Dalton Highway runs parallel to the trans-Alaska pipeline, along the section from Fairbanks to Prudhoe Bay, and serves mainly as a freight corridor to the oil fields, although other traffic is now also allowed. The closest community to this road is Nuiqsut, having access to the Dalton Highway four months out of the year via a restricted access ice road to Deadhorse on the Colville River and pre-existing oilfield roads.[41]

Within Utqiaġvik, the transportation options consist of a public bus system, taxis, and airlines which include Alaska Airlines (Commercial passenger and cargo) and Wright Air Service (Charter and Commercial passenger). Alaska Airlines currently flies into Utqiaġvik twice a day,

[41] Dalton Highway Scenic Byway Corridor Partnership Plan

and all other regular passenger services to the other communities are through Wright Air, except for Point Hope, who receives passenger transport via Bering Air out of Kotzebue.

UIC Bowhead Transport is the only way for heavy equipment and construction materials to be delivered to Utqiaġvik, via barge. The cost of shipping materials by transporting them to Prudhoe Bay through the Dalton Highway and barging them to Utqiaġvik is equivalent to shipping directly from Seattle. Bowhead accepts orders between May and June for deliveries to Barrow and a few of the other North Slope Borough Villages. The barge leaves Seattle around the beginning of July of each year to make its yearly run to Barrow, Point Hope, Point Lay, Wainwright, and Kaktovik.

Ice roads are utilized not only by the oil industry, but also by many North Slope communities in the wintertime. More information on the design and operation of ice roads can be found in the University of Alaska Fairbanks's Institute of Northern Engineering and DOT&PF's manual: *Design & Operations Ice Road Manual.*[42] Residents and organizations utilize snowmachines, rolligons, and trucks with mattrack conversions to traverse the ice roads and ice trails to travel to remote subsistence areas and between communities. When barge and air freight are unavailable or too costly, residents may haul equipment, food, and other necessities from Utqiaġvik, or another nearby community, to their village. Funds through the Community Winter Trail Access (CWAT) permitting program have been used by the NSB in recent years to expand and manage these trails for use by residents.

Many communities, especially along the coast where flooding is common, have requested the construction of evacuation roads for emergency egress. In addition, some communities, such as Point Lay and Point Hope, are considering partial or total relocation of their townsites further inland due to changes in conditions related to climate change.

A 2015 inventory of vehicles showed that there are 4,242 total vehicles in Utqiaġvik, with 43% commercial trucks, 25% passenger vehicles, 17% pick-ups, and 8% snow machines. There are also 43 buses used for public transport. ICAS has completed a 2018-2023 Long Range Transportation Plan[43], which aligns closely with the goals of this CEDS.

2.3.5 Emergency Services

Emergency services include police, fire, search and rescue, and risk management. These services are provided by the NSB.

- NSB Police facilities can be found in each village, with the headquarters and 24-hour dispatch center located in Utqiaġvik. Each community has its own offices, police officers, community public safety specialist, and jail.
- The NSB Fire Department, also headquartered in Utqiaġvik, responds to fires and other emergencies. Staff includes medical professionals for critical care, air ambulance and

[42] Design and Operation of Ice Roads
[43] ICAS Long Range Transportation Plan 2018-2023 [ref].

medevac services, instruction at Iḷisaġvik College, and fire prevention and safety programs for school children. There are two fire stations in Utqiaġvik, and each village also has its own facility.
- NSB Search and Rescue provides medevac, search and rescue, and other emergency services with four dedicated aircraft. NSB SAR utilizes volunteers and partnerships with other agencies across the North Slope region for ground, air and water search and rescue missions.
- NSB Risk Management Division provides disaster coordination and emergency preparedness and response. Risk Management stores supplies and equipment for immediate deployment in the case of an emergency.

2.3.6 Recreational Facilities

Many residents in the North Slope feel that their communities' recreational facilities do not meet their family's needs, especially families with children or young adults. Residents who participated in The Voice of the Arctic Iñupiat (VOICE) 2023 Community Needs Assessment shared that lack of activities and opportunities for young people is a pressing concern. There is a need for more engagement, motivation, and positive outlets to keep youth away from trouble. Many of the facilities that do exist are often booked and residents have requested more community centers to increase availability. Child care facilities and entertainment opportunities are needed, as well as gathering places and activity centers for all community members. Below is a summary of recreational centers by community:

Utqiaġvik:
The City of Utqiaġvik manages a variety of recreational facilities in Utqiaġvik, including:

- Piuraaġvik Recreation Center (1984, renovated 2010). A $13M expansion effort is planned for a 700 person, fold down stage and movie screen, with five interchangeable program spaces for aerobics, weight training, exercise equipment and dance lessons.
- The Cathy Parker Football Field (2007) was named after a Florida woman who raised $500,000 to ship 60 tons of blue artificial turf to Barrow to build the Whalers football field.
- Playgrounds: Ipalook Elementary School has two playgrounds (one for toddlers and the other side for older kids). The playgrounds are outside and open for the public.
- The Boys and Girls Club

Anaktuvuk Pass:
The community maintains a few recreational facilities, including an outside basketball court and community playground. The school also has a gymnasium, pool, and library.

Atqasuk:
Meade River School has a pool and playground facility.

Kaktovik:
A fire in 2020 destroyed much of the Kaveolook School, including its new gymnasium which also served as a space for community gatherings. The school playground did not sustain damage in the fire and is still being used by the community. Kaktovik's City Hall is used for larger community gatherings.

Nuiqsut:
Nuiqsut Trapper School has a gymnasium and playground and The City of Nuiqsut provides the use of city hall for larger community gatherings.

Point Hope:
Tikigaq school has a gymnasium which is used as a gathering place by the community, along with a library. The library has computers and free internet for community members to use. The school also has an outdoor community playground and basketball court, updated in 2013. The City of Point Hope has city offices and a community center that is used for small functions such as bingo, NSB meetings, and teleconference classes. There are also three churches in Point Hope: the Baptist Church, Assembly of God Church, and the Episcopal Church.

Point Lay:
Kali School has a pool and playground facilities. There is also a small community center used for community meetings, bingo, and other activities as needed.

Wainwright:
Alak School has a gymnasium and playground. The city also owns a ballfield, playground, and community center for larger gatherings.

A representative of the Qikiqtagruk Inupiaq Youth Council offered feedback about the important role recreational programs play in their community - to quote: **"In the village, *Ball is Life."*** In particular, basketball programs, along with other sports, offer a regular structured outlet for socializing and development of self-confidence for students.

2.4 INDUSTRY CLUSTERS

Industry clusters and employment sectors were assessed using both US Census data and by polling the communities during the SWOT meetings. Below are the results from the SWOT:

During community SWOT meetings, residents were asked what industry clusters exist in their village. Industry clusters were defined as economic drivers in the area, often taken to mean where people work in the village. While many organizations in the region are considered ‘Tribal', a distinction was made between the Tribe and Tribal corporations, as Tribal Corporations operate as private businesses, which has many economic implications for local employment, local input, revenue streams, and type of work undertaken.

Main Sources of Employment: Predominantly, residents identified the municipality, the tribe, and tribal corporations as the main sources of employment.

Municipal Employment: While municipal jobs play a large role in all North Slope communities, in the non-hub communities (meaning outside of Utqiaġvik) residents report that municipal jobs provide an even higher percentage of employment. Larger communities like Utqiaġvik, Point Hope, and Nuiqsut have more private business.

Private Business: Private Business received 15 inputs in the region from residents, about 17.44% of total responses. Utqiaġvik made up 9 inputs of the total 15, by far the most responses. Some of the private businesses mentioned include grocery stores, the oil and gas industry, internet service providers, and guide work.

Other Industry Clusters: Federal jobs and jobs related to education did not rank high as perceived areas of employment across the region. In addition, predictably, Utqiaġvik has the highest diversity in industry clusters.

The overall trend for the region shows the proliferation of jobs through municipal and tribal organizations as the main source of employment, according to residents, with the private sector playing a smaller role, except in Utqiaġvik. With many jobs being sourced from work related to public sector funding or policies, it is possible that many North Slope communities, especially non-hub communities, may be vulnerable to changes in government funding or political leadership.

SWOT vs CENSUS Clusters

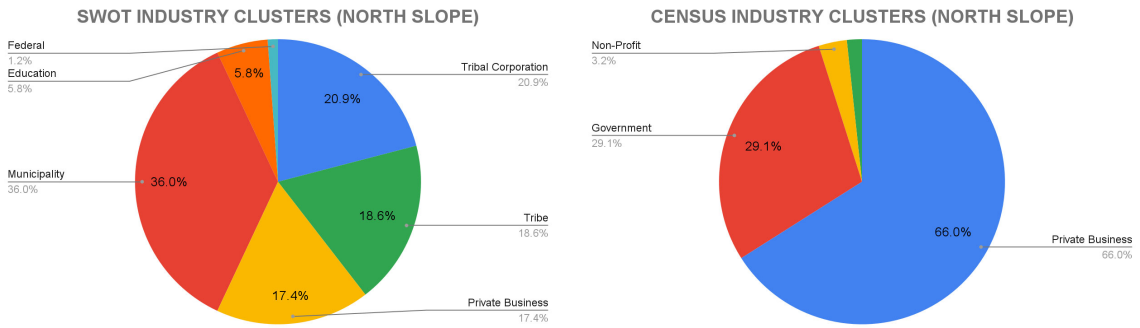


Figure X. *Compared to the US Census, Tribal Corporation jobs appear to be categorized as Private Business, while working for the Tribe*

U.S.Census Industry Clusters and Employment Sectors

In addition to data on industry clusters, U.S. Census Data was referenced for employment sector data to determine where residents in the North Slope find employment:

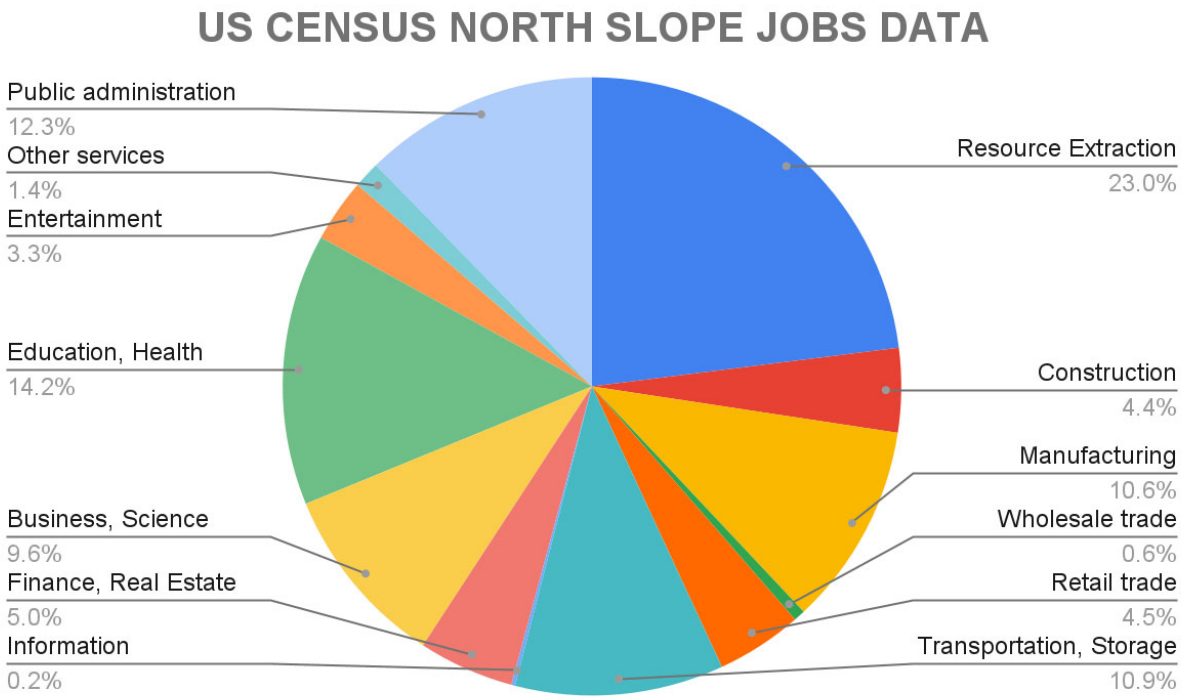


Figure 2. *Using census data from the North Slope Borough's profile, we can compare perceived industry cluster inputs with census reported industry clusters. (Source: U.S. Census[44])*

Resource Extraction: Agriculture, Forestry, Fishing, Hunting, and Mining (23.00%) represents the largest sector, highlighting the heavy reliance on natural resource extraction, namely oil and gas. This is expected due to the presence of the oil and gas fields at Prudhoe Bay and other locations, which heavily influence the North Slope economy through tax revenue. Nuiqsut and Utqiaġvik mentioned the oil and gas industry in their SWOT inputs, but across all community SWOTs, oil and gas employment did not reflect a significant number of inputs.

Education and Health: Census data combines education, healthcare, and social assistance (14.2%), separate from public administration. Data reflects that this sector is prominent in Utqiaġvik, Nuiqsut, Anaktuvuk Pass, and Atqasuk, and holds a significant presence in all of the communities. Jobs with the tribe and municipal entities administer education, healthcare, and social assistance programs, so this data reflects residents' perceptions as a large source of employment.

[44] US Census

Public Administration: The U.S. Census found that public administration is a significant employment sector across all communities (12.3%), with a notable presence in Point Lay, Kaktovik, Utqiaġvik, and Atqasuk. This is in accordance with the perceived industry cluster data received from residents which reported high in municipal and tribal employment.

Transportation and Storage: Transportation, warehousing, and utilities represent the next significant industry cluster (10.9%). This large share reflects the logistical challenges of operating in a remote and geographically vast area. Transportation is critical for moving goods, people, and equipment within the borough and to outside markets. SWOT inputs did not mention transportation, warehousing, or utilities frequently, except for single inputs for jobs at airports and UIC Bowhead, but these functions are mostly undertaken by federal, state, city, or tribal entities, which were the top inputs received.

Manufacturing: Manufacturing (10.60%) is likely related to oil and gas processing and equipment maintenance. None of the other North Slope communities outside of Prudhoe Bay report industry in manufacturing in the census data, and this is reflected in the SWOT data.

Other notable industries include professional, scientific, administrative, and waste management services and construction. The data suggests potential opportunities for diversification, especially in sectors like retail, wholesale, tourism, and hospitality (currently underdeveloped). Expanding professional services and information sectors could foster further local employment, particularly as the region transitions toward future challenges in sustainability and climate adaptation. This industry distribution underscores the reliance on key industries like oil and gas while reflecting the challenges of economic diversification in a remote, resource-dependent region.

2.5 ECONOMIC RELATIONSHIPS

Federal: The federal government has many agencies working within the North Slope directly, indirectly, and through grants; these include but are not limited to the Department of Interior (DOI), Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), Fish and Wildlife Service (FWS), Department of Justice (DOJ), Department of Defense (DOD), Housing and Urban Development (HUD), Department of Commerce (DOC), and Economic Development Administration (EDA).

The State of Alaska: Involved directly, indirectly, and through grants, including the State of Alaska Court System, State of Alaska Troopers, Department of Natural Resources, Department of Fish and Game, and health and welfare programs.

The North Slope Borough: Incorporated as a first class Borough on July 2, 1972 under the laws of the State of Alaska. A Home Rule Charter[45] was adopted in 1974. The NSB is responsible for the regional governance of the eight villages in the north slope. At 89,000 square miles of landmass, it is the largest county-level political subdivision in the United States.

Arctic Slope Regional Corporation (ASRC): ASRC is a private, for-profit corporation that is owned by and represents the business interests of, its approximately 13,000 Iñupiat shareholders in the North Slope villages, and beyond. The corporation owns title to nearly 5 million acres of land on Alaska's North Slope, and does business in the areas of government contract services, petroleum refining and marketing, energy support services, industrial services, land and natural resource management, construction, and other operations.

The Iñupiat Community of the Arctic Slope (ICAS) is the Federally Recognized Regional Tribe governed by the Indian Reorganization Act of 1934, as amended, that represents and is selected by the Iñupiat people of the Arctic Slope region. ICAS represents over 3,500 members and was established as an IRA on August 26, 1971 and is the longest standing local government in Barrow. The mission of ICAS is to exercise its sovereign rights and powers for the benefit of tribal members, to conserve and retain tribal lands and resources including subsistence and environmental issues, to establish and carry-out justice systems, including social services, pursuant to Iñupiat Tribal law and custom, and to increase the variety and quality of services provided to current tribal members and for their future generations. This is accomplished through its Self-Governance Funding Agreement with the US Department of Interior Bureau of Indian Affairs, various grants, and pull-tab gaming. ICAS is pursuing for-profit business development in support of tribe member owned businesses, workforce development, and business growth in Barrow, and the region as a whole.

[45] A home rule charter is, in essence, a local constitution (Ref).

Village corporations for each community in the North Slope were created through ANCSA, allowing villages to select their village surface entitlements from federal withdrawals and manage them through private, for-profit corporations. Corporations include: Nunamiut Inupiat Corp. (NIC) for Anaktuvuk Pass, The Cully Corp. for Point Lay, Kuukpik Corp. for Nuiqsut, Kaktovik Iñupiat Corp. for Kaktovik, Ukpeaġvik Iñupiat Corporation (UIC) in Utqiaġvik, Atqasuk Corp. for Atqasuk, Tikigaq Corp. for Point Hope, and Olgoonik Corp. for Wainwright.

North Slope city governments manage and operate municipal needs of each community in the North Slope, except for Point Lay, which is unincorporated. The City of Utqiaġvik was incorporated as a 1st Class City in 1958, and changed its name from Barrow in December 2016. The City is responsible for harbors and docks, recreation, licensing, and cemeteries. Their recreational facilities include Piuraagvik Recreation Center, and the Barrow Hockey and Curling Association Ice Skating Rink. The other communities are incorporated as second class cities.

Arctic Slope Native Association (ASNA) is a tribal nonprofit health and social services organization. ASNA provides health services out of Samuel Simmonds Memorial Hospital, located in Utqiaġvik, a wide array of social services, assisted living at Aimaaġvik Assisted Living, the Medical Travel and Funeral Assistance program, and scholarship opportunities for medical students.

Taġiuġmiullu Nunamiullu Housing Authority (TNHA), established in 1974, is a public corporation under state law which works to address housing needs in the North Slope. TNHA is one of fourteen regional housing authorities in Alaska.

Oil and Gas development in the Utqiaġvik area (Barrow gas fields and Walakpa discovery site), Prudhoe Bay (oil & gas), Kuparuk and Alpine fields (oil), and other areas, are a large source of revenue for a variety of stakeholders. The North Slope Borough manages gas resources through the Barrow Gas Field Transfer Act of 1984. There are many parties involved in oil and gas leasing, land use, extraction, and transportation in the North Slope, including, but not limited to, the State of Alaska, the borough, tribal governments, ConocoPhillips Alaska, Inc., Chevron Corporation, Alyeska Pipeline Service Company, ExxonMobil, Hilcorp Alaska, etc.

The State of Alaska manages the National Petroleum Reserve-Alaska (NPR-A) Impact Grant Program, the primary objective of which “is to provide eligible municipalities with grants to help mitigate significantly adverse impacts related to oil and gas development within the NPR-A.[46]” Priority for funding is given to communities experiencing or who will experience the most direct or severe impact from oil and gas development. North Slope communities which fall within the NPR-A boundary are Utqiaġvik, Wainwright, Atqasuk, and Nuiqsut. The North Slope Borough is also eligible to apply for funds.

[46] National Petroleum Reserve-Alaska (NPR-A) Impact Grant Program

Arctic research, often based out of the Naval Arctic Research Laboratory (NARL) in Utqiaġvik, takes many forms across the North Slope. Through NARL, UIC Science directly supports projects funded through the National Science Foundation, the US Department of Energy, the Office of Naval Research, the North Pacific Research Board, NASA, and BOEM; as well as non-US based researchers including Max Planck Institute for Ornithology, Swedish Polar Research Secretariat, Ocean University of China, and dozens of privately funded research and media projects each year.

Arctic Slope Community Foundation is a community foundation working to support projects within the North Slope. They offer grant programs and services to the eight communities in the areas of education, financial literacy, infrastructure projects, Iñupiaq language preservation, and capacity building.

Voice of the Arctic (VOICE) is a non-profit organization which provides local advocacy and engagement to state, federal, and international forums addressing Arctic issues. VOICE produces communication materials and fosters connections inside and outside the North Slope region to protect the interests of Arctic Slope Iñupiat.

2.6 FACTORS AFFECTING ECONOMIC PERFORMANCE

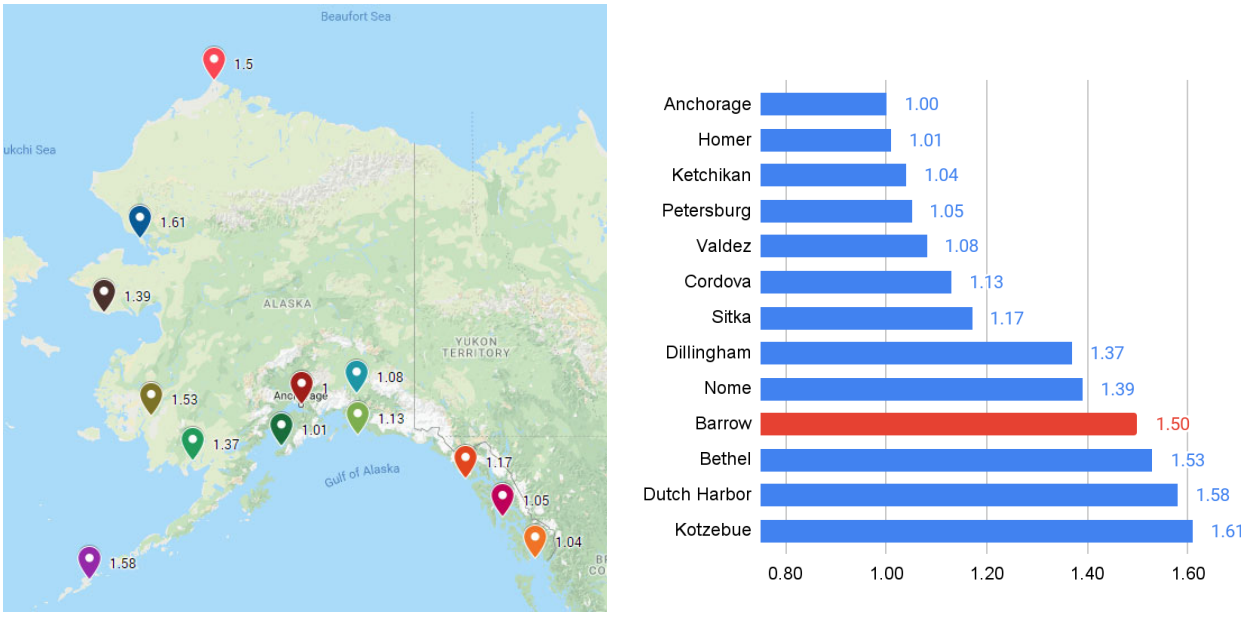


Image 18: *The Alaska Community Cost Differentials (2008) compare the total cost of living, utilities, housing, fuel and transportation, etc., against Anchorage. As economic drivers and conditions throughout Alaska have not changed significantly since 2008, this data is still indicative of the general financial burden experienced by the residents of the North Slope.*

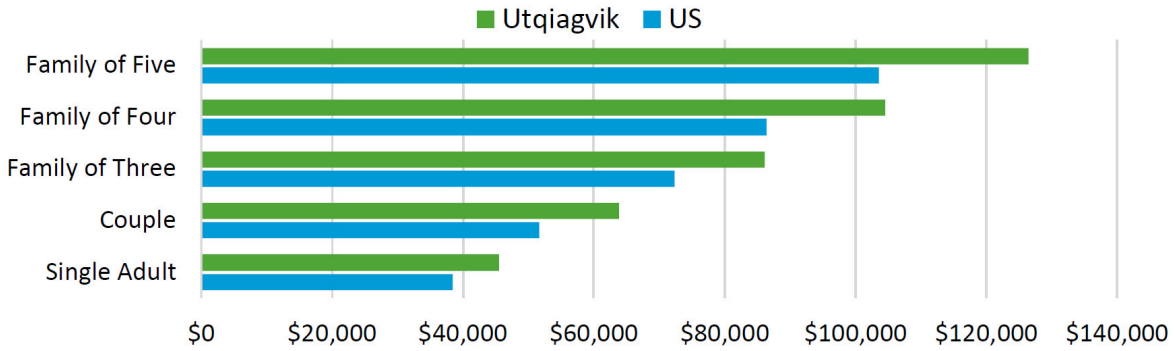
The remote location, lack of connectivity to the road system, dependence on the volatility of oil and gas exploration in the region, and the extreme environment, ensures the cost of living is one of the highest in the nation. Groceries are about 2.3 times more expensive in the North Slope than similar items purchased in the lower 48. A family of one adult and two children in the North Slope is estimated to require $100,885 annually before taxes to meet the cost of living. The working adult would need to make $48.50 an hour, which is more than four times Alaska's minimum wage ($10.85 per hour).[47]

As a result of high prices and limited product selection, caused in part by high shipping costs, residents are forced to shop outside of the slope, often taking several plastic totes as luggage to purchase items in Anchorage and Fairbanks when they fly out. This causes the money to bleed away from the community instead of sustaining it. Along with the need to travel to acquire goods, resident's overall expenses are impacted by the necessity of traveling for health services, either to the hub community of Utqiaġvik, or larger health centers in Fairbanks and Anchorage. Airfare in the region is expensive and flight schedules, through the limited choice of passenger airlines, often necessitate an overnight stay at a hotel, adding to the expense of accessing healthcare.

[47] Voice of the Arctic Inupiat Community Needs Assessment 2023

Table 21: Market Basket Grocery Items June 2023[48]

Item	Description	Utqiaġvik Price	Lower 48 Price	Difference	% Diff	Lower 48 Store
Barilla Elbow Macaroni	16 oz	$4.19	$1.99	$2.20	110.60%	Target
Ragu Pizza Sauce	16 oz	$4.69	$1.89	$2.80	148.10%	Meijer
Kellogg's Frosted Flakes	24 oz	$13.09	$5.49	$7.60	138.40%	Walmart
Milk (store brand, whole milk)	Gallon	$14.99	$4.01	$10.98	273.80%	Hannaford
Angel Soft Toilet Paper	4 'mega' rolls	$30.50	$14.95	$15.55	104.00%	Amazon
Pampers Baby Dry Diapers Jumbo	24 ct.	$17.59	$10.49	$7.10	67.70%	Target



Household Size	United States	Utqiaġvik	Percent Higher in Utqiaġvik
Single Adult	$38,433	$45,496	18.4%
Couple	$51,622	$63,871	23.7%
Family of Three	$72,299	$86,096	19.1%
Family of Four	$86,448	$104,524	20.9%
Family of Five	$103,585	$126,481	22.1%

Image 16: *The cost of living in Utqiaġvik is ~20% higher than the national average. Image Source:* Voice of the Arctic Inupiat Community Needs Assessment 2023

The Alaska Division of Community and Regional Affairs (DCRA) conducts a survey of energy (heating fuel and gasoline) prices around the state biannually. There is a general lack of Consumer Price Index (CPI) data for the region, along with other comparison indicators, but gas and fuel prices comparisons can reveal part of the picture for cost of living in the North Slope.

[48] Voice of the Arctic Inupiat Community Needs Assessment 2023

Table 22: Gas retail price per gallon comparison (Winter 2024) [49]

Community	Gas Retail Price Per Gallon	Gas Vendor
Utqiaġvik	$6.90	Eskimos Inc.
Anaktuvuk Pass	$7.12	North Slope Borough
Kaktovik	$7.50	Kaktovik Inupiat Corporation
Nuiqsut	$6.47	North Slope Borough
Point Hope	$7.60	Tigara Corporation
Wainwright	$6.89	Olgoonik Corporation
Atqasuk	$9.02	North Slope Borough
Juneau	$3.59	Petro One
Fairbanks	$3.59	University Chevron

Table 23: Summer 2023 heating fuel pricing in the North Slope[50]

Community	Residential	Commercial
Anaktuvuk Pass	$1.50	$7.61
Atqasuk	$1.50	$9.32
Kaktovik	$2.50	$10.00
Nuiqsut	$1.50	$6.66
Point Hope	$1.70	$10.36
Utqiaġvik	n/a	n/a
Wainwright	$1.75	$11.25

Note: Because residential heating fuel costs are subsidized, North Slope communities are not factored into the average heating fuel price of Alaska State DCRA's surveyed communities. Also, heating fuel is not sold in Utqiaġvik, where homes are heated with natural gas.

Seven residents hold commercial fishing permits and many residents rely upon subsistence food sources: whale, seal, polar bear, walrus, duck, caribou, along with grayling and whitefish, that are harvested from the coast or nearby rivers and lakes.

Tourism

Tourism increasingly is a consideration and opportunity for North Slope communities, especially Utqiaġvik, which has jet service to Anchorage and Fairbanks. There are a number of infrastructure needs which must be developed or expanded in each community to facilitate the growth of the tourism economy, including lodging, restaurants, grocery stores, local artisan stores, recreational opportunities (including wildlife tours, museums, etc.), transportation for

[49] Alaska Dept. of Commerce, Community, & Economic Development Gas Prices
[50] Alaska Fuel Price Report: Summer 2023

visitors, guides/visitors centers, and many more. The midnight sun attracts tourism in which local artisans sell their arts and crafts to provide seasonal cash income, and hotels and restaurants benefit from the extra revenue, especially during traditional festivities.

2.7 OTHER FACTORS

2.7.1 Housing

Image 17: *All construction is on posts to protect permafrost from residential heating. Drift snow and high winds take a toll on paint and siding.*

Currently there are three organizations considered to be Tribally Designated Housing Entities (TDHE) in the North Slope which use Native American Housing Assistance and Self Determination Act (NAHASDA) funding toward various housing initiatives in the region. These are Tagiugmiullu Nunamiullu Housing Authority (TNHA), the Native Village of Barrow (NVB), and the Native Village of Point Hope (NVPH). The Inupiat Community of the Arctic Slope's Housing Department (ICASHD) also operates in the region, along with the North Slope Borough's Housing Department.

Almost all regions of Alaska are experiencing a housing crisis, but the situation in rural Alaska, including the North Slope, is especially dire. Meeting housing needs in the North Slope is difficult due to the extreme costs of arctic living, logistics, and the lack of local materials such as lumber and gravel which are needed for maintenance and new developments. The VOICE 2023 Community Needs Assessment reflects community members' need for safe, affordable housing by naming overcrowding and dilapidated housing conditions as a significant issue affecting all North Slope communities. There are a variety of factors contributing and exacerbating the housing crisis in the North Slope, including lack of building materials and high shipping costs, a lack of energy efficient infrastructure and the high cost of fuel (despite the existence of natural gas in the region), land disputes and acquisition difficulty, unique environmental considerations for construction, and overcrowding due to the lack of affordable housing. Population growth rates reported by the North Slope Borough predicts a population growth estimate of 1,262 or

2,886 people by the year 2035.[51] To address the current housing needs of residents and to meet anticipated needs, the rate of housing construction will have to increase significantly.

Overcrowding & Affordable Housing

As per the most recent 2020 Regional Housing Needs Assessment conducted by TNHA, housing in the North Slope is tight, with 41.2% households experiencing overcrowding (1+ ppl per room) and 8.8% households reporting to be extremely-overcrowded (2+ ppl per room).[52] The Alaska Housing Finance Corporation (AHFC) reported in an 2018 North Slope Housing Assessment that the North Slope was experiencing overcrowding at more than 8 times the national average. They also report that overcrowding is more prevalent outside of Utqiaġvik where less units are available for sale or to rent.[53] Another factor affecting the construction of new housing stock is complex land ownership and disputes over the usage and buying or selling of land.

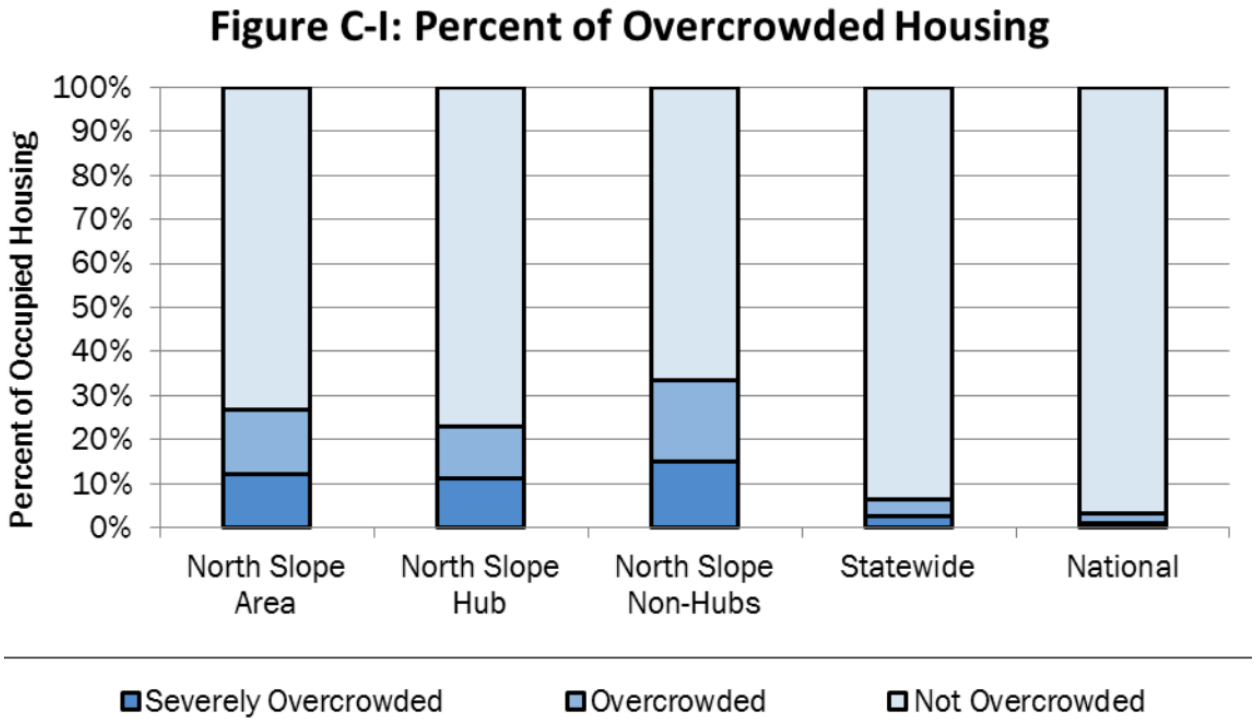


Image 20: AHFC 2017 Overcrowding Data

Related to overcrowding is the lack of affordable housing in the North Slope. As previously stated in the section on labor statistics, the unemployment rate reported by the State of Alaska for the North Slope region in March 2024 was 5.2%, higher than the national average, while cost

[51] North Slope Borough Part II | Chapter 11: Housing Comprehensive Plan 2019-2039
[52] TNHA 2020 Regional Housing Needs Assessment
[53] AHFC 2017 Alaska Housing Assessment

of living, previously discussed in section 2.6 of this document, is also higher than the national average. With high unemployment and high cost of living, the North Slope is especially in need of affordable housing. The U.S. Census 2022 American Community Survey 5-Year Estimates found a homeownership rate of 46.7% in the North Slope Borough, much lower than the 66.1% rate for the rest of Alaska. In 2015, TNHA reported having a waitlist of more than 300 people for their affordable housing programs, indicating the critical need for more affordable housing in the region.

While U.S. Census and Alaska Housing Finance Corporation figures report that North Slope residents are not cost burdened, i.e. a significant number of households are not spending more than 30 percent of their monthly income on housing, these figures do not reflect the large expense incurred to maintain older homes in the Arctic. Additionally, overcrowded households may report more income than households with a lower occupancy rate, thus eliminating overcrowding may reveal the true nature of cost burden for home expenses.[54]

The Alaska Rural Development State Office has stated that current, traditional sources of public funding for rural housing projects cannot keep up with demand. In the office's 'Alaska Rural Homeownership Resource Guide,' they have recommended the leveraging of programs which increase the accessibility for mortgage financing in rural Alaska, where currently the use of mortgages is rare.

Historically, there have been many reasons why rural Alaskan residents have not utilized mortgages, including a lack of cash, lack of mortgage financing lenders, high cost of construction, lack of water and sewer infrastructure, issues with acquiring homeowners insurance, and limited private land availability. The Alaska Rural Development State Office recommends a variety of strategies to overcome these obstacles, such as the creation of partnerships between housing developers and lenders, innovation in bringing down construction costs, and working to create a reduction in up-front homeownership costs.[55]

Lack of Building Materials, High Shipping Costs, and Home Financing

Many construction materials needed for new homes are not readily available in the North Slope and shipping costs can be prohibitive - in many cases adding 30% to the cost of building the home. In particular, gravel sources are in dire need in all of the communities in the region. Residents have also reported that acquiring other home necessities, such as appliances, repair materials, and repair services is also extremely difficult.

Related to the issue of high building costs is the problem many residents face with applying for financing. Currently a 3 bedroom 2 bath 1,000 sq ft home in Utqiaġvik costs approximately $300,000 to build, which is far above most family income limits, and banks do not have special

[54] North Slope Borough Comprehensive Plan 2019 — 2039
[55] Alaska Homeownership Resource Guide

rules for rural Alaska to agree to financing such expensive homes. In the more outlying communities, the cost to build is even higher due to increased shipping costs. Residents have also reported trouble acquiring home insurance. For many families, the only path toward homeownership available is to apply for programs offered through local housing authorities which will help mitigate costs and logistics of construction and offer financing options they would not be able to receive through a traditional lender.

The use of mortgages to finance homeownership and/or the construction of new homes in most of rural Alaska is infrequent, and the same is true for the North Slope. The USDA's Alaska Rural Homeownership Resource Guide[56] states that a "concerted effort on the part of Native leadership, federal and state agencies, Native housing organizations, private sector banks, the construction and real estate industry, and non-profit and philanthropic organizations' will be necessary to make mortgages work in rural Alaska." Some of the suggested strategies listed by the guide for reducing homeownership costs include increasing home energy efficiency, lowering the cost of construction, increasing financial literacy, developing local financing programs which cater to specific community needs, developing a risk mitigation pool, and streamlining the establishment of site control for development.

Energy Efficiency

The U.S. Census 2022 American Community Survey 5-Year Estimates reports that the majority of the 2,625 housing units in the North Slope were built in the 70s, 80s, and 90s, with no housing units built since 2020 at the time of the survey.[57] Many of the homes surveyed by Alaska Housing Finance Corporation have a 1-Star home rating, the least efficient rating, which uses approximately four times more energy than a maximum efficiency home.[58] Given the high cost of fuel in the region, the extreme weather, and the lack of infrastructure in communities outside of Utqiaġvik for homes to utilize natural gas, this is both a serious financial and safety issue for the region which must be addressed.

Constructing the Arctic Home

Special consideration must be taken in order to make home construction financially feasible and environmentally sustainable for the residents of the North Slope. As previously stated, much of the current housing stock is dated - and due to shipping costs - made with cheap materials. In addition to these issues, there are unique environmental factors for Arctic building which makes simply replicating home construction techniques from the lower 48 unsustainable.

Issues with moisture and frost on water, sewer, A/C, and other mechanical systems in the Arctic are a challenge in every community in the North Slope. Pipes often freeze, moisture is trapped in walls, causing mold, and sewer systems must be heat traced, which often fails and requires

[56] https://www.rd.usda.gov/files/Alaska%20Rural%20Homeownership%20Guide%2001_11_17_v2.pdf
[57] US Census, North Slope Borough
[58] AHFC 2017 Alaska Housing Assessment

maintenance. Many homes in the North Slope were built with boilers which were not meant to operate in arctic conditions.[59] The thawing and refreezing of land often creates an unstable surface on which to build and due to the shortage of gravel, all housing construction happens on pilings, which require installation in the winter with specialized augers. All construction in the Arctic occurs on wetlands, which require expensive and time consuming environmental assessments. Villages often have inconsistent drainage mechanisms, and houses may be subject to water pooling underneath.

	Alaska	North Slope Borough	Anaktuvuk Pass	Atqasuk	Kaktovik	Nuiqsut	Point Hope	Point Lay	Utqiaġvik	Wainwright
Occupied housing units	260,561	2,103	73	33	61	125	203	45	1,425	138
Lacking complete plumbing facilities	3.7%	10.8%	26.0%	0.0%	1.6%	16.0%	17.2%	31.1%	8.6%	12.3%
Lacking complete kitchen facilities	2.8%	6.8%	26.0%	0.0%	3.3%	10.4%	9.4%	13.3%	5.3%	5.8%
No telephone service available	1.2%	4.0%	0.0%	0.0%	0.0%	0.0%	4.9%	6.7%	4.6%	5.1%

Source: U.S. Census Bureau, 2017-2021 American Community Survey Five-Year Estimates

Image 18: *The U.S. Census records show a significant number of homes in the North Slope do not have adequate plumbing or kitchen facilities, especially in Anaktuvuk Pass, Nuiqsut, and Point Lay.*

The aesthetics of future homes is also a consideration. Most current structures in North Slope communities lack a consistent style and do not reflect local stylistic cues. While safety and sustainability concerns take precedence, cultivating a local building aesthetic would contribute to each community's residential quality of living and increase the quality of experience for tourists in places where increased tourism is sought after. Innovations for supply chain efficiencies, financial assistance, and arctic building practices which are affordable to implement, and more, are necessary for addressing the North Slope's current housing crisis.

[59] Voice of the Arctic Inupiat Community Needs Assessment 2023

Recent Home Construction

Some units have been completed in the last few years which have helped alleviate some of the burden of overcrowding, such as the recent completion of a 10-plex in Anaktuvuk Pass by the NSB, which was the most recent in a series of constructions undertaken by the borough, with other recent multiplexes in Point Hope, Nuiqsut, Point Lay, and Atqasuk. ASNA owns a recently completed multiplex, and another separate duplex, for employee housing near the hospital in Utqiagvik.

TNHA has been working on completing three duplexes in Point Lay, which are expected to be occupied by the end of this summer, 2024. In addition, the Native Village of Kaktovik and TNHA are currently partnered to build a duplex in Kaktovik in the near future. While there is still much work to be done, all of these projects are a step in the right direction for addressing the North Slope's housing issues.

2.7.2 Health, Safety, and Social Services

Image 19: *Samuel Simmonds Memorial (built 2013), has 10 inpatient and 2 delivery rooms.*

There are two major health suppliers in the North Slope: the Arctic Slope Native Association (ASNA) and the North Slope Borough (NSB) Health & Social Services Department. The largest health facility in the region is Samuel Simmonds Memorial Hospital, located in Utqiaġvik. Many residents from outlying villages fly into Utqiaġvik, Fairbanks, or Anchorage when they are in need of specialized healthcare. Maniilaq Association, based in Kotzebue, provides health services in Point Hope, and services in Anaktuvuk Pass are provided through the Tanana Chiefs Conference, based out of Fairbanks. All other villages have clinics run by the NSB and receive regular fly-in visits from dentists, optometrists, and periodically, behavioral health services.

Many different entities patchwork social service provision across the region, including: each tribal village association operating within their respective community, the Arctic Slope Native Association (ASNA), Inupiat Community of the Arctic Slope (ICAS), North Slope Borough (NSB), Tanana Chiefs Conference (TCC), Maniilaq Association, and the State of Alaska.

The NSB provides the following in Utqiaġvik: Behavioral Health; Wellness Clinic; Public Health Nursing; Community Health Aide Program; Senior Program; Eye Clinic; Women, Infant, and Children's Program; Allied Health Program; Arctic Women in Crisis Shelter; Children Youth Services; and the Vet Clinic. These services are available to residents from the other communities who fly into Utqiaġvik, along with some of the services, like the Community Health Aide Program, which extend into the other communities themselves.

ASNA provides health services out of Samuel Simmonds Memorial Hospital, located in Utqiaġvik, an array of social services, assisted living at Aimaaġvik Assisted Living, the Pre-Maternal Home for expectant mothers and their children, the Medical Travel and Funeral Assistance program, and scholarship opportunities for medical students.

ICAS provides the following to membership: Tribal Child Protection, Foster Care, Elder caregivers programming, financial assistance, burial assistance, and emergency financial assistance. The most critical need in the village is the development and provision of childcare services, a juvenile detention facility, and alcohol and drug misuse treatment centers.

Hope Community Resources operates a mental health facility in Utqiaġvik which provides in-home and respite supports, along with an assisted living home with mental and behavioral health support.

Substance Abuse Treatment

There are currently no inpatient facilities for substance abuse treatment within the North Slope. The NSB Health Department provides outpatient treatment through the Integrated Behavioral Health Program, which also provides referrals for inpatient treatment elsewhere. The NSB provides one-time scholarships to adults to travel to a treatment facility, often being referred to the Lakeside-Milam's 28 day residential treatment program in Washington State. Youth can also utilize the scholarship if given a referral, once when they are still considered a minor, and again as an adult. Many North Slope stakeholders would prefer to have a treatment facility located within the North Slope, due to the short duration of the current program being offered, the expense of the program, and the lack of culturally appropriate treatment options. The VOICE 2023 Community Needs Assessment highlights resident's feelings that alcohol and substance abuse is a recurring problem in their community and has a noticeable effect on an individual's overall wellbeing. The residents also draw a connection between intoxication and instances of domestic violence. Most of the communities in the North Slope have a ban on the sale and importation of alcohol, and some also have a ban on the possession of alcohol, and are considered "dry communities." Kaktovik recently voted to lift their ban on the import, sale, and possession of alcohol in 2020.[60]

Mental Health Services

While some mental health services exist within the North Slope, and telehealth behavioral services programs across the state are becoming more robust, more services and greater accessibility for services are needed. The Voice of the Arctic Iñupiat (VOICE) 2023 Community Needs Assessment shares that some residents' included the need for improved mental health services and support for those affected by domestic violence in their discussions on community resilience.

Homelessness Facilities or Services

There are currently no shelters for people experiencing homelessness within any North Slope community or housing case management programs. In Utqiaġvik, the Native Village of Barrow administers an assistance program which can place tribal members in local hotel rooms on a temporary basis. On average, NVB assists 20 people a year, with each person allotted $5,000 in assistance per year.[61] The NSB previously awarded NVB a grant for $200,000 in the pursuit of locating a suitable facility for a shelter.

[60] Kaktovik Voters Overturn Decades Old Alcohol Ban
[61] NSB Comprehensive Plan 2019-2039

Table 24: *North Slope medical facilities by community*

Community	Facility
Anaktuvuk Pass	**Robert Ahgook Memorial Health Clinic**
Atqasuk	Atqasuk Health Clinic
Kaktovik	Tom Gordon Health Clinic
Nuiqsut	Uyagagvik Health Clinic
Point Lay	Point Lay Clinic
Wainwright	Wainwright Health Clinic
Point Hope	Point Hope Medical Clinic
Utqiagvik	Samuel Simmonds Memorial Hospital

Healthcare Accessibility

Healthcare accessibility, access to food, and access to clean drinking water and sewage treatment are all areas of concern North Slope residents have reported as factors in their overall wellbeing.[62] Access to subsistence foods increases food security and offsets the high cost of living in the arctic, but increased reliance on food shipped into communities decreases freshness and availability of much of the food regularly utilized by families. Lack of easily accessible healthcare and mental health support, and the expense of acquiring these through traveling to other communities, are also among top concerns for community members.

Image 20: *Nalukataq is the spring whaling festival of the Iñupiat Eskimos of Northern Alaska. An opportunity to give thanks and to distribute whale meat to the community.*

[62] Voice of the Arctic Iñupiat (VOICE) 2023 Community Needs Assessment

2.8 NATURAL RESOURCES

2.8.1 Natural Gas

Natural gas fuels approximately 93% of all households in Utqiaġvik. The nearby Barrow Gas Fields make heating homes in Utqiaġvik one of the least expensive areas in the state. The U.S. Navy conducted exploration within the National Petroleum Reserve in Alaska (NPR-A) (1944-1952), which led to the discovery of natural gas south of Utqiaġvik. Since then, a number of gas fields have been identified, including The South Barrow Gasfield (1949), East Barrow Gasfield (1975), and Walakpa (1976). In 1984, the federal government, under the Barrow Gas Fields Transfer Act, conveyed entitlement of 19 existing wells and subsurface resources to the North Slope Borough for community use.[63]

During the first half of 2011, the South Barrow Gasfield produced 1,115,000 cubic feet of gas per day (Coffman 2014). In 2013, gas production began dwindling; additional well drilling in Walakpa made up for much of the declining productivity of South Barrow. The Walakpa Gasfield is located southwest of Utqiaġvik. A drill program for the Utqiaġvik (then Barrow) community began in the early 1990s, resulting in the construction of eight wells, infield pipelines, a gathering facility, a field generation facility, and 16 mile aboveground transmission lines connecting the gasfield to BUECI.

During the winter of 2011, five horizontal wells were drilled: Savik 1 and Savik 2 at East Barrow and Walakpa wells 11, 12, and 13 in Walakpa (Petroleum News, 2013). Image 21 depicts gas pipelines in Utqiaġvik (Barrow) and Browerville and location of gas wells. Production at the East Field continues through an upgraded six inch aboveground transmission pipeline to the gas handling facility at South Field. The 2011 program upgraded the six inch pipeline from East Field and established new well houses on all the wells drilled under the program. The wells in both East Barrow and Walakpa are connected with six-inch diameter pipes terminating at the gas handling processing facility located at the South Barrow Gasfield.

Utqiaġvik is the staging ground for Chukchi and Western Beaufort Sea offshore oil and gas development. Thirty percent of the world's undiscovered natural gas and natural gas liquids are estimated to occur in the Outer Continental Shelf and Circum-arctic region. Increased offshore exploration can be expected to increase with receding sea ice. Since 2005, there has been over $3.5B dollars of commercial investments in Chukchi and Beaufort Sea offshore development. UIC operates a Compressed Natural Gas (CNG) vehicle fuel station in Utqiaġvik, selling for $2.75/gal.eq in 2018. For comparison, in October 2018, the ASRC operated fuel station provided $5.90/gal gasoline and $6.40/gal diesel.

[63] 2015 Barrow Comprehensive Plan

Nuiqsut is also powered by natural gas. Since 2008, Nuiqsut and ConocoPhillips Alaska have entered into an agreement to have natural gas piped along the Nuiqsut Natural Gas Pipeline (NNGP) from Alpine Discovery Project to the community's electric power generation facility to be converted into electricity. Most residences and some community and commercial buildings receive natural gas as well, cutting energy costs for the area significantly. Gas connections within the community are managed by the Nuiqsut Utility Cooperative (NUC) and backup power is supplied through diesel generation.

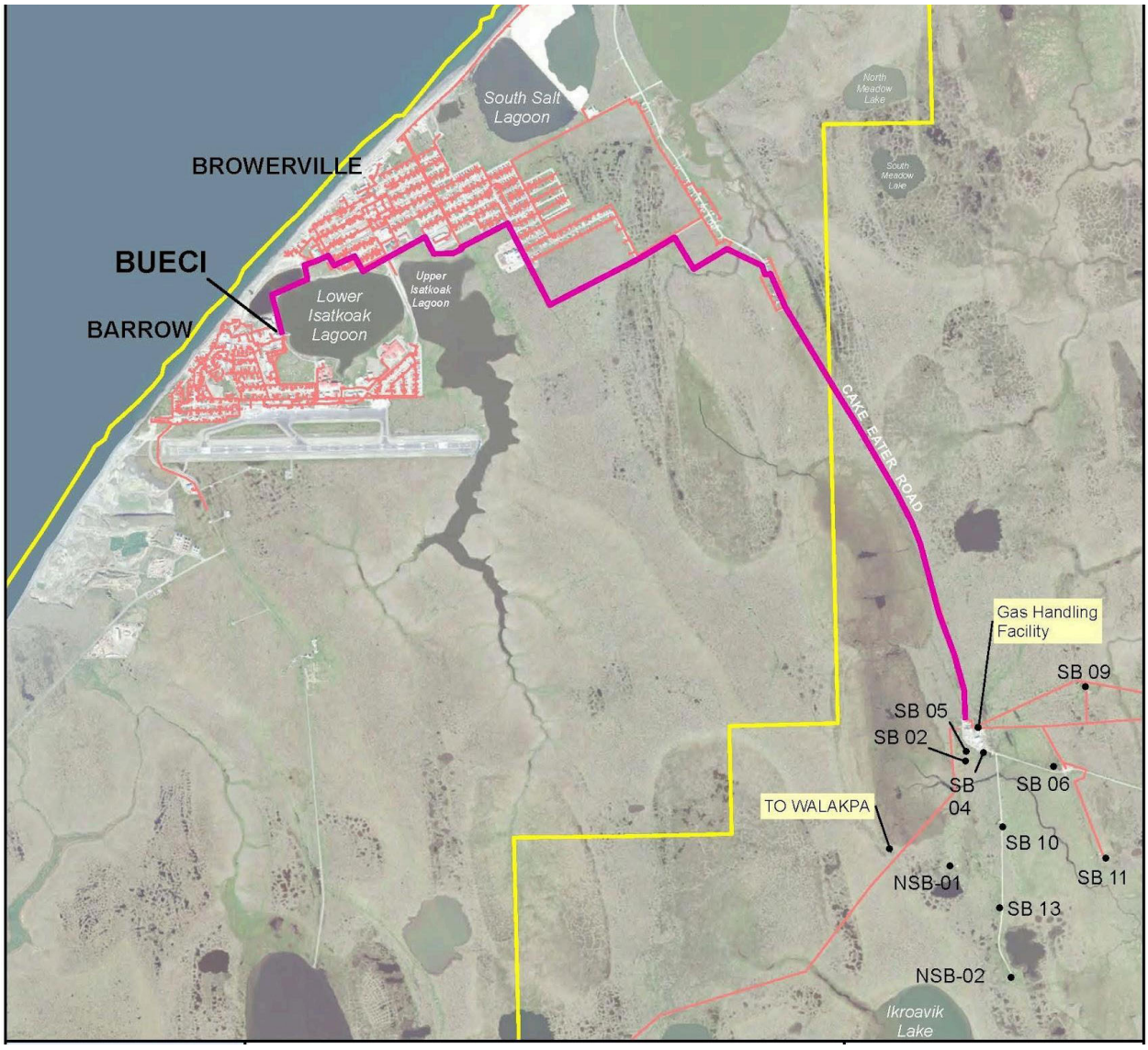


Image 21: *Existing and abandoned gas wells of Barrow. (Request map of gas wells active/inactive throughout the North Slope)*

2.8.2 Oil Exploration & Production

Prior to 1839, when English explorer Thomas Simpson reported oil seepages on the northern coast of Alaska, Iñupiat residents were aware oil was present in what is now the North Slope. President Harding created the National Petroleum Reserve No. 4 in 1923 as an emergency oil supply for the U.S. Navy, marking the first federal step in the development, extraction, and transport of oil out of the region. As with any resource development project, especially one of the size and potential for energy significance found in the North Slope, many different entities became involved in the development over time, from tribal associations and corporations, to large private organizations, and the continued involvement of the State and Federal governments. The development of the region for the purpose of oil extraction continued alongside conservation activities in the North Slope, the largest conservation area designated was the Arctic National Wildlife Refuge (ANWR) by Eisenhower in 1960. The Arctic National Wildlife Refuge is roughly 19.6 million acres and is managed by the U.S. Fish and Wildlife Service.

Another major milestone in the development of oil production in the region was the completion of the Trans-Alaska Pipeline in 1977, which allowed for faster and more reliable transport of oil from the North Slope, past Fairbanks, and to the port of Valdez for transport to market by oil tankers. The construction and ongoing maintenance to the pipeline, along with shipment of supplies north for oil extraction, prompted the construction of a road in 1974, now known as the Dalton Highway, which starts north of Fairbanks and runs 414 miles to Deadhorse, terminating just a few miles from Prudhoe Bay itself. The Dalton Highway is the only road into the North Slope.

The Barrow Gas Field Transfer Act of 1984 congressionally mandated the Secretary of the Interior to convey subsurface estates of the Barrow gas field and Walakpa gas discovery site, related support facilities, funds and other surrounding land interests to the North Slope Borough. This subsurface land transfer gave the NSB ownership of and authorization for exploration and harvesting of oil and gas within 320 acres of land near Utqiaġvik.

Leasing and land use activities within the North Slope in relation to exploratory drilling and associated infrastructure, such as ice roads, require a lengthy and complex process of navigating regulations and requirements. Due to varied land ownership, federal, municipal, and tribal management regarding land in the North Slope, petroleum development and discovery must pass through a variety of processes before being undertaken. Taxes levied against oil and gas leasing are the North Slope Borough's main source of revenue, with undiscovered estimates of oil and gas updated by USGS which show further oil and gas reserves in the region, onshore and off, the North Slope Borough expects to receive steady resource extraction tax revenues into the future.[64] The North Slope Borough's total revenues from property taxes in

[64] NSB Comprehensive Plan 2019-2039

2023 were $404,230,014, the majority of which were collected from oil and gas infrastructure.[65] The assessed value for oil & gas holdings by the NSB in 2023 was $22,754,647,650.[66]

As mentioned previously in the 'Economic Relationships' section of this document, the State of Alaska manages the National Petroleum Reserve-Alaska (NPR-A) Impact Grant Program, which is available to provide funding to the North Slope Borough, Utqiaġvik, Wainwright, Atqasuk, and Nuiqsut for mitigating effects from oil and gas development. Funds have been used for a variety of community resilience and infrastructure projects undertaken by these communities and the borough.

While the North Slope Borough and the State of Alaska both receive revenue from oil and gas industry property taxes, the State of Alaska also receives revenues from an oil and gas production tax at 35% - which is more volatile given the unpredictable nature of the market and has recently been in decline. Royalties for state-owned leased land and an oil and gas corporate net income tax are also levied by the State. Revenue from mineral leases on state-owned lands and from federal mineral revenue-sharing payments go into the Permanent Fund for investment, from which each Alaskan resident receives an annual dividend payment. In 2023, the PFD dispersed to each Alaskan was $1,312.

Though the State and the borough bring in significant revenue from oil and gas taxation, royalties, and land leasing, there are costs associated with oil and gas activities for which local and state governments are responsible for. The NSB maintains around 100 miles of roads, along with boat ramps, boat landings and ports, nine public airports, and public roads, among other infrastructure and land management needs. Airport usage is greatly increased by the transportation needs of the oil and gas industries. In 2015, the NSB also completed a new water and wastewater treatment facility in Prudhoe Bay, with the overall investment totalling approximately $75 million. The borough also provides and pays for emergency services on oil field roads. In addition to costs incurred by the borough, the State of Alaska also allocates funding toward the prevention and mitigation of oil and hazardous substance emergencies.[67]

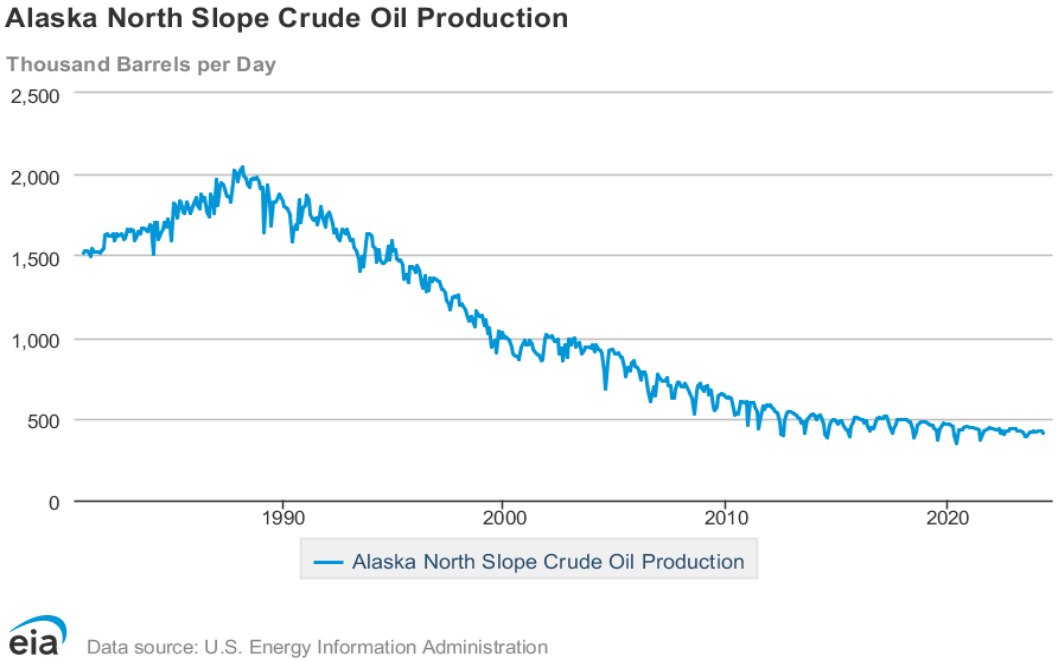
Many national and international companies hold leases for oil extraction or discovery purposes in the North Slope, including ConocoPhillips Alaska, Hilcorp North Slope, Lagniappe Alaska, LLC, Santos, Savant Alaska, LLC, International Hydrates Test Project, Balcony Natural Resources, Inc, Caelus Energy, and many more. In August of 2019, BP announced it would be selling its Alaska assets to Hilcorp Energy, marking a large shift in ownership and management of oil production in Prudhoe Bay.

Though ConocoPhillips Alaska is Alaska's largest producer of crude oil and owns the most exploration leases, North Slope exploration and extraction has diversified, with 63 current lease

[65] U.S. Department of the Interior, Natural Resources Revenue Data
[66] 2023 NSB Popular Annual Financial Report
[67] U.S. Department of the Interior, Natural Resources Revenue Data

holders from seven countries.[68] Prudhoe Bay, Alpine Field, and Kuparuk River in the North Slope constitute the majority of the state of Alaska's oil production.

Though new projects are underway which may increase output in the future, crude oil production in the North Slope has decreased over time. North Slope crude oil production in May 2024 was 408,000 barrels per day.[69]

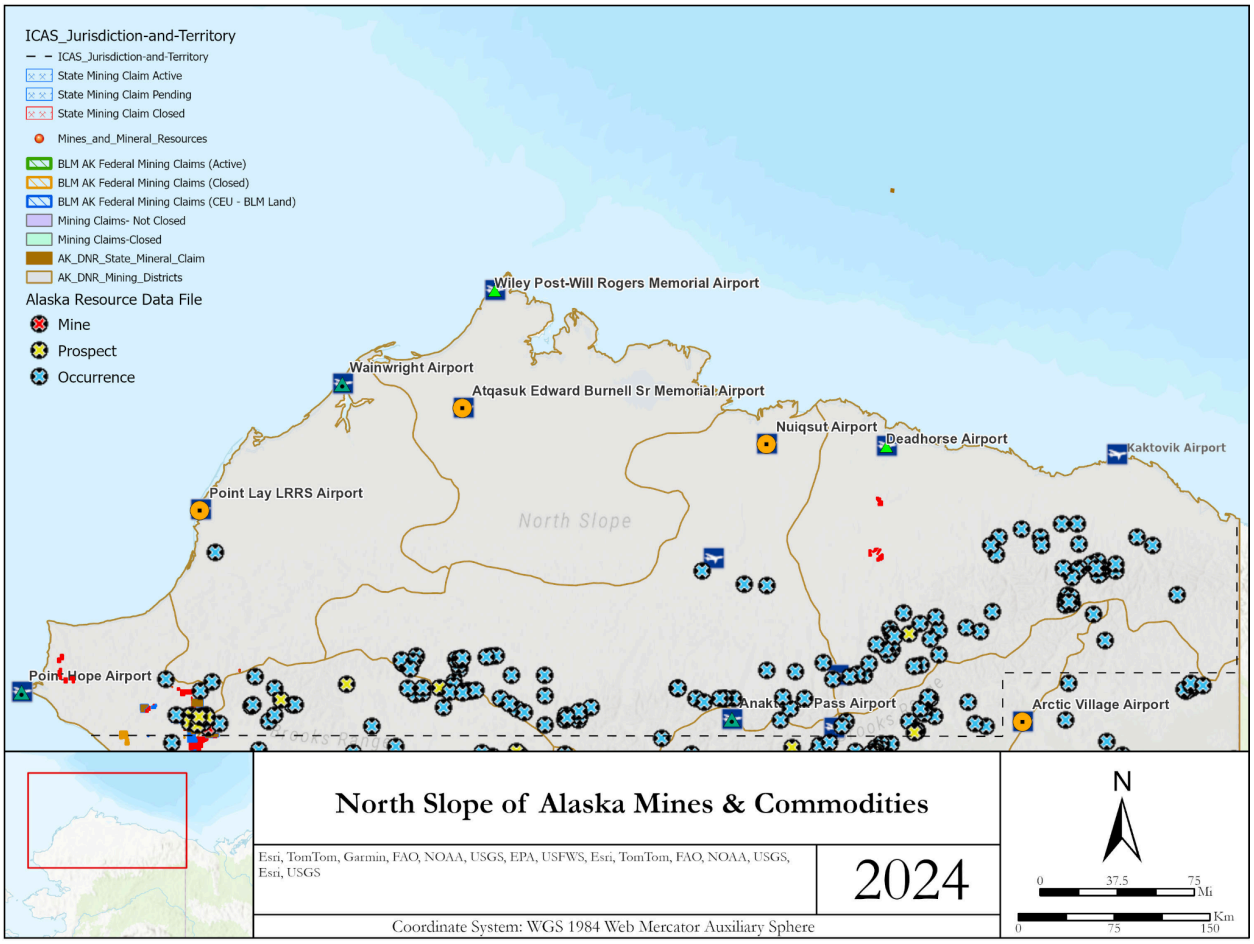


The North Slope Borough lists some concerns and impacts faced by North Slope communities and the surrounding land with regards to oil and gas production in their North Slope Borough Comprehensive Plan 2019 -2039.[70] Increased ice road and winter trail activity associated with further development projects will require more environmental impact research and tundra conservation efforts. In addition, many activities and byproducts of oil production can have negative effects on subsistence activities undertaken by the surrounding communities. Subsistence activities are an integral part of the North Slope cultural resilience, food security, and continued stewardship of the land.

Another consideration lies in the rate of employment - the NSB benefits from tax revenues received from oil and gas activities in the region, but few residents of the North Slope are employed by the industry. Individuals and households are under strain from the high cost of living and lack of employment opportunities in the area and job connections to this lucrative industry would create more economic resilience across the North Slope.

[68] U.S. Department of the Interior, Natural Resources Revenue Data
[69] U.S. Energy Information Administration
[70] NSB Comprehensive Plan 2019-2039

2.8.2 Gravel



Mine ID	Operator	Mine Name	Status	Primary Canvass Code	Commodity
5001261	ASRC Energy Services Alaska, Inc.	Power Screen Chieftan 1400 Kuparuk	Abandoned	SandAndGravel	Construction Sand and Gravel
5001729	State of Alaska DOT	Sag Screener	Abandoned	SandAndGravel	Construction Sand and Gravel
5001742	Brice Incorporated	Brice Inc. Portable #D	Abandoned	Stone	Crushed, Broken Stone NEC
5001883	Orion Marine Contractors	Cape Lisburne	Abandoned	Stone	Crushed, Broken Stone NEC
5001898	Cruz Construction Inc.	Cruz Grizzly Crusher	Intermittent	SandAndGravel	Construction Sand and Gravel
5001965	Alaska Frontier Constructors, Inc.	AFC Cone & Jaw Crusher	Abandoned	SandAndGravel	Construction Sand and Gravel
5002009	AKCC, Alaska Civil Constructors LLC	AKCC Portable #1	Abandoned	SandAndGravel	Construction Sand and Gravel
5002010	AKCC, Alaska Civil Constructors	AKCC Portable #2	Abandoned	SandAndGravel	Construction Sand and Gravel
5002011	AKCC, Alaska Civil Constructors LLC	AKCC Portable #6	Abandoned	SandAndGravel	Construction Sand and Gravel
5002058	UIC Construction, LLC	UIC Gravel Pit #1	Abandoned	SandAndGravel	Construction Sand and Gravel
5002059	ASRC Construction Holding Company	Barrow City Pit Screen	Abandoned	SandAndGravel	Construction Sand and Gravel

Table XX. *List of active/inactive surface gravel mines registered with MSHA*[71].

[71] https://www.msha.gov/data-and-reports/mine-data-retrieval-system

Gravel is an integral material to the expansion and maintenance of any community, but it is in short supply in the North Slope. The ability to find viable sources of gravel and the quality of gravel varies by community, but one constant is that most North Slope communities do not have enough gravel to sustain their current needs. In light of the housing shortage across the region, the shortage of gravel is a particularly pressing issue. In addition, many communities only have enough gravel to sustain community projects, making acquiring gravel for private use impossible for many residents. One to two years is needed to obtain a permit for a new material source, depending on environmental issues, further adding to acquisition complications.

Utqiaġvik

In the Utqiaġvik area, gravel material for construction is limited. There are two active commercial material source mining pits used to supply the gravel needs for non-airport construction and maintenance needs.[72]

- **ASRC SKW Eskimos, Inc.** operates a pit on land owned by the City of Utqiaġvik and located at the southwest end of the airport. This pit is reaching the end of its useful life. Although it is still mined, it will not be able to be the sole provider for large gravel needs. Expansion is possible and estimated yield has been discussed as high as one million cubic yards (CY). The soils are classified as gravel, producing sandy gravel and gravelly sand.
- **UIC** opened a new gravel pit off east of the Wiley Post–Will Rogers Memorial Airport runway in 2023. The soils here are generally sandier/siltier than the material in the SKW pit and are poorly graded sand with silt and gravel.
- **DOT -** During the construction of the airport, the material was mined from a Alaska Department of Transportation (ADOT) pit located between the runway and the SKW material pit on state land. Expansion of this pit is limited as minimal materials remain within State property. Also, there is a petroleum pipeline that is located along the south boundary of the pit. Emaiksoun Road limits expansion from the east.

Gravel needs for community use includes landfill cover, road and culvert maintenance, infrastructure development, parking area maintenance, as well as for private use and capital projects. Large scale development, such as the Samuel Simmonds Memorial Hospital, or Top of the World Hotel, created additional demands for gravel.

As part of the Barrow Airport Master Plan, ninety-five borings were drilled in and adjacent to the existing material sites to depths of 20 to 50 feet. The West Material Source is located on state land adjacent to the existing DOT material pit. Another source, East Material Source, is south and east of the runway. A portion of the northern area that was explored is located on state land, but the majority of the exploration area was conducted on land with surface rights owned by UIC with BLM subsurface rights. General conditions found seem favorable to a sizable material source that could produce gravely sands and sandy gravels.

[72] Barrow 2015 Comprehensive Plan

Utqiaġvik is a growing community and will require gravel to support future development. Construction and maintenance needs will drive the need for well-graded construction material, while providing a material that is cost efficient. The easiest and quickest sources of additional material are expansions of the UIC and SKW/City of Utqiaġvik pits. However, these pit expansions may produce limited material that is of lesser quality. A program for expansion of existing pits should be considered where practical and feasible, along with a careful evaluation of new material sources that could be developed to serve the community.

Anaktuvuk Pass

Anaktuvuk Pass is the only community with access to an adequate supply of construction grade material. There is one material source site on the north side of the village, owned by the Nunamiut Corporation. In 2016, it was reported that 80,000 cubic yards of material was still available, and producing 3 inch minus (some sand and silt) construction gravel.[73]

Atqasuk

Historically, Atqasuk has utilized gravel sites located at the nearby Imaġruaq Lake and Meade River, but these previously used sites were officially designated as depleted in 2013. Both the lake and the river areas have had additional potential dredging sites identified, but there are financial limitations for purchasing dredging equipment and mobilization of the project, along with concerns for producing the necessary hydrology report required by the Department of Natural Resources (DNR) and obtaining permits for the project. Since the depletion of the local sites, the community has maintained a supply of gravel by hauling gravel from Utqiaġvik via ice road, but gravel sources in the hub community are also dwindling and the cost of shipping from Utqiaġvik makes larger projects which require the use of gravel cost prohibitive. It is estimated that Atqasuk requires about 1,800 cubic yards of gravel per year for regular maintenance needs. Further ice road construction would increase hauling opportunities for gravel development from nearby areas, especially those slated for possible oil development as well.[74]

Kaktovik

There is no gravel pit permitted on Barter Island, where the Kaktovik town site is located, but there is an adequate gravel site nearby on the mainland. 90,000 cubic yards of gravel was stockpiled on Barter Island during the airport relocation project in 2015 for use in the community. The mainland gravel pit itself is located on KIC land, but is within the bounds of ANWR and therefore needs to be in compliance with the purposes of ANWR, increasing regulatory needs for mining and material transport. [75]

Nuiqsut

Though there are a few sites along the Nigliq Channel which have been utilized as gravel sources, Nuiqsut is in need of another gravel site for road repair in particular. The sites which

[73] Anaktuvuk Pass 2016 Comprehensive Plan
[74] Atqasuk 2017 Comprehensive Plan
[75] Kaktovik 2021 Comprehensive Plan

were permitted and used in the past are either near depletion or are reserved for large capital projects.[76]

Point Hope

Another viable gravel source is needed in Point Hope, as previous gravel extraction occurred from beach sites, resulting in possible erosion issues and sub-par quality gravel. For these reasons, gravel extraction from all beach sites has been discontinued. There is a small gravel pile west of the landfill, owned by the NSB, which is used for maintenance purposes and small projects, but is not an adequate source for larger projects. Gravel for larger projects must be barged to the community, making undertaking larger projects cost prohibitive. Four sites in the area have been shortlisted for further investigation as possible future gravel sources, with one of these sites, located 18 miles southeast of the village, marked as particularly promising.[77]

Point Lay

The gravel source for Point Lay is located on the shore of Kokolik River, with mining taking place during the summer.In 2013, the stockpile was measured to be just over 118,000 cubic yards in size. In the 90s, two separate dredging projects were undertaken, with both sites upstream of the fresh water intake. Future dredging projects will need to take water quality and any downstream effects into account.[78]

Wainwright

Olgoonik Corporation operates a gravel source east of town close to Wainwright Inlet. Gravel is mined during the winter months when the lagoon is frozen, requiring projects which need a significant amount of gravel to be coordinated in advance. Wainwright's 2045 comprehensive plan anticipates the need for the community to develop additional housing to alleviate overcrowding, which will most likely require conducting geotechnical surveys for another nearby gravel source for new roads and other infrastructure.[79]

Shipping Gravel

A 2014 NSB PAR estimated that transporting gravel from Utqiaġvik to Atqasuk via ice road cost between $450 and $600 per cubic yard.

DOT has previously paid premium prices to barge gravel from Nome when necessary, but this is not a viable solution for projects with a smaller budget.

[76] Nuiqsut 2022 Comprehensive Plan
[77] Point Hope 2017 Comprehensive Plan
[78] Point Lay Comprehensive Plan 2017-2037
[79] Wainwright Comprehensive Plan 2045

3. SWOT ANALYSIS

A Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis is an activity which guides participants into creating lists and mind maps for discovering, generally speaking, what works and what requires our attention in any given endeavor, to assist with decision making:

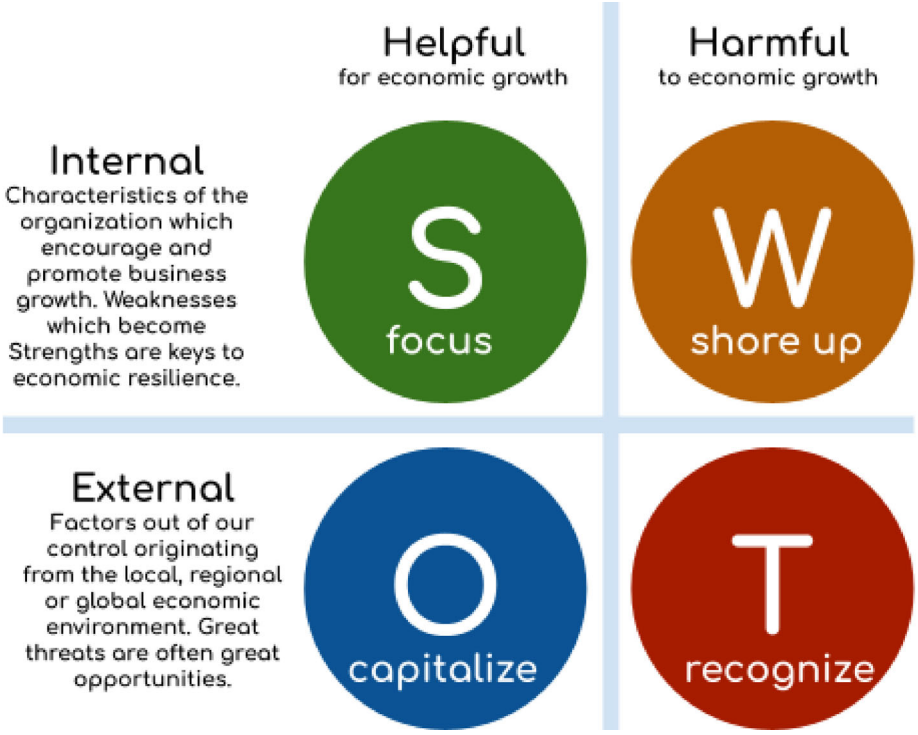


Image 23: *A SWOT draws a distinction between internal/external and helpful/harmful factors and how to direct a comprehensive strategy. In general we want to* a) *Focus on strengths. b) Shore-up weaknesses. c) Capitalize on opportunities, d) Recognize threats.*

- **Industry Clusters:** Clusters are usually identified from demographic and census data, but asking our participants allowed us to gauge what the "perceived" clusters are. We can interpret this as industries which workers have the most confidence in contributing to the local economy.
- **Resilience:** Economic and environmental factors which affect economic stability, such as large companies shutting down, storm and flood hazards, etc
- **Big Ideas:** A place for blue sky thinking, where everyone can let their imagination run wild. Maglev trains throughout the north slope, rocket launch facilities, 100 acre hydroponic farms, to feed the entire North Slope, anything goes.

Pictures from the SWOT meeting rooms:

Anaktuvuk Pass

Atqasuk

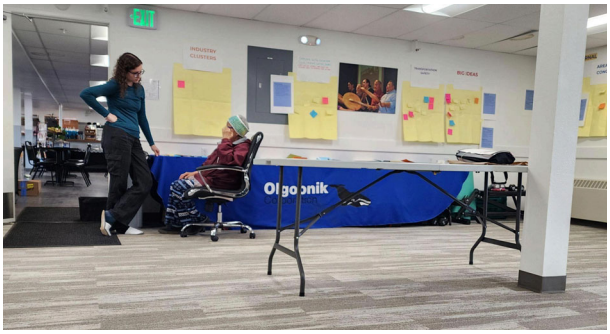
Kaktovik

Nuiqsut

Point Hope

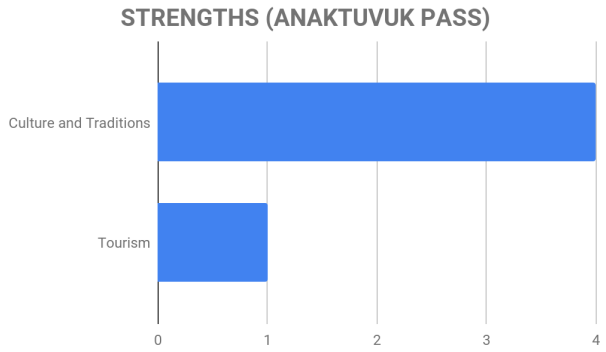
Point Lay

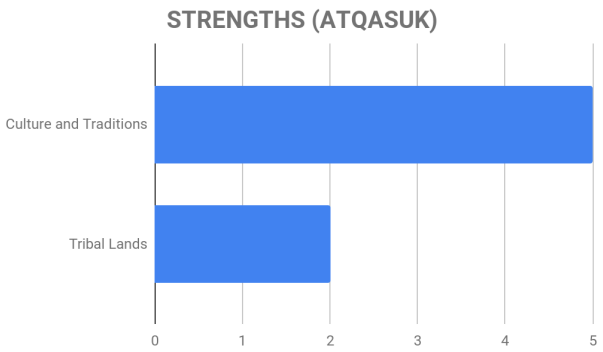
Utqiagvik

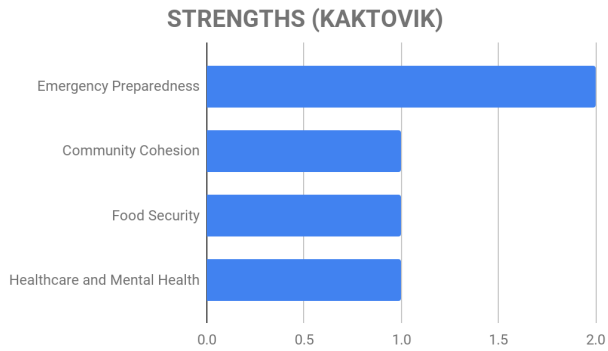


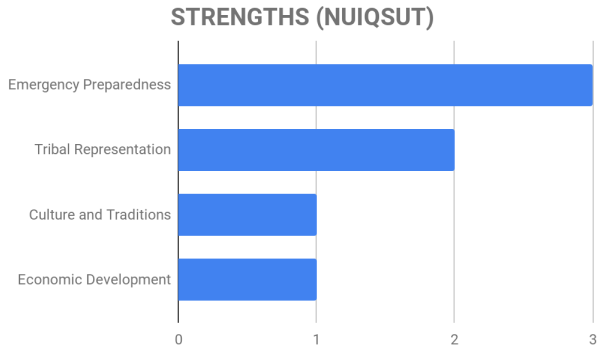
Wainwright

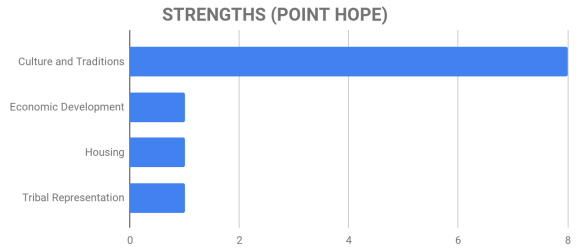
3.1 STRENGTHS

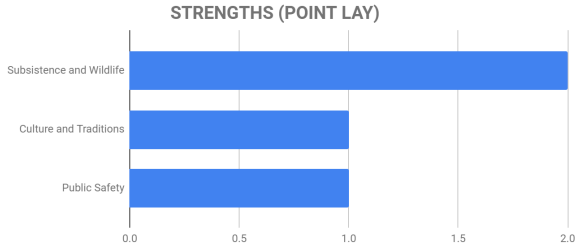


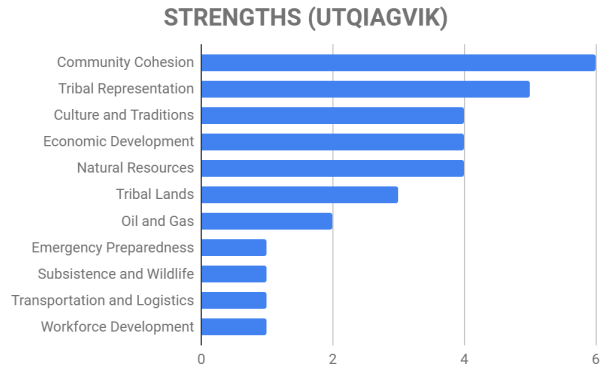


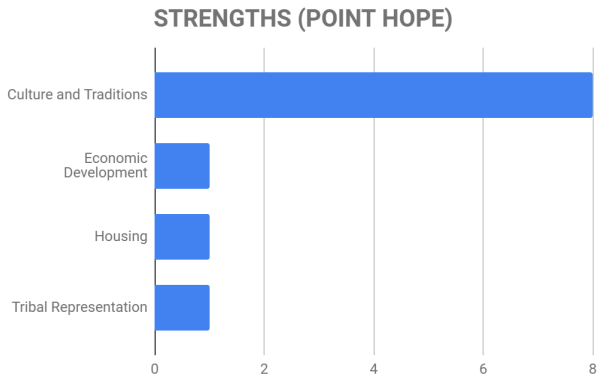












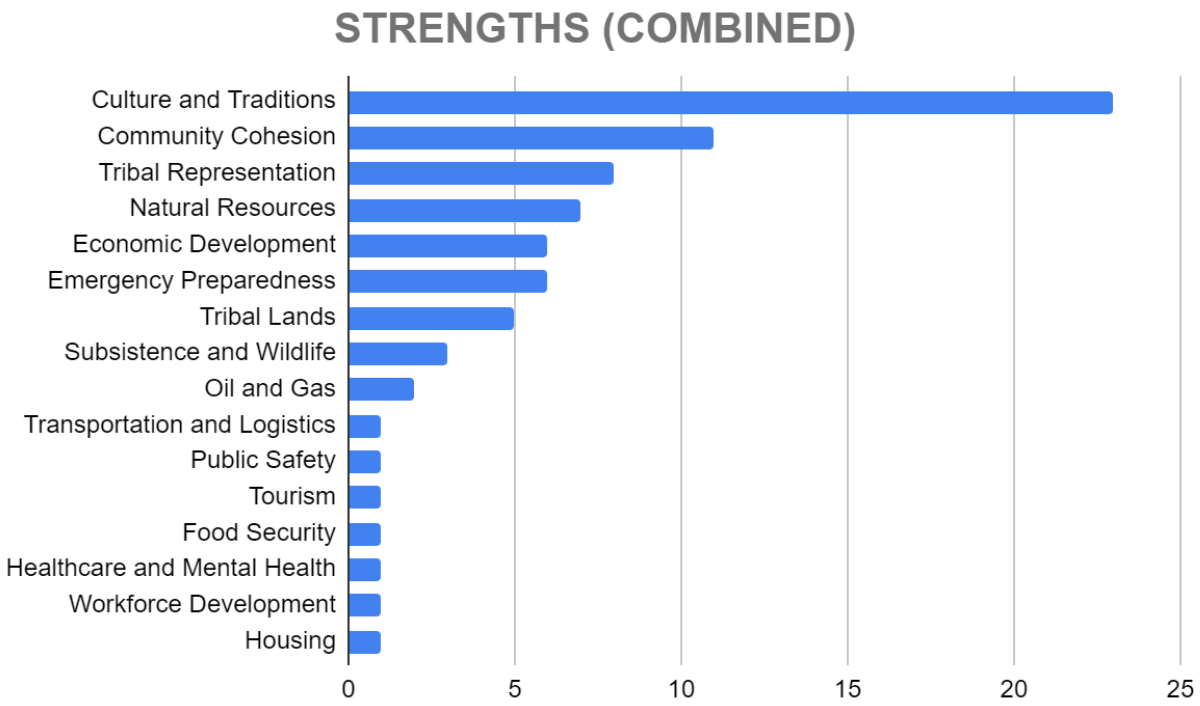


Image 24: *78 individual responses were collected, grouped here into common themes.*

Culture and Traditions is a common top strength listed in many of the communities, and when not present as the top category listed, still ranks within the top 3.

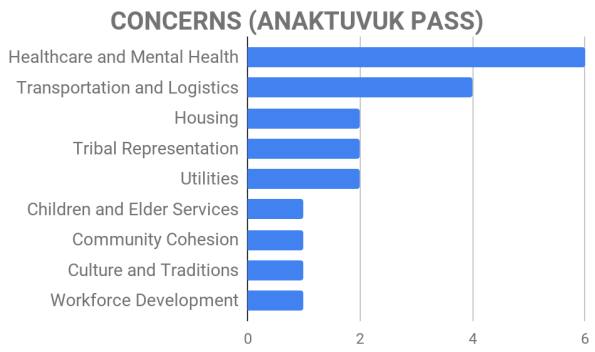
For Utqiaġvik and Wainwright, **Community Cohesion** stood out as the top strength, highlighting the importance of togetherness and cooperation in those communities.

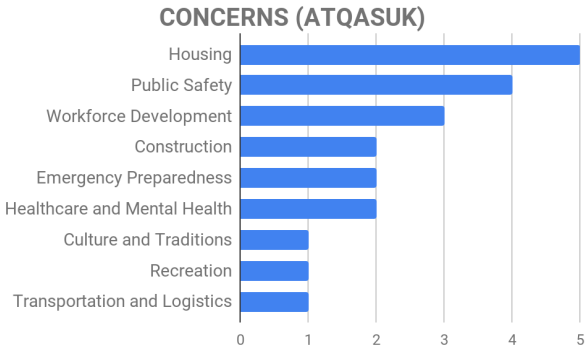
Tribal Representation came in second for Utqiaġvik and Nuiqsut, as well as regionally, underlining the importance of the ability for Tribes to advocate for member interests within their community and regionally.

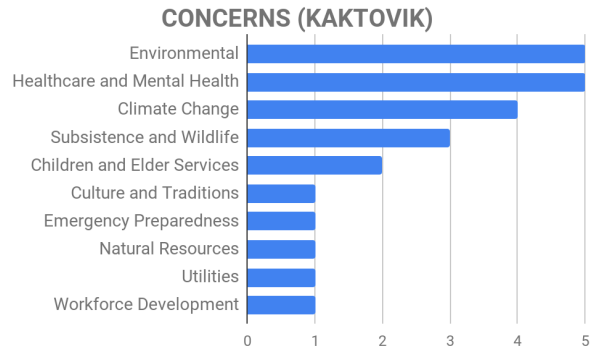
Natural Resources also made it into the top four, regionally, with **Economic Development** coming in fifth. The most mentions of Economic Development were in Utqiaġvik, where there are a greater diversity of industry clusters.

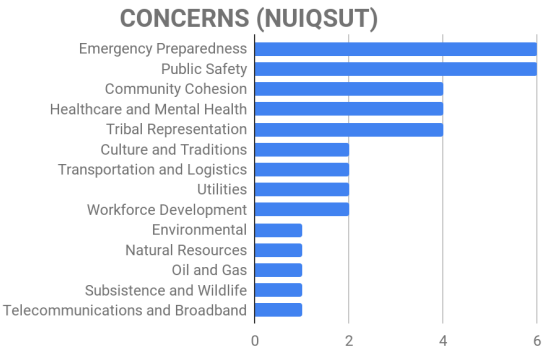
Emergency Preparedness took top place in the Kaktovik and Nuiqsut SWOT meetings, showcasing the capacity these villages have built up in recent years in order to prepare for possible disaster. After recent disasters impacted the region (COVID, the fiber optic cable break, effects of climate change), ICAS has begun focusing more heavily on Emergency Preparedness across all of its communities.

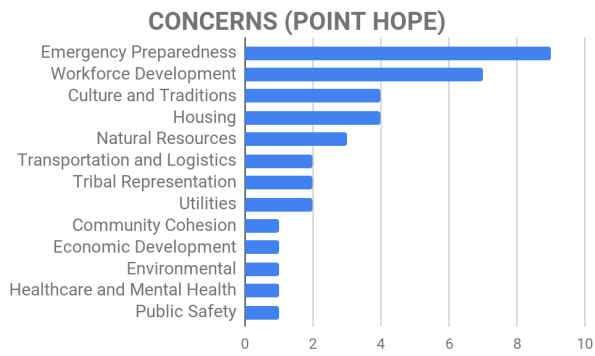
3.2 WEAKNESSES / CONCERNS

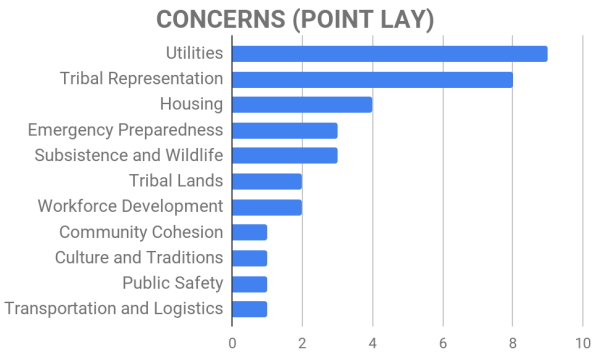


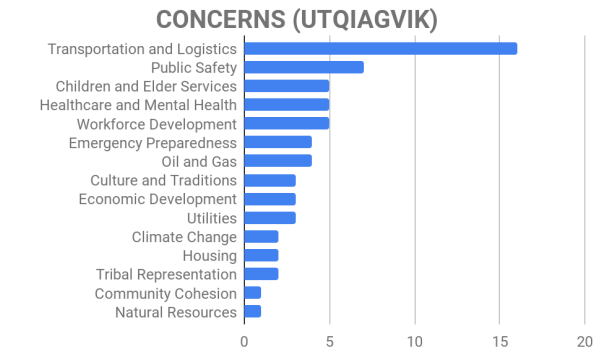


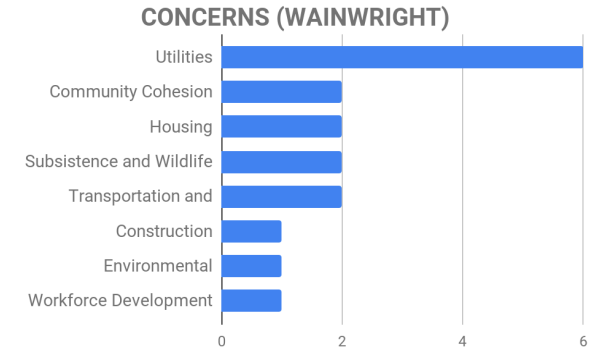












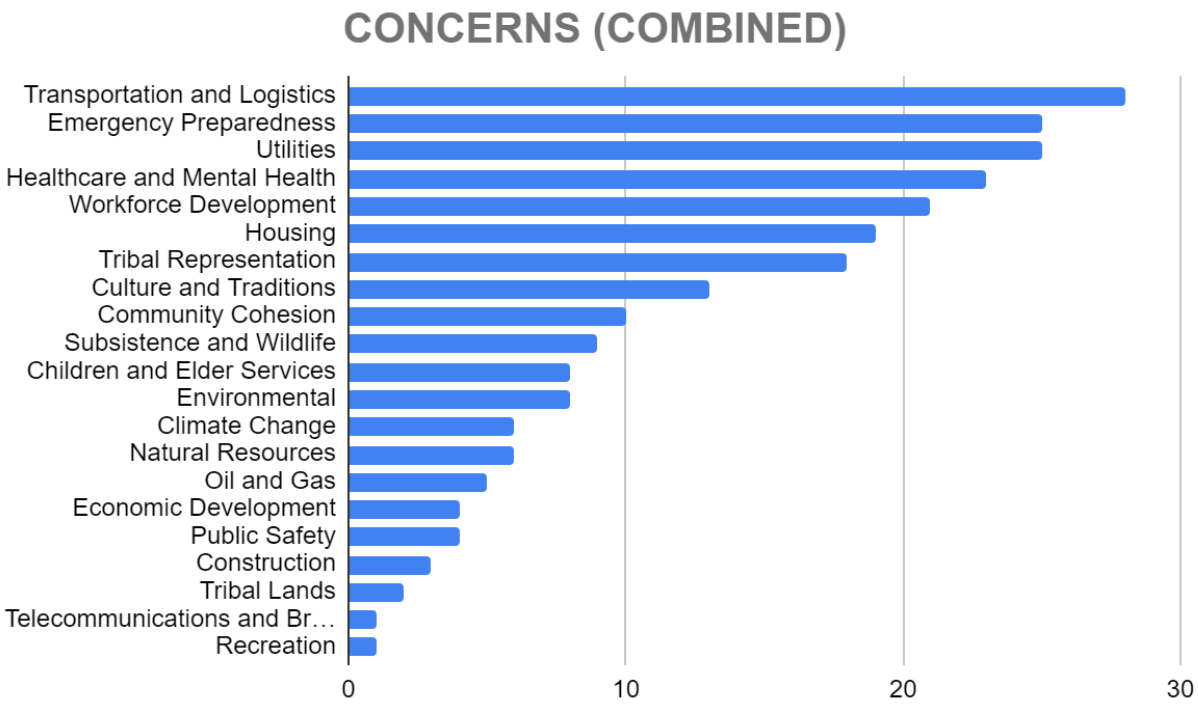


Image 25: *255 individual responses were collected, grouped here into common themes.*

Transportation and Logistics concerns were voiced strongly in Utqiaġvik and Anaktuvuk Pass, and mentioned in many of the other communities, underscoring the importance of infrastructure improvements.

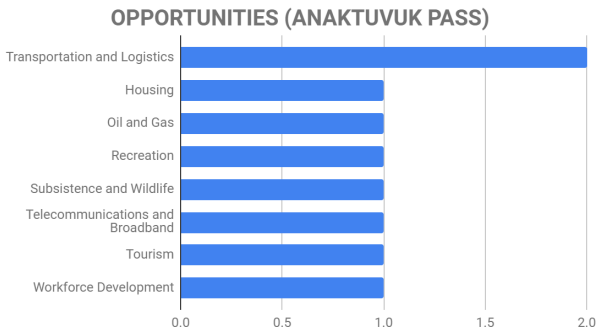
Emergency Preparedness ranked high as a concern for Point Hope and Nuiqsut especially, but also for other communities, coming in second for the region.

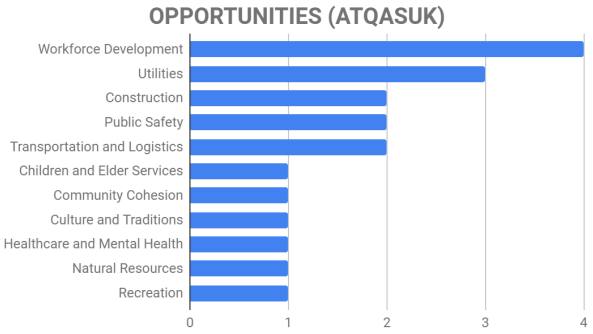
Utilities ranked number one for Wainwright and Point Lay, and was included on all communities' list of concerns.

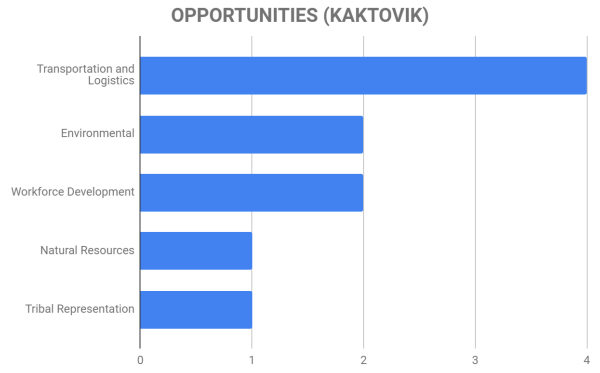
Healthcare and Mental Health emerged as a significant concern across multiple communities, especially in Anaktuvuk Pass, Atqasuk, Kaktovik, Nuiqsut, and Utqiaġvik, highlighting ongoing challenges in medical access and support for mental wellness.

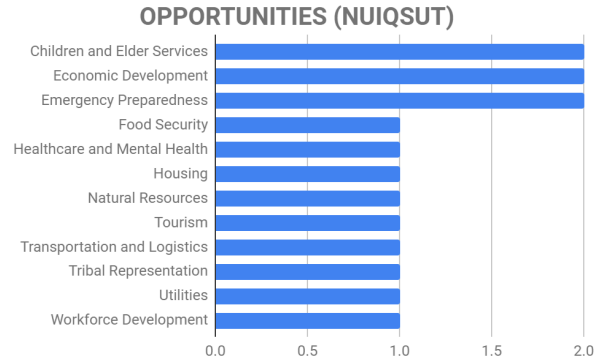
Workforce Development placed third, with significant focus from Point Hope, Utqiaġvik, but was discussed in some capacity by every community across the board. This reflects the importance of job creation, training, and skill development to boost local employment opportunities and economic sustainability.

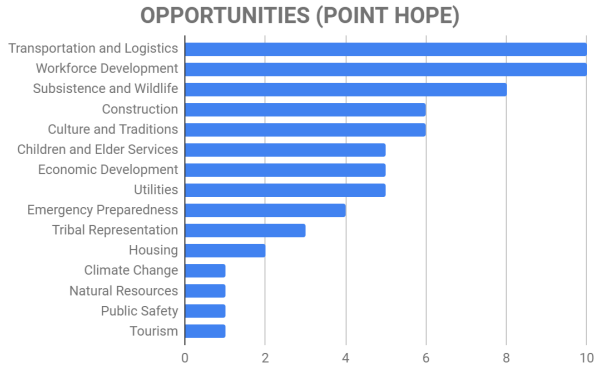
3.3 OPPORTUNITIES

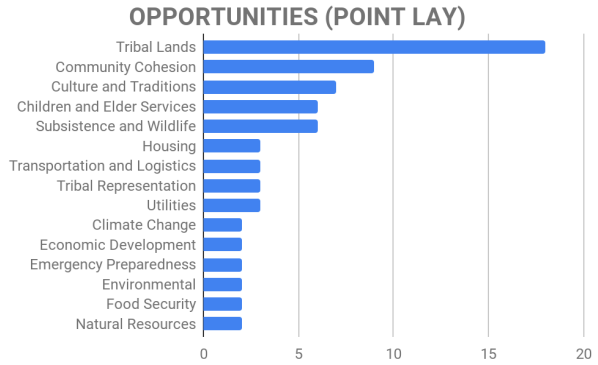


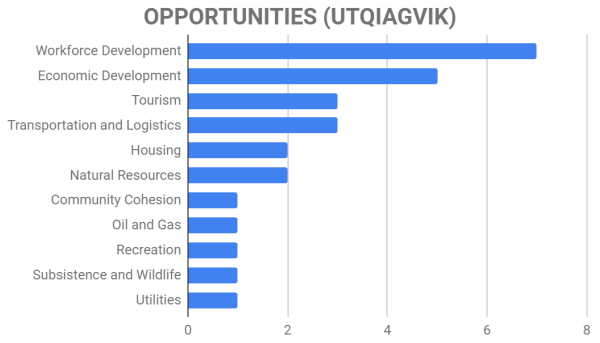


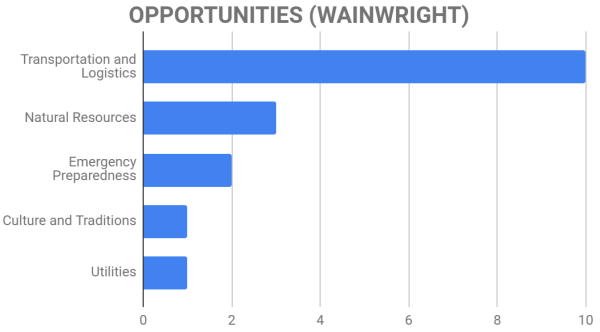












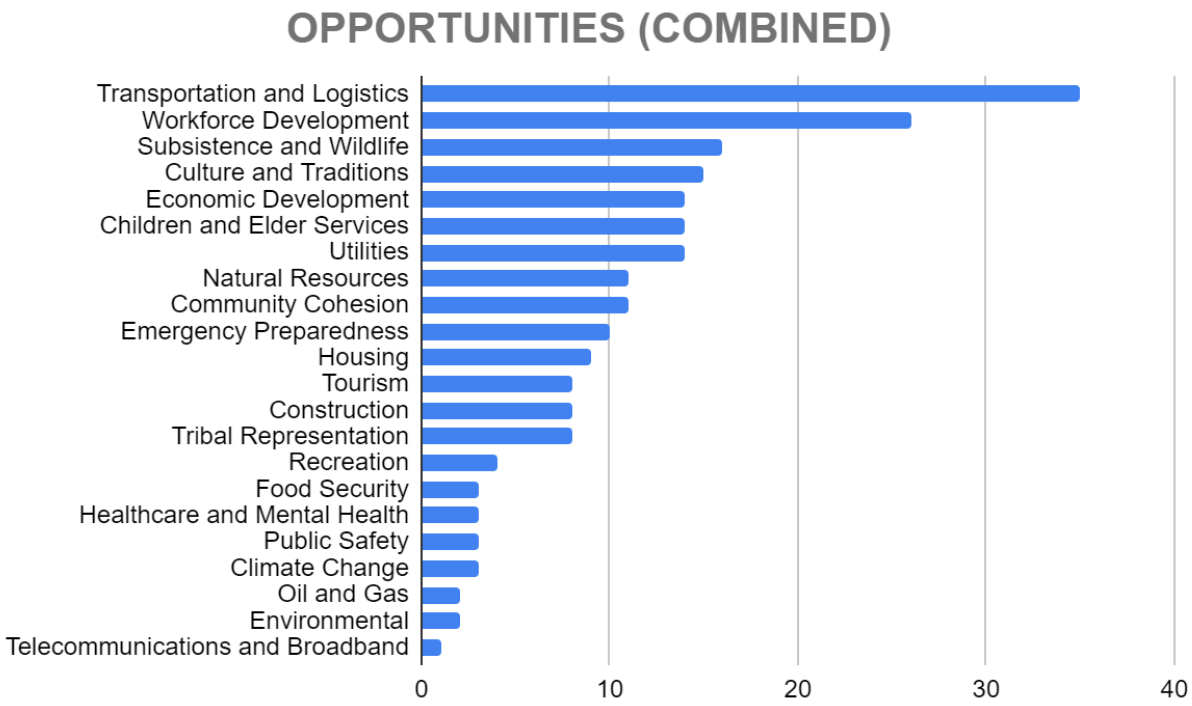


Image 26: *241 individual responses were collected, grouped here into common themes.*

Opportunities related to improving the region's **Transportation and Logistics** framework were flagged as crucial for the region in order to enhance quality of life for residents.

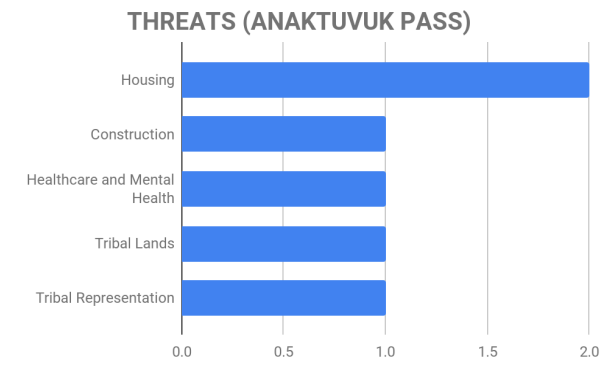
Workforce Development opportunities in the region are currently lacking, presenting an opportunity for new education and job training programs, especially in Atqasuk, Point Hope, and Utqiaġvik. Childcare can also be factored into a family's ability to seek and maintain employment.

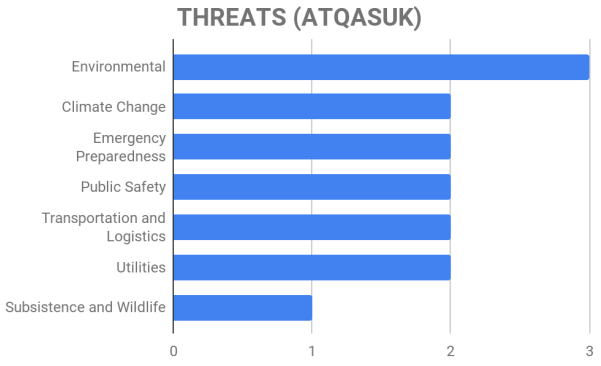
Prioritizing **Subsistence and Wildlife** initiatives are important to residents in the region. They sustain traditional practices and are intrinsically linked to food security.

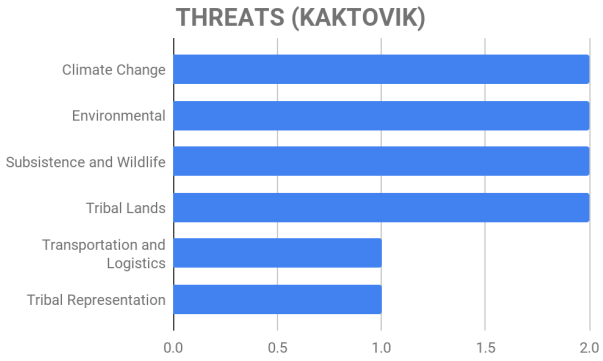
Relatedly, emphasizing **Culture and Traditions** came in fourth for opportunities, signaling that the preservation and continuation of traditional knowledge is important region-wide.

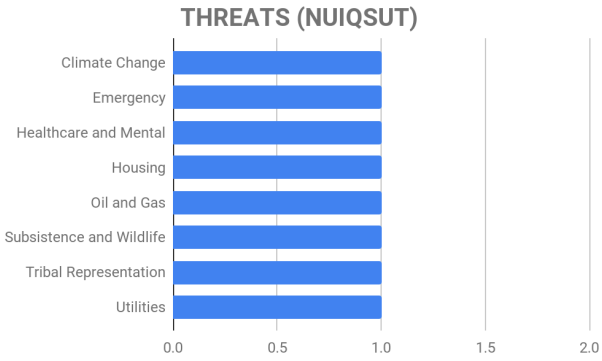
Economic Development, **Children and Elder Services**, and **Utilities** all totaled at 14 responses each across the region, as well.

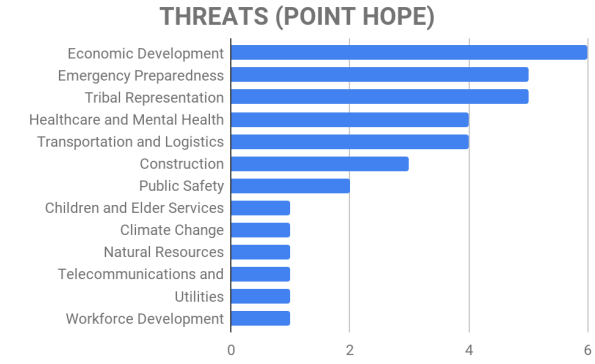
3.4 THREATS

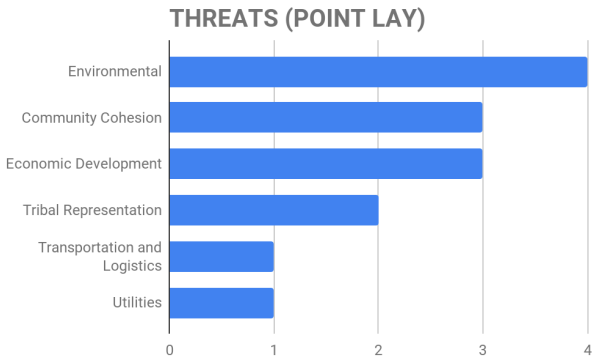

THREATS (ANAKTUVUK PASS)
Housing
Construction
Healthcare and Mental Health
Tribal Lands
Tribal Representation
0.0
0.5
1.0
1.5
2.0

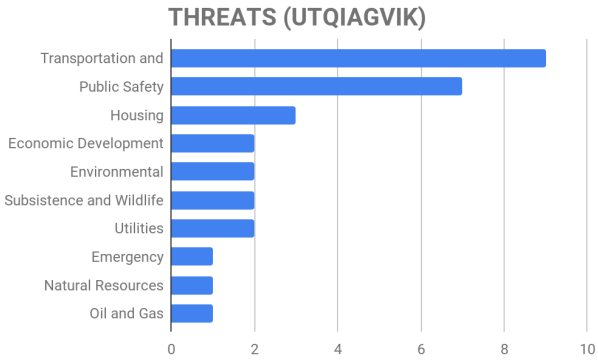

THREATS (ATQASUK)
Environmental
Climate Change
Emergency Preparedness
Public Safety
Transportation and Logistics
Utilities
Subsistence and Wildlife
0
1
2
3

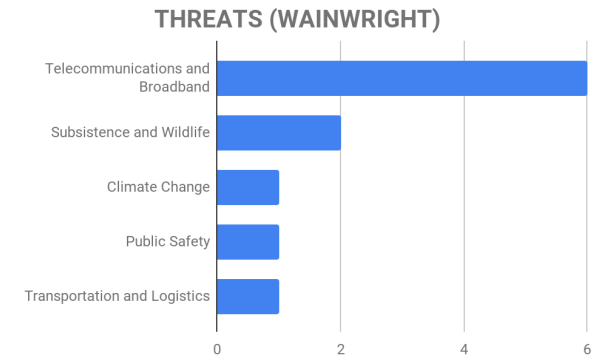

THREATS (KAKTOVIK)
Climate Change
Environmental
Subsistence and Wildlife
Tribal Lands
Transportation and Logistics
Tribal Representation
0.0
0.5
1.0
1.5
2.0


THREATS (NUIQSUT)
Climate Change
Emergency
Healthcare and Mental
Housing
Oil and Gas
Subsistence and Wildlife
Tribal Representation
Utilities
0.0
0.5
1.0
1.5
2.0


THREATS (POINT HOPE)
Economic Development
Emergency Preparedness
Tribal Representation
Healthcare and Mental Health
Transportation and Logistics
Construction
Public Safety
Children and Elder Services
Climate Change
Natural Resources
Telecommunications and
Utilities
Workforce Development
0
2
4
6


THREATS (POINT LAY)
Environmental
Community Cohesion
Economic Development
Tribal Representation
Transportation and Logistics
Utilities
0
1
2
3
4


THREATS (UTQIAGVIK)
Transportation and
Public Safety
Housing
Economic Development
Environmental
Subsistence and Wildlife
Utilities
Emergency
Natural Resources
Oil and Gas
0
2
4
6
8
10


THREATS (WAINWRIGHT)
Telecommunications and Broadband
Subsistence and Wildlife
Climate Change
Public Safety
Transportation and Logistics
0
2
4
6

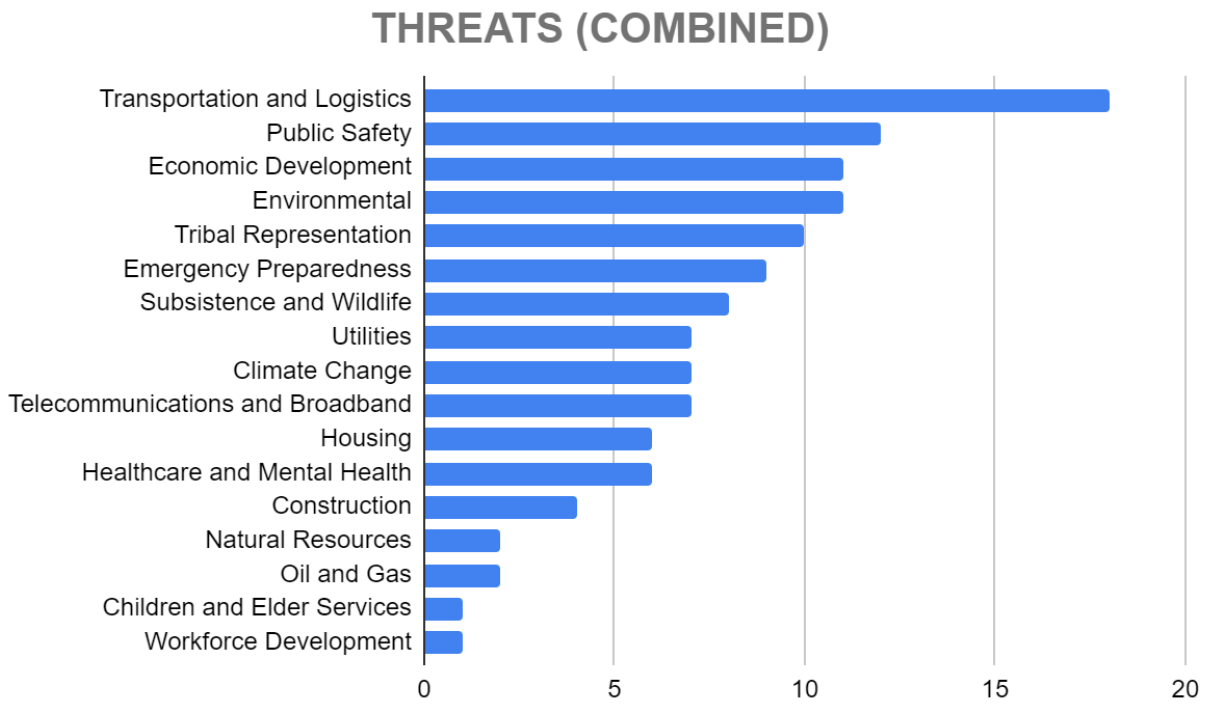


Image 27: *128 individual responses were collected, grouped here into common themes.*

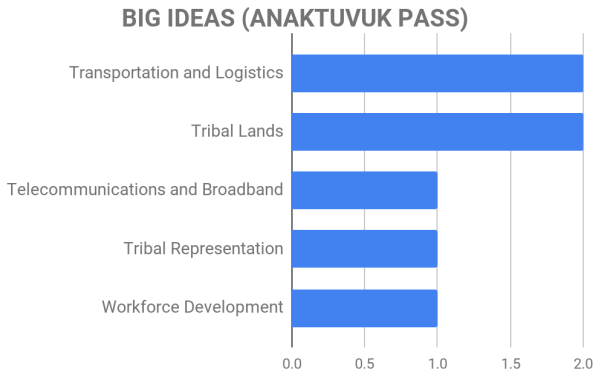
Transportation and Logistics ranks high as a threat for many communities, especially Utqiaġvik. As the hub community, Utqiaġvik serves as the transportation nerve center for the region, with many regional transportation headquarters based there.

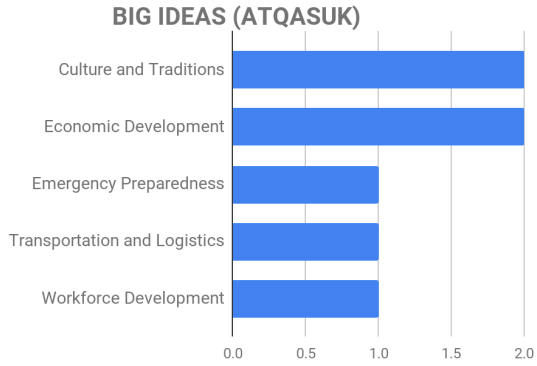
The second highest ranking threat for the region is **Public Safety**, with Utqiaġvik specifically raising concerns about quality of policing, and many other communities commenting on emergency services, enforcement of law throughout tribal lands, and safety infrastructure, like signage.

Threats to **Economic Development** in Point Hope, Point Lay, and Utqiaġvik raised the category's ranking regionally, highlighting the lack of diverse and resilient industry in much of the region. Economic Development concerns are related to many other topic areas, including Transportation and Logistics, Tribal Representation, Workforce Development and more.

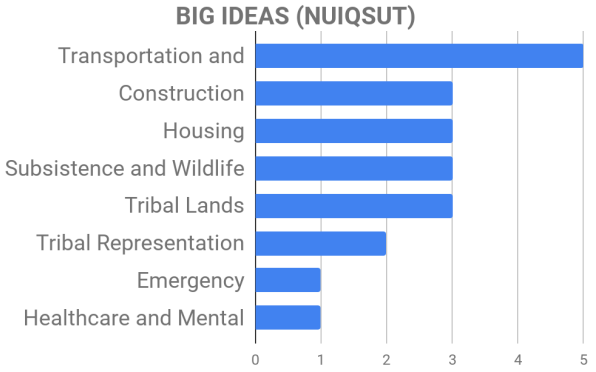
Environmental threats also rank high in the region, especially in Atqasuk and Point Lay. There are many previous project sites on tribal land in the region which are contaminated by hazardous waste and other unwanted materials. Some contaminated sites are near water sources or other important public infrastructure, like playgrounds.

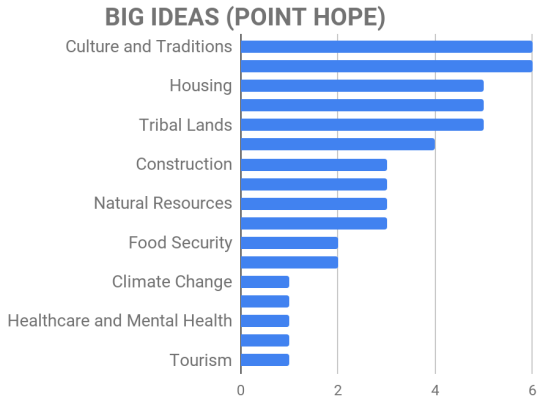
3.5 BIG IDEAS

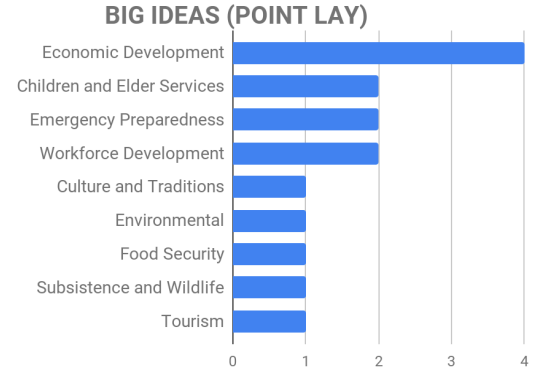

BIG IDEAS (ANAKTUVUK PASS)
Transportation and Logistics
Tribal Lands
Telecommunications and Broadband
Tribal Representation
Workforce Development
0.0
0.5
1.0
1.5
2.0

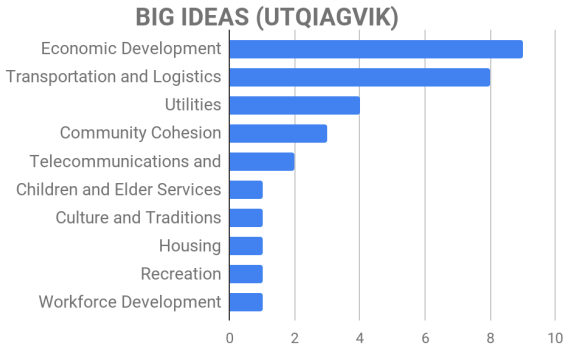

BIG IDEAS (ATQASUK)
Culture and Traditions
Economic Development
Emergency Preparedness
Transportation and Logistics
Workforce Development
0.0
0.5
1.0
1.5
2.0

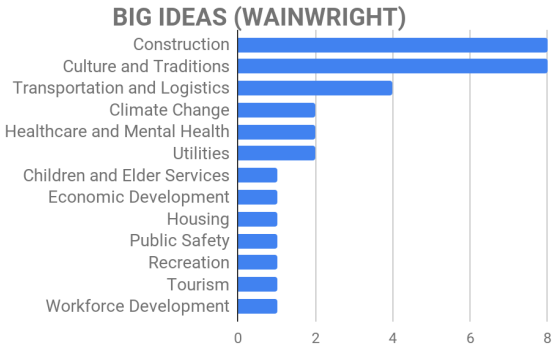

BIG IDEAS (KAKTOVIK)
Environmental
Subsistence and Wildlife
Transportation and Logistics
Construction
Food Security
Children and Elder Services
Climate Change
Culture and Traditions
0
1
2
3
4


BIG IDEAS (NUIQSUT)
Transportation and
Construction
Housing
Subsistence and Wildlife
Tribal Lands
Tribal Representation
Emergency
Healthcare and Mental
0
1
2
3
4
5


BIG IDEAS (POINT HOPE)
Culture and Traditions
Housing
Tribal Lands
Construction
Natural Resources
Food Security
Climate Change
Healthcare and Mental Health
Tourism
0
2
4
6


BIG IDEAS (POINT LAY)
Economic Development
Children and Elder Services
Emergency Preparedness
Workforce Development
Culture and Traditions
Environmental
Food Security
Subsistence and Wildlife
Tourism
0
1
2
3
4


BIG IDEAS (UTQIAGVIK)
Economic Development
Transportation and Logistics
Utilities
Community Cohesion
Telecommunications and
Children and Elder Services
Culture and Traditions
Housing
Recreation
Workforce Development
0
2
4
6
8
10


BIG IDEAS (WAINWRIGHT)
Construction
Culture and Traditions
Transportation and Logistics
Climate Change
Healthcare and Mental Health
Utilities
Children and Elder Services
Economic Development
Housing
Public Safety
Recreation
Tourism
Workforce Development
0
2
4
6
8

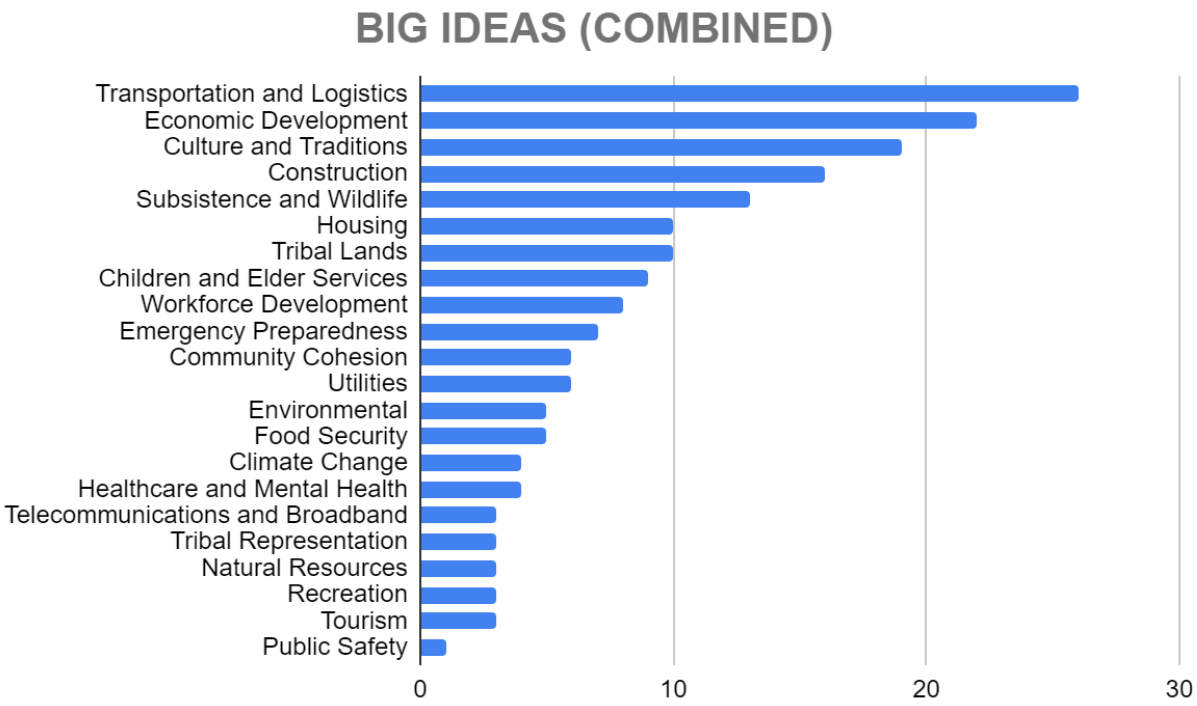


Image 28: *Big ideas were collected, grouped here into industry clusters.*

In the Big Ideas section of the SWOT, **Transportation and Logistics** received the most inputs, totalling 26 responses overall regionally and mainly focused on the building of new or updating current roads, docks, bridges, or airports.

Economic Development ranked second in Big Ideas, with many residents suggesting the development of more diverse industry clusters in their area.

Programs for the strengthening of **Culture and Traditions** were also suggested, such as the development of cultural centers in the villages or traditional language lessons.

Construction ranked high across the region for big ideas, especially in Wainwright. Residents there advocated for the construction of more community buildings.

Subsistence and Wildlife ranked fifth regionally, and second in Kaktovik. Kaktovik residents expressed the need for more oversight for use of subsistence lands for outside hunting or other uses.

4. STRATEGIC DIRECTION / ACTION PLAN

4.1 VISION STATEMENT

It is advantageous to retain the earlier vision statements from preceding Comprehensive Economic Development Strategies (CEDS). These prior vision statements originate from the region-wide Barrow (Utqiaġvik) CEDS and can be viewed as a progression of concepts and regional priorities, several of which continue to hold relevance.

CEDS 2012 VISION:

> “Our vision for development is to become a tribe that is self-sustaining, rich in culture and tradition that will blend the paths of the old and the new in a way that preserves the Iñupiat traditional knowledge and way of life that unites us as one people in the respect, values, and memory of our ancestors.”

CEDS 2018 VISION:

> "Barrow is and will continue to be a village that fosters and values a strong sense of community through diversity, an active subsistence lifestyle, multi-generational traditional knowledge and traditional Iñupiat values while also embracing new technological advancements and contemporary knowledge. Residents and community leaders will guide community growth and development in a coordinated, cost effective, efficient and environmentally sensitive manner that respects and protects local wildlife habitats and the area’s abundant natural resources. Barrow’s education system will prepare its youth through training opportunities and college programs tailored to meet the employment needs of the local community, science research and industry. There will be a diversity of safe and affordable housing opportunities and well-maintained and reliable utilities and other public infrastructure and community facilities. Residents will have a variety of recreational opportunities, especially for families and youth that facilitate healthy living and an active lifestyle. Community cooperation, transparency and resident involvement will provide a high quality of life."

CEDS 2025 VISION:

> "Our vision for the North Slope is to build self-sustaining communities which uphold Iñupiat culture, traditions, and values. Our communities will grow through cooperation between residents and leadership, fostering a healthy and vibrant future for all generations. Guided by respect for our land and wildlife, we strive to maintain an active subsistence lifestyle and a deep connection to the land.
>
> We will hold strong to our goal of a Connected, Healthy, Safe, Educated, Informed and Prosperous Arctic. We will develop efficient transportation and logistics systems which will increase connectivity for each village, enhancing access to resources and services.

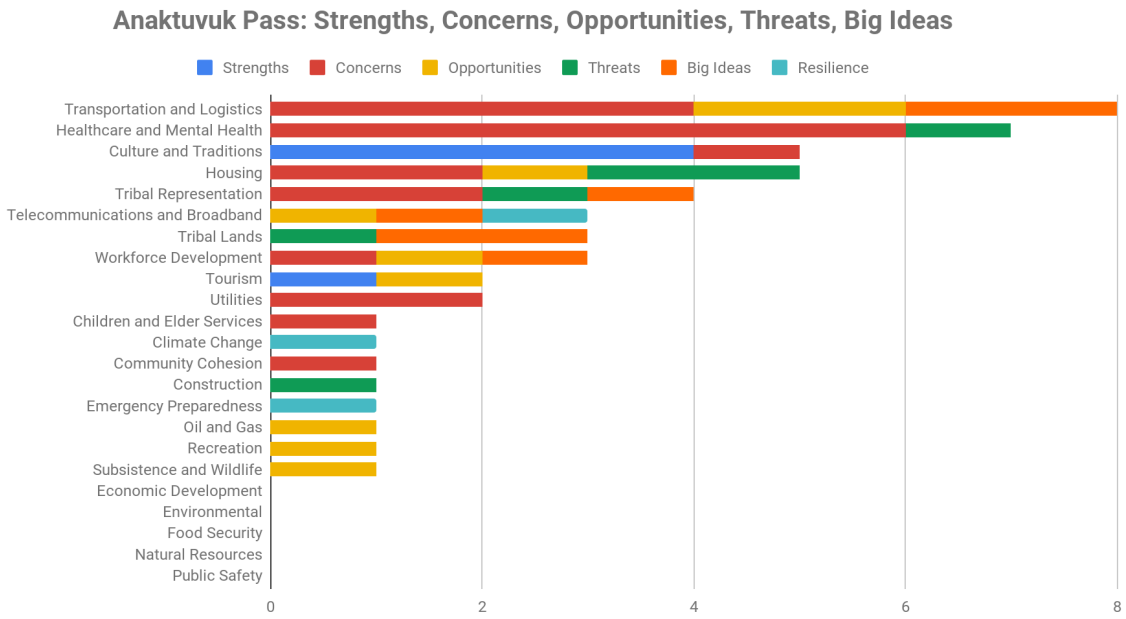
We will prioritize health and safety, to ensure our communities are able and prepared to face any and all natural or man-made challenges. We will provide educational opportunities and training that empower our youth to train our workforce in local and global industries. Prosperity for our people means safe, warm homes, reliable utilities and affordable public services to guarantee a high quality of life.

Together, we will preserve our cultural heritage, protect our natural resources, and encourage economic growth that benefits every village, ensuring the North Slope remains strong, unified, and resilient."

4.2 STRATEGIC DIRECTION

Our first step is to consider the priorities of the of the individual villages, which will inspire the regional strategy:

4.2.1 VILLAGE STRATEGY - ANAKTUVUK PASS

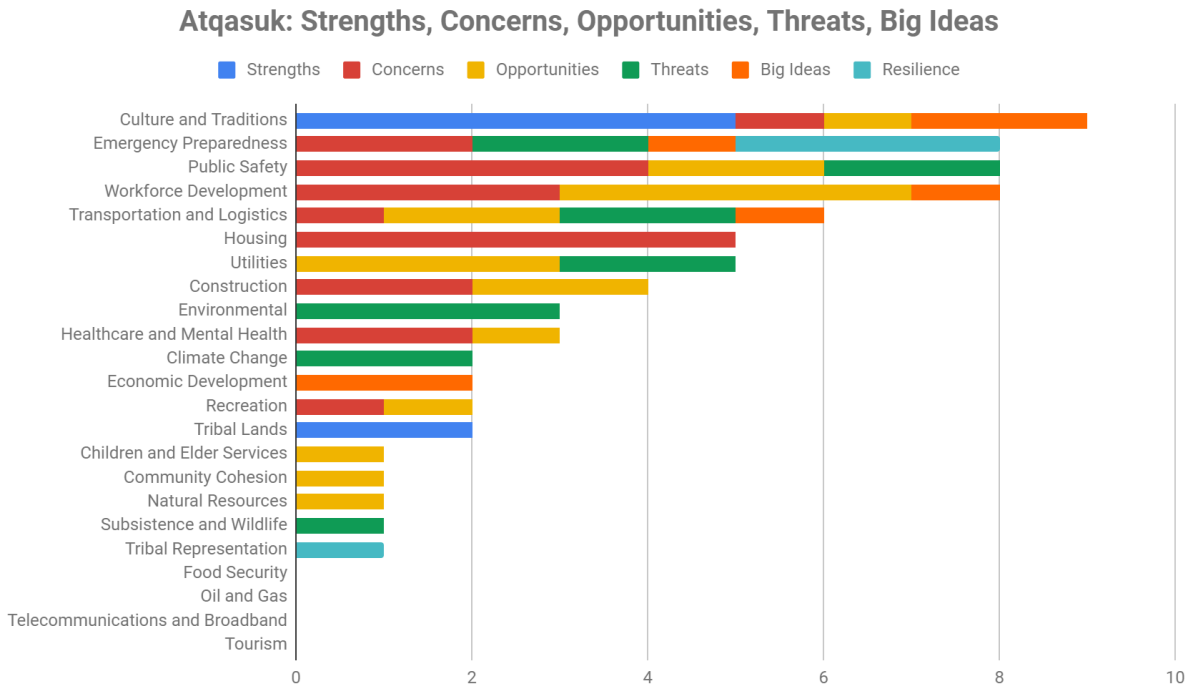


Most resident responses for Anaktuvuk Pass were dedicated to **Transportation and Logistics** and **Healthcare and Mental Health**. Residents expressed the need for more road infrastructure such as equipment to repair roads, street lighting, and a connection to the Dalton Highway. They also emphasized the need for improved healthcare and mental health services and improved alcohol and drug abuse support services.

The next highest group of responses related to **Culture and Traditions**, **Housing**, and **Tribal Representation**. Residents reported strength in their traditions, language, and sense of community. They expressed the need for more housing, but raised concerns about the acquisition of land, materials, and services needed to build new homes. Responses collected also emphasized the importance of strong tribal representation on the State, municipal, and regional tribe level.

Telecommunications and Broadband, **Tribal Lands**, and **Workforce Development** were the next three categories to obtain the most attention from village residents. Residents mentioned the importance of stable, high speed internet, autonomy over tribal lands, and increasing job training and employment opportunities.

4.2.2 VILLAGE STRATEGY - ATQASUK

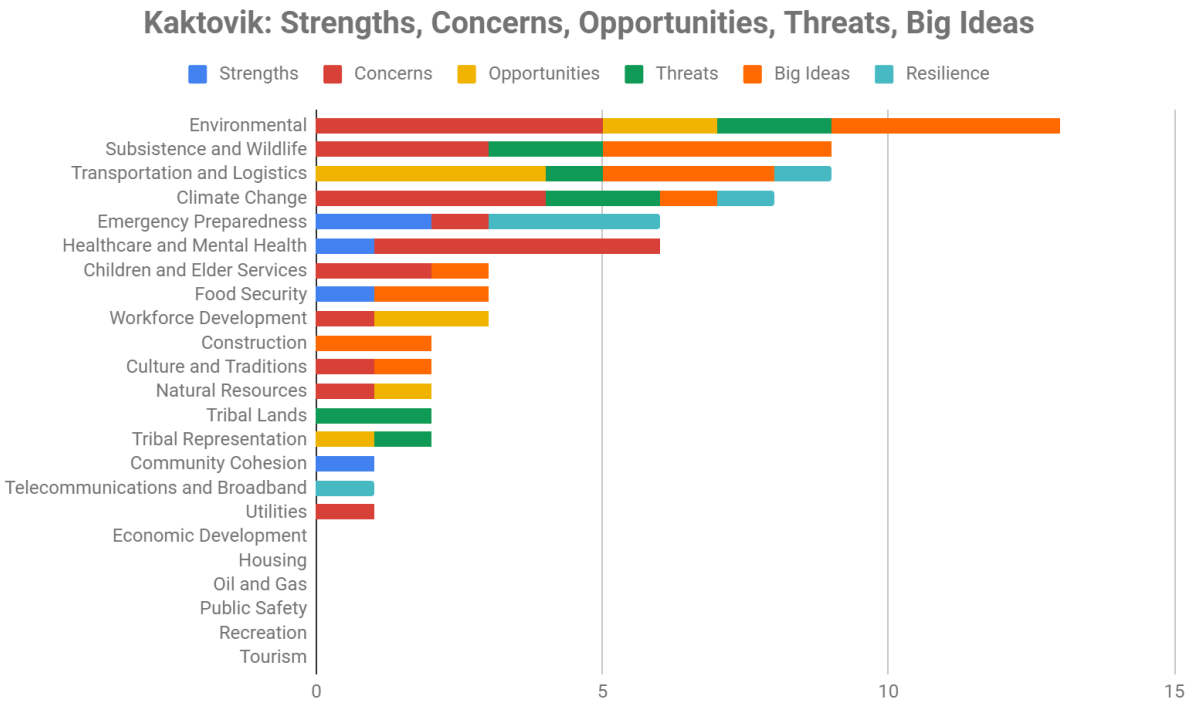


Most responses from Atqasuk residents emphasized the importance of **Culture and Traditions**, highlighting the need for resources to support local arts, traditional knowledge preservation, and included a request for the development of a culture center.

Residents of Atqasuk raised significant concerns about **Emergency Preparedness** and **Public Safety**, highlighting the importance of upgrading the Search and Rescue building, increasing road signage for safety, and addressing hazards like mudflats along the riverbed. **Workforce Development** was also addressed, and residents stressed the need for more training and certification programs for local workers, including drivers, electricians, and HVAC specialists, to ensure the community has the skills needed for vital repairs and services.

Atqasuk residents expressed a strong need for improvements in **Transportation and Logistics**, including the development of a road between Atqasuk and Utqiaġvik and better maintenance of existing roads. **Housing** was another critical concern, with residents noting overcrowding in homes and a lack of education on homeownership and maintenance. They called for more housing development, along with resources to help families with home repairs, such as fixing boilers and addressing water problems. The community also highlighted the importance of upgrading **Utilities**, such as power pole replacements and additional water tanks for homes.

4.2.3 VILLAGE STRATEGY - KAKTOVIK

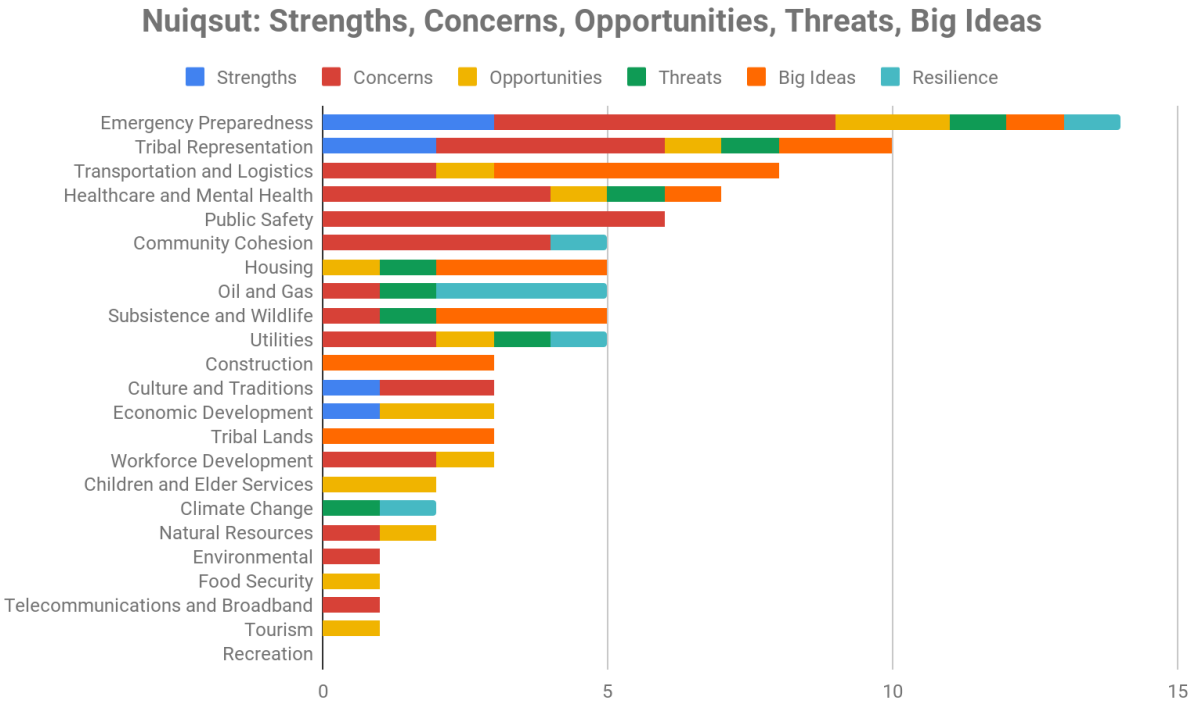


The top number of responses for Kaktovik related to **Environmental** concerns. Notably, permafrost erosion along Iglukpaaluk Road, contaminated stockpiles close to the community, and environmental disturbances affecting subsistence activities.

Subsistence and Wildlife also emerged as a top area of interest, with comments about changing weather and industry affecting the caribou migration and concerns about managing overhunting. **Transportation and Logistics** obtained a similar response, with residents anticipating the development of CWAT access trails and wanting access to Prudhoe Bay roads.

Climate Change, **Emergency Preparedness**, and Healthcare and Mental Health were the next priorities for Kaktovik residents. The community faces increasing weather unpredictability, necessitating robust emergency plans and responses. Kaktovik residents also raised concerns about a decline in medical services, citing inadequate staffing, limited educational opportunities, and a lack of support for the clinic.

4.2.4 VILLAGE STRATEGY - NUIQSUT



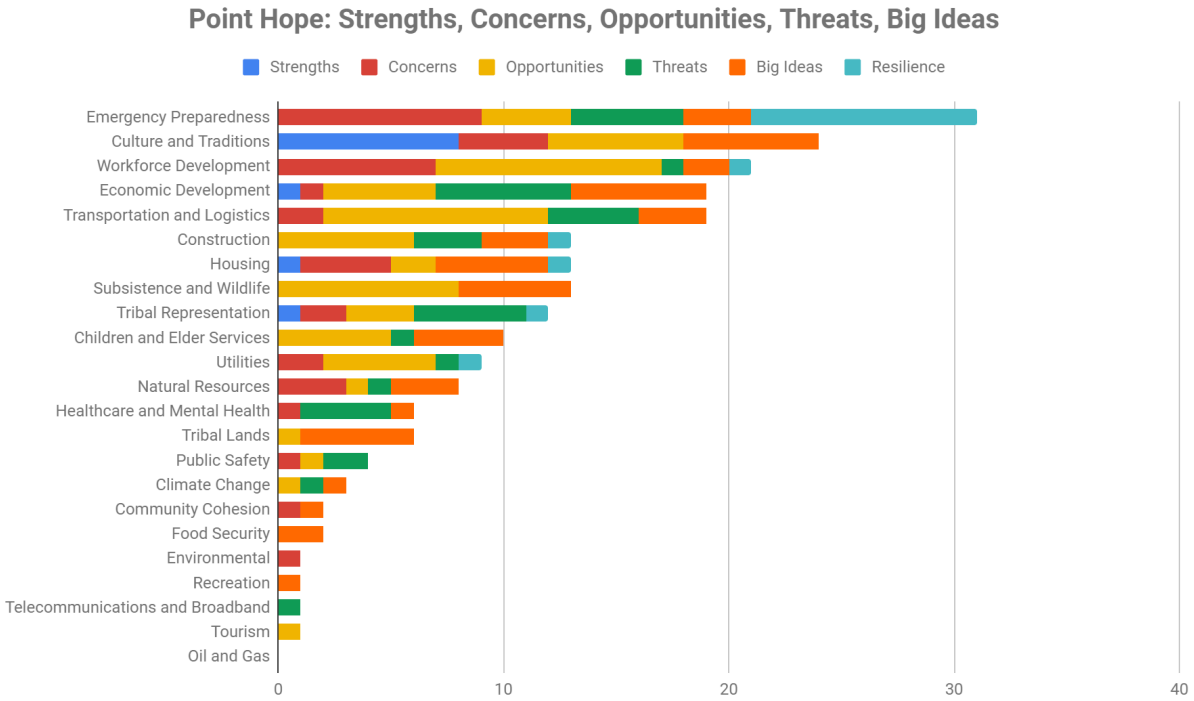
In Nuiqsut, **Emergency Preparedness** is a pressing concern, highlighted by the community's need for home water tanks, enhanced road access for evacuation routes, and a reliable emergency food distribution system. The community also emphasized the importance of job training for emergency services and better equipment for search and rescue operations.

Tribal Representation ranked next in residents' responses, which simultaneously praised leadership, while also advocating for stronger representation with outside entities.

Transportation and Logistics are essential for the Nuiqsut community, particularly in improving access to vital resources and services. Participants highlighted the need for infrastructure upgrades, such as extending the airport runway to accommodate medical evacuations and enhancing existing roads for safer travel.

Healthcare and Mental Health and **Public Safety** ranked next, with residents expressing the need for more resources for substance abuse treatment. In addition, emergency equipment upgrades and more training for emergency services were requested.

4.2.5 VILLAGE STRATEGY - POINT HOPE



Point Hope has a Trilateral Resolution in Support of Unified Tikigaq Project Priorities, (Resolution 2023-01), which lists the top five (5) priority needs for the people of Tikigaq, namely (1) Extend Emergency Road (safety and well-being of community), (2) Permanent Airport (Inland due to the rapid erosion problem), (3) Clinic, (4) New Landfill Relocation, (5) Heavy Equipment/Warm Storage.

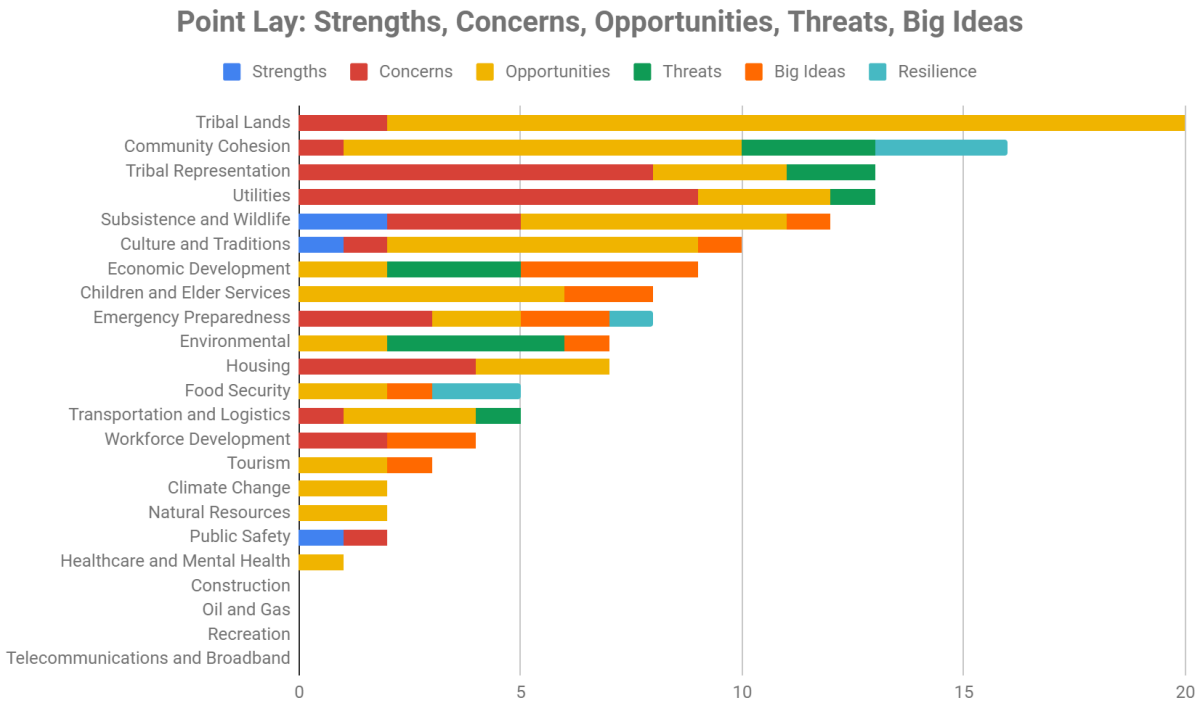
Point Hope's highest number of responses correspond to **Emergency Preparedness**, with maintenance for their evacuation road (eventually to the Kuvik River) is a top priority for the community, in line with Point Hope's recently developed Trilateral Priorities.

Culture and Traditions were the next most frequent topic with many residents taking pride in the historical significance of the area and seeking to encourage language preservation activities and other traditional oriented initiatives, including the storage and display of historically significant cultural artifacts.

Workforce Development and **Economic Development** were both mentioned frequently during the Point Hope meeting, often in relation to needing an increase in training, equipment, and services in the village.

Transportation and Logistics also received attention during the community SWOT meeting, with many responses discussing improvements to the 7 mile road in Point Hope, the village's main evacuation point.

4.2.6 VILLAGE STRATEGY - POINT LAY



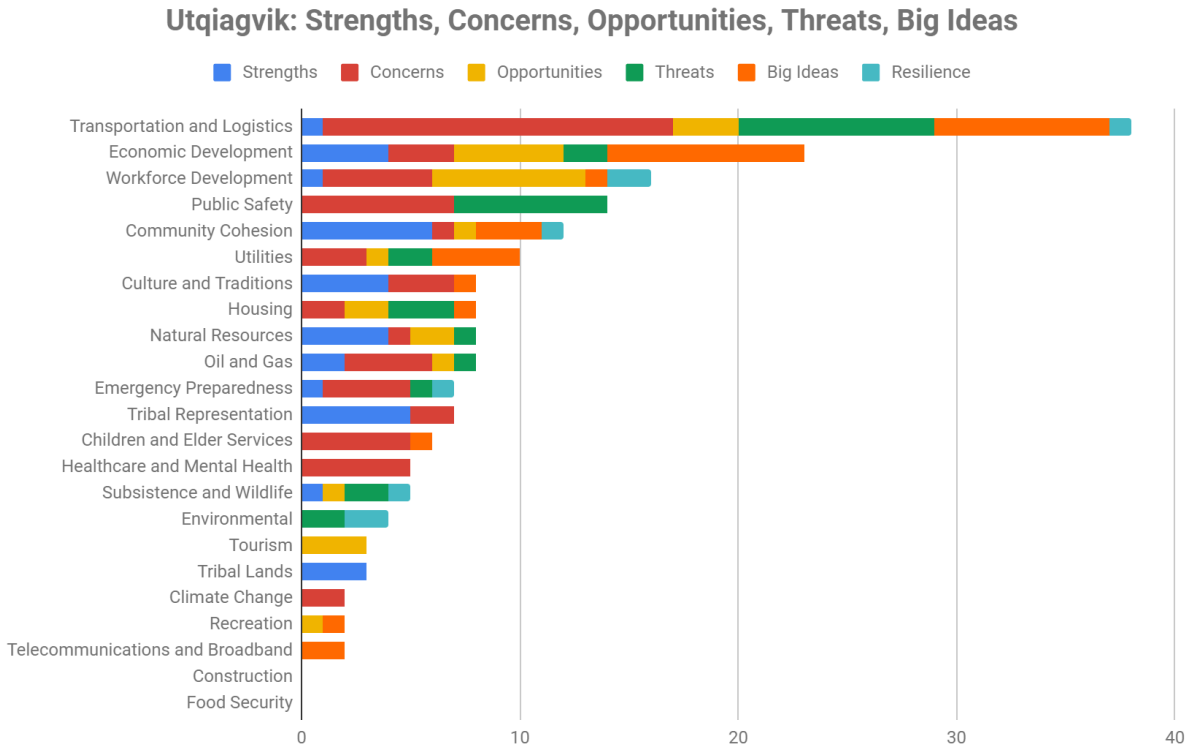
During the Point Lay community meeting, many participants highlighted the importance of protecting **Tribal Lands** for cultural heritage and subsistence practices. They called for improved resources for management of traditional hunting and fishing areas.

The next highest number of responses from the community emphasized the need for **Community Cohesion** within Point Lay, to enhance communication and partnerships between various stakeholders.

Next, **Tribal Representation** emerged as a priority, underscoring the importance of having representatives who advocate for tribal needs and perspectives, fostering a sense of ownership and empowerment within the community. A similar number of responses were collected regarding **Utilities**, which are a significant concern for the community, particularly regarding the need for reliable water delivery, waste management, and electrical services.

Subsistence and Wildlife also comprised a sizable portion of responses, with many responses related to wildlife and subsistence area management.

4.2.7 VILLAGE STRATEGY - UTQIAGVIK

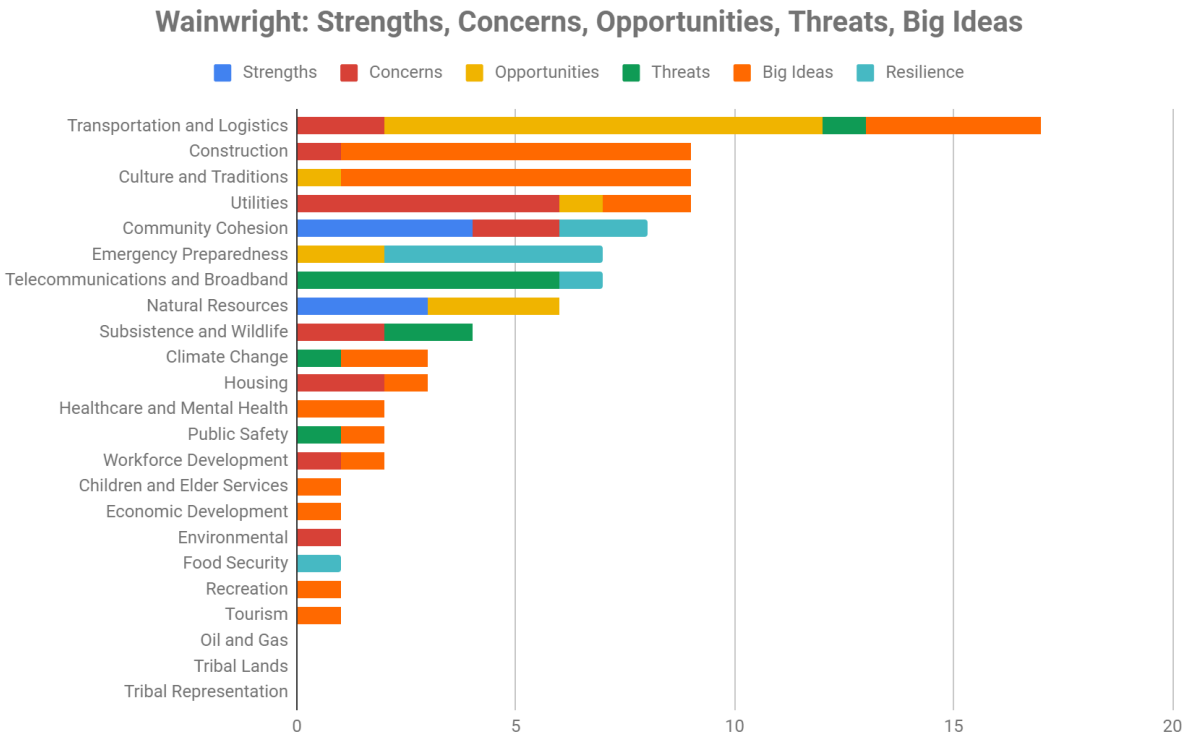


Transportation and Logistics led responses in Utqiaġvik, with the community voicing a need for improved road connectivity and the development of multimodal options. Key priorities include better drainage and water control systems to enhance road conditions, monitored transportation corridors for safety, and improved street lighting for safer travel during long winter nights.

Utqiaġvik's **Economic Development** needs made up the next category of responses and center around diversifying revenue sources, enhancing local infrastructure, and fostering small business growth. Resident's responses also highlight the need for improved **Workforce Development** through local training programs that focus on essential skills such as carpentry, plumbing, and electrical work.

Responses regarding **Public Safety** emphasize the need for enhanced emergency services and proper public safety measures, including adequate cultural training for law enforcement personnel.

4.2.8 VILLAGE STRATEGY - WAINWRIGHT



The Wainwright responses highlight a strong desire for improved **Transportation and Logistics**, with calls for better road systems, increased air service competition, and enhanced connectivity to subsistence areas. Additionally, there is a need for more reliable transportation options, including a village bus and upgrades to airport facilities for passengers and cargo.

Construction was the next most frequent response, with many residents requesting a new facility for the Qargi Academy and places for community members to work on mechanical projects.

Responses reflect a strong commitment to preserving and promoting Wainwright's **Culture and Traditions**, with suggestions for enhanced traditional teachings, including language lessons and subsistence practices for the next generation.

Next most prevalent was the need for upgrades and improvements in various **Utilities**, highlighting issues such as outdated power plants, sewer and water system enhancements, and the elimination of reliance on heating oil.

Residents in Wainwright also touched on **Community Cohesion**, and the importance of holding more tribal meetings.

4.2.9 REGIONAL STRATEGIES

Our next step is to combine the individual Village Strategies into the broader Regional Strategy, highlighting common goals.

It is certainly challenging to create an economic development strategy for an entire region, having any number of needs and concerns, all of which feel urgent. How much more so for the North Slope, which extends over the entirety of a vast, ecologically diverse, oil rich, high arctic land mass, disconnected from the road system, and cut off from its ocean for all but three months a year by sea-ice. In a place where thousand year old traditions and culture are as strong as ever, and where education, healthcare, transportation, housing, food security and employment are all critical needs, we approach the task of setting a strategic direction by listening to the community's concerns and adding up all the numbers.

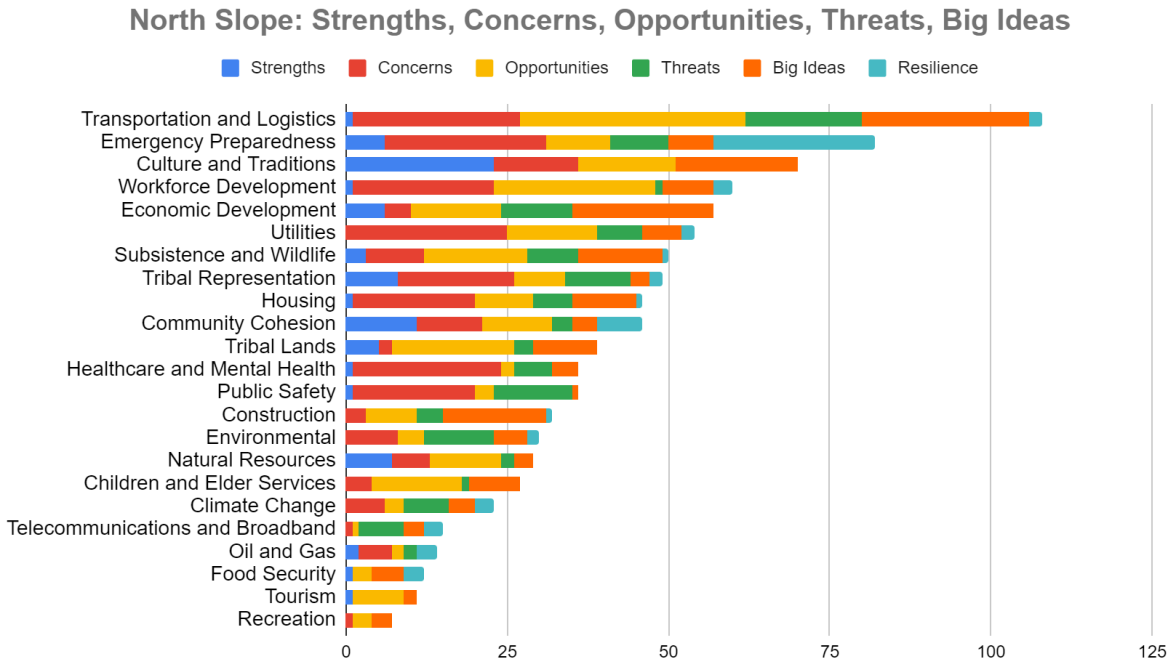


Image 29: *In the image above we have stacked Concerns, Opportunities, Threats and Big Ideas to reveal a ranking of the feedback received. The image in table form follows for clarity.*

	Transportation and Logistics	Emergency Preparedness	Culture and Traditions	Workforce Development	Economic Development	Utilities	Subsistence and Wildlife	Tribal Representation	Housing	Community Cohesion	Tribal Lands	Healthcare and Mental Health	Public Safety	Construction	Environmental	Natural Resources	Children and Elder Services	Climate Change	Telecommunications and Broadband	Oil and Gas	Food Security	Tourism	Recreation
Strengths	1	6	23	1	6	0	3	8	1	11	5	1	1	0	0	7	0	0	0	2	1	1	0
Concerns	26	25	13	22	4	25	9	18	19	10	2	23	19	3	8	6	4	6	1	5	0	0	1
Opportunities	35	10	15	25	14	14	16	8	9	11	19	2	3	8	4	11	14	3	1	2	3	8	3
Threats	18	9	0	1	11	7	8	10	6	3	3	6	12	4	11	2	1	7	7	2	0	0	0
Big Ideas	26	7	19	8	22	6	13	3	10	4	10	4	1	16	5	3	8	4	3	0	5	2	3
Resilience	2	25	0	3	0	2	1	2	1	7	0	0	0	1	2	0	0	3	3	3	3	0	0
Totals	108	82	70	60	57	54	50	49	46	46	39	36	36	32	30	29	27	23	15	14	12	11	7

Image 30: *Economic development opportunities identified by collecting SWOT data.*

We use this ranking to identify and prioritize goals, objects and specific projects in this CEDS.

Through the course of the CEDS SWOT analysis we have identified four overarching goals which are reflected in the collected responses across the 8 ICAS communities. We have developed corresponding objectives for each goal listed below in an effort to thoroughly respond to the reported needs of the region, as uncovered during each village's SWOT meeting.

GOAL 1: Village Sustainability and Resilience

- Physical Infrastructure Development
- Housing
- Utilities
- Emergency Preparedness
- Community Cohesion
- Tribal Representation

GOAL 2: Economic Growth and Infrastructure

- Economic Development
- Oil and Gas
- Workforce Development
- Telecommunications and Broadband
- Tourism
- Transportation and Logistics

GOAL 3: Community Health and Wellbeing

- Children and Elder Services
- Healthcare and Mental Health
- Public Safety
- Food Security
- Recreation
- Culture and Traditions

GOAL 4: Environmental Stewardship

- Climate Change
- Natural Resources
- Environmental
- Subsistence and Wildlife
- Tribal Lands

4.3 GOALS AND OBJECTIVES

GOAL 1: VILLAGE SUSTAINABILITY AND RESILIENCE

OBJECTIVE 1.1: Physical Infrastructure Development in All Communities

Responsible Parties: Tribes, NSB, Village Corporations
Timeline: 2025-2030
Cost Estimate: $50,000,000
Funding Sources: HUD, EDA, USDA RD, Denali Commission, Rasmuson

Description:

This project aims to enhance community infrastructure across all North Slope villages by constructing new tribal buildings that serve as multifunctional facilities, including Qargi (traditional gathering places) and shared office spaces. We plan to build hotels and restaurants in every village to boost local economies and accommodate visitors. In Utqiaġvik, a new conference center will host professional conferences for doctors, scientists, and Arctic researchers. Renovating gyms and playgrounds will improve recreational facilities for residents. To support construction needs, heavy equipment like augers will be made available in each village, along with hangars for equipment warm storage.

Steps:

- Identify community needs and select sites for development.
- Secure funding from HUD, EDA, USDA, and other sources.
- Procure heavy equipment and build storage hangars.
- Construct multifunctional tribal buildings in each community.
- Build hotels and restaurants in every village.
- Construct the conference center in Utqiaġvik.
- Renovate existing gyms and playgrounds.
- Commission all facilities for public use.

Evaluation Criteria:

- Completion and operational status of new facilities.
- Measurable improvements in community infrastructure and economic activity.

GOAL 1: VILLAGE SUSTAINABILITY AND RESILIENCE

OBJECTIVE 1.2: Innovate Arctic Housing

Responsible Parties: Tribes, TNHA, NSB, Village Corporations
Timeline: 2025 onwards
Cost Estimate: ~$450,000 per home; construct 2–5 homes per year
Funding Sources: HUD NAHASDA, ICDBG, Tax Credits, USDA RD, AHFC

Description:

The North Slope faces a significant shortage of affordable housing for families earning less than $26,000 annually. Many are homeless, in transitional housing, or living in overcrowded conditions while seeking rental options or affordable homes. ICAS and TNHA have identified approximately 150 families in need of assistance. There is also a high need for housing for skilled workers, such as Engineers, Scientists, Managers, Accountants and young professionals who are returning to Barrow to start their families, after completing their higher education. Housing for professionals is needed to attract and keep families in the village where they may contribute to the local economy. To address this critical need, ICAS plans to construct 2–5 low-income homes each year, depending on funding availability, to provide safe and affordable housing for these families.

Steps:

- Create Regional Housing Master Plan[80,81,82,83], creating a new model for Arctic Housing, listing build, own and financing options[84].
- Coordinate housing efforts with NSB, TNHA; establish partnerships.
- Consult with NSB and UIC to identify sites for new housing development.
- Secure grant funding and subsidies for home construction.
- Build the homes.
- Allocate homes to eligible families.

Evaluation Criteria:

- Number of homes constructed and occupied by low-income families.
- Number of construction jobs created.

[80] http://www.north-slope.org/.../DRAFT_Barrow_Comprehensive_Plan_7-7-14_file_2.pdf
[81] https://www.hud.gov/sites/documents/FINAL-AK-PROCEEDINGS.PDF
[82] http://dhss.alaska.gov/gcdse/Documents/Publications/AHFC2016-2020ConsolidatedPlan.pdf
[83] https://www.commerce.alaska.gov/web/Portals/4/pub/mertarvik_housing_master_plan.pdf
[84] https://www.rd.usda.gov/files/Alaska%20Rural%20Homeownership%20Guide%2001_11_17_v2.pdf

GOAL 1: VILLAGE SUSTAINABILITY AND RESILIENCE

OBJECTIVE 1.3: Enhance Utilities Infrastructure

Responsible Parties: Tribes, NSB Public Works, BUECI
Timeline: 2026–2030
Cost Estimate: $50,000,000
Funding Sources: USDA Rural Development, EPA Grants, DOE

Description:

We aim to improve power, water, and sewer utilities across all North Slope communities. This includes supporting entities like Barrow Utilities & Electric Cooperative, Inc. (BUECI) and collaborating with the North Slope Borough (NSB) to accelerate program development and implement fail-safes. Key initiatives involve establishing regular water inspection and treatment systems to prevent issues like those experienced in Point Lay and Point Hope. We will modernize raw sewage treatment facilities and institute regular inspection protocols. Additionally, we plan to develop long-term solid waste disposal and recycling strategies, including old vehicle disposal and removal plans. Exploring wind and solar energy feasibility projects is also a priority to promote renewable energy use. Develop natural gas powerplant mines for communities having identified nearby resources.[85,86,87]

Steps:

- Partner with BUECI and NSB to assess current utility infrastructure.
- Secure funding through USDA, EPA, DOE, and tribal federal programs.
- Implement regular water inspection and treatment systems in all communities.
- Modernize sewage treatment facilities and establish inspection protocols.
- Develop a comprehensive solid waste disposal and recycling plan.
- Create an old vehicle disposal and removal program.
- Conduct wind and solar energy feasibility studies.
- Develop natural gas mines and powerplant business plans to trade off diesel.

Evaluation Criteria:

- Completion of utility upgrades and implementation of inspection systems.
- Measurable improvements in utility services and environmental safety.

[85] List of 2018 DOE Tribal Energy Deployment Projects and DOE TEDP database.
[86] BIA Tribal Energy Development Capacity (TEDC) Grant Program
[87] https://www.thearcticinstitute.org/best-practices-solar-arctic-infographic/

GOAL 1: VILLAGE SUSTAINABILITY AND RESILIENCE

OBJECTIVE 1.4: Emergency Preparedness

Responsible Parties: ICAS Emergency Management, NSB Risk Management
Timeline: 2025–2027
Cost Estimate: $95,000,000
Funding Sources: FEMA, DHS Grants, NSB Funding, State Grants

Description:

The remote location and harsh climate of North Slope communities make them especially vulnerable to emergencies such as natural disasters, environmental hazards, and security threats. To ensure the safety and resilience of our communities, we propose to establish Emergency Operations Centers (EOCs) in every village, implement air and water quality control systems, and enhance air and marine traffic control systems. Collaborating with the U.S. Coast Guard, we will develop protocols to prevent unauthorized boats from docking without permission. We will construct evacuation roads and community shelters equipped with emergency supplies (water, food, clothing) sufficient for one month. Emergency transportation vehicles for mass evacuations of civilians to high ground will also be procured. Coastal erosion mitigation plans will be developed for each community and create shelter in place vs strategic relocation strategies. A regional cybersecurity council will oversee IT systems upgrades to utilities and public services throughout the region, with the highest caliber firewalls protecting the US Arctic's stability.

Steps:

- Establish EOCs in every community.
- Implement air and water quality control systems.
- Enhance air and marine traffic control systems.
- Collaborate with the U.S. Coast Guard on maritime security protocols.
- Develop evacuation roads and community evacuation shelters.
- Equip shelters with emergency supplies for one month.
- Procure emergency escape vehicles for evacuation to high ground.
- Create Coastal Erosion Mitigation plans for each community.
- Create Arctic Cybersecurity Policies and implement.

Evaluation Criteria:

- EOCs operational and staffed in all communities.
- Evacuation shelters constructed, equipped, and ready for use.

GOAL 1: VILLAGE SUSTAINABILITY AND RESILIENCE

OBJECTIVE 1.5: Community Cohesion

Responsible Parties: Tribal Councils, NSB, ASRC, Cities, VOICE
Timeline: 2025–2028
Cost Estimate: $500,000
Funding Sources: Self-Funded by Tribes, Private/Foundation Funds, ASCF

Description:

We aim to strengthen community cohesion by creating opportunities for team exercises and cultural activities that support each other and our families. This includes establishing local trilaterals between the tribe, Alaska Native Corporations (ANC), and city governments, as well as regional trilaterals involving NSB, ICAS, and ASRC. By staying informed and communicating cohesively, we will present a unified voice to state and federal governments. Publishing local newspapers and newsletters will keep residents and external stakeholders informed and engaged.

The ICAS Annual Regional Arctic Conference, will grow and be developed into a nexus for local and regional planning, sharing of ideas and investments.

Steps:

- Organize team-building exercises and cultural events in all communities.
- Establish local trilaterals between tribe, ANC, and city governments.
- Form regional trilaterals with NSB, ICAS, and ASRC.
- Develop cohesive communication strategies for state and federal engagement.
- Publish local newspapers and newsletters regularly.
- ICAS Annual Regional Arctic Conference, planning and sponsorships.

Evaluation Criteria:

- Trilateral partnerships established and functioning.
- Regular publication of newspapers and newsletters enhancing communication.
- ICAS Annual Arctic Conference held annually.

GOAL 1: VILLAGE SUSTAINABILITY AND RESILIENCE

OBJECTIVE 1.6: Strengthen Tribal Representation and Sovereignty

Responsible Parties: Tribal Councils, AFN, VOICE
Timeline: 2025–2028
Cost Estimate: $1,000,000
Funding Sources: Bureau of Indian Affairs, EDA, Tribal Grants, Foundation Funds

Description:

We aim to enhance tribal representation by guiding organizations like the Alaska Federation of Natives (AFN) and Voice of the Arctic Iñupiat (VOICE) to ensure their activities are community-driven. Utilizing the ICAS Tribal Council as a central clearinghouse for local village needs, wants, and success stories will promote harmonious growth. We will educate community members about tribal powers in schools, train staff in project management and accounting to work within the tribe, establish legal representation and protections, exercise tribal sovereignty, and develop tribally owned businesses, native arts and crafts.

Steps:

- Provide guidance to AFN and VOICE to align activities with community needs.
- Use ICAS Tribal Council to collect and share village needs and success stories.
- Implement educational programs in schools about tribal powers and sovereignty.
- Train staff in project management and accounting for tribal roles.
- Establish legal representation and protections for tribal interests.
- Exercise tribal sovereignty through the development of tribally owned businesses.

Evaluation Criteria:

- Improved alignment of AFN and VOICE activities with community priorities.
- Increased number of trained staff employed by the tribe.
- Establishment of legal frameworks and successful tribal businesses.

GOAL 2: ECONOMIC GROWTH AND INFRASTRUCTURE DEVELOPMENT

OBJECTIVE 2.1: Enhance Economic Development in North Slope Communities

Responsible Parties: Tribal Councils, NSB, ASRC, City Governments
Timeline: 2025–2028
Cost Estimate: $50,000,000
Funding Sources: SSBCI, EDA, SBA, USDA Rural Development, Venture Capital

Description:

There are a number of Alaska Regional Development Organizations[88] (ARDORS) in Alaska which have proven to be an incredible resource for new business and motivators for economic growth. We aim to stimulate economic growth across all North Slope communities by establishing a North Slope Economic Development Corporation and supporting new rural business opportunities. Key initiatives include developing businesses such as shopping malls, movie theaters, coffee shops, conference centers, restaurants, recycling stations, hydroponic farms, indoor activity centers for kids, childcare and daycare centers, local grocery stores and small engine machine shops to name a few. Purchasing mixed-use commercial spaces with storage, workshops, offices such as makerspaces or co-working spaces to incubate small businesses is also a priority. Leveraging programs like the State Small Business Credit Initiative (SSBCI) and venture capital funds will provide necessary financing for these projects.

Steps:

- Establish the North Slope Economic Development Corporation.
- Secure funding through SSBCI, venture capital, and other sources.
- Stand up a startup business investment program, providing business support.
- Develop and support key business projects in the community.
- Provide assistance to small businesses and entrepreneurs.
- Promote economic diversification and sustainability.

Evaluation Criteria:

- Number of new businesses established and operational.
- Measurable increase in local employment and economic activity.

[88] https://www.commerce.alaska.gov/web/ded/dev/ardors.aspx

GOAL 2: ECONOMIC GROWTH AND INFRASTRUCTURE DEVELOPMENT

OBJECTIVE 2.2: Tribal Oil and Gas Resource Development

Responsible Parties: Tribal Councils, BUECI, NSB, ASRC, Village Corps
Timeline: 2025–2028
Cost Estimate: $50,000,000
Funding Sources: DOE, EDA, BIA Tribal Energy Program, Private Investment

Description:

Internal: Tribal Oil and Gas Strategy: We propose to create Tribal Oil and Gas resource developments in every community to reduce or eliminate the need for diesel fuel. Utilizing local natural gas resources will provide cleaner, more efficient power generation. Additionally, we will establish a vehicle CNG (Compressed Natural Gas) conversion subsidy program to further reduce diesel dependence. This strategy will be more effective if, **Action 1: A CNG New Vehicle Ordinance** was passed by Tribes and Cities, **Action 2: CNG Retrofit Grant Program,** was established, subsidized by federal funds, and **Action 3. Build New CNG Refueling Stations**, starting with Barrow which has existing CNG fleet vehicles (BUECI, City of Utqiagvik).[89]

External: Improving Oil Company Communications: We aim to create tribal support resources to manage, oversee and support or regulate regional oil and gas exploration, ensuring respect of the natural environment, operational safety and cost-effective management of natural resources.

Steps:

- Assess natural gas availability and feasibility in each community.
- Secure funding through DOE, EDA, and other sources.
- Develop natural gas extraction and power generation infrastructure.
- Implement the vehicle CNG conversion subsidy program.
- Establish tribal oversight for oil and gas resource management.
- Commission natural gas facilities.

Evaluation Criteria:

- Successful CNG conversion program implementation.Reduction in diesel usage.
- Number of communities powered by natural gas.

[89] 1 gallon of gasoline costs $7.50 to $9.00, using Barrow as an example. It is estimated that $1.5M is spent every year on gasoline. With the Barrow Gas Fields estimated at having 100 to 160 year reserve capacity, shifting vehicles and home heating to natural gas is low hanging fruit. A CNG conversion kit for 2018 Ford Explorer, costs $8,000, which translates to recovery of the investment cost in 15,000 - 20,000 miles.

GOAL 2: ECONOMIC GROWTH AND INFRASTRUCTURE DEVELOPMENT

OBJECTIVE 2.3: Workforce Development

Responsible Parties: Tribal Councils, Iḷisaġvik College, NSB
Timeline: 2025–2027
Cost Estimate: $15,000,000
Funding Sources: EDA, Department of Education, USDA RD, State, Foundations

Description:

We aim to develop educational and workforce development centers in each village to enhance local employment opportunities. Partnering with Iḷisaġvik College, we will expand training programs through locally delivered courses and remote learning. Training will focus on international market opportunities, remote working, remote services, software development, and other relevant skills. Working with regional partners we will assist in developing the new Iḷisaġvik College building currently being planned. Recognizing that workforce development in the Arctic also includes preserving traditional hunting methods, local arts and crafts, and local songs, we will include these as employable vocations.

Steps:

- Collaborate with Iḷisaġvik College to design training programs.
- Secure funding from EDA, Department of Education, and other sources.
- Establish workforce development centers in each village.
- Implement training programs, both in-person and remote.
- Include traditional skills in the curriculum.
- Promote programs to local residents.

Evaluation Criteria:

- Number of workforce development centers established.
- Number of participants completing training programs.
- Employment rate of program graduates in local and remote jobs.

GOAL 2: ECONOMIC GROWTH AND INFRASTRUCTURE DEVELOPMENT

OBJECTIVE 2.4: Telecommunications and Broadband

Responsible Parties: Tribes, ASTAC, Quintillion, ATT, GCI
Timeline: 2025–2026
Cost Estimate: $30,000,000
Funding Sources: USDA Rural Utilities Service, FCC Grants, EDA, NTIA Tribal Broadband Connectivity Program, Private Investments

Description:

We aim to create redundant broadband connectivity throughout the Arctic by paralleling the subsea fiber with overland fiber. To ensure uninterrupted communication, we will install generator or battery-powered failsafes in every community as additional local backups, housed at the local Emergency Operation Centers. Our goal is to establish a sustainable model for local services by creating a tribally owned telecommunications company with local installers and repair staff.

Steps:

- Design the overland fiber network parallel to existing subsea fiber.
- Secure funding from USDA, FCC, EDA, and other sources.
- Install generator or battery-powered failsafes in each community.
- Establish a tribally owned telecommunications company.
- Train and employ local installers and repair staff.
- Deploy the overland fiber network and commission it for use.

Evaluation Criteria:

- Redundant broadband connectivity established.
- Tribally owned telecommunications company operational.
- Increased local employment in telecommunications.

GOAL 2: ECONOMIC GROWTH AND INFRASTRUCTURE DEVELOPMENT

OBJECTIVE 2.5: Tourism Infrastructure

Responsible Parties: Tribes, ICAS, NSB, Village Corporations, Cities
Timeline: 2025–2027
Cost Estimate: $2,000,000
Funding Sources: EDA, USDA Rural Development, State Tourism Grant, Private Funds

Description:

Statewide, direct visitor industry spending in Alaska is more than $2.42 billion annually. It generates 38,700 jobs and $1.3 billion in labor income. Barrow, for example as the northernmost city in the United States and has a unique potential for growing its tourism industry, which is currently essentially untapped. Even so, flights into Barrow are always full of visitors either coming up for work or leisure.

Kivgiq, The Messenger Feast, for example is an international event which attracts visitors from around the Arctic Circle. International Arctic and Polar conferences are hosted regularly and the potential for attracting professional medical, ecological, wildlife, marine biology, oil and gas, engineering, climatology, wildlife and other conferences is proven. Princess cruise ships are often seen passing by, with the village unfortunately out of reach. From sports fishing, hunting, polar bear, whale watching tours to sea-ice excursions, cultural immersion workshops, and other general ecotourism opportunities, the Arctic's tourism industry is a low hanging fruit. It is even becoming common to see self organized Asian tour groups walking around town and taking in the sites.

To do it right, the North Slope needs marketing, infrastructure and guides, which is the intention of this program.

Steps:

- Establish local tourist centers in each community.
- Develop hotels and restaurants to accommodate visitors.
- Create guided tours showcasing local subsistence and areas of interest.
- Train local residents as tour guides and hospitality staff.
- Promote the ecotourism program to attract visitors.

Evaluation Criteria:

- Tourist centers operational in all villages.
- Measurable increase in tourism and local economic activity.

GOAL 2: ECONOMIC GROWTH AND INFRASTRUCTURE DEVELOPMENT

OBJECTIVE 2.6: Transportation and Logistics

Responsible Parties: Tribal Transportation Program Managers, NSB ASTAR, ANCs
Timeline: 2025–2028
Cost Estimate: $50,000,000
Funding Sources: DOT, EDA, FHWA, BIA, USDA Rural Development, Denali

Description:

The lack of readily available gravel is the primary obstacle to road construction in our communities. We propose to develop new gravel sites around each village to supply materials for construction projects. Once the material is available, we will proceed with meeting pressing community needs such as the construction of evacuation roads as appropriate for each community, paving existing roads, constructing raised walkways to schools and central areas to enhance safety and accessibility.

Recent advancements in road grading, surfacing, and stabilization techniques provide an opportunity to pursue new methods of paving roads in the high arctic. For example soil-cement mixtures[90], use local aggregate and only 5-10% mixture of cement, lime and organic resins, which are finished with a thin bituminous surface. In fact, the US Army used this method to pave most rural roads in Alaska and 90% of rural roads in Australia built in the 1960s are still in use today. Rigid insulation used to provide stability and insulate the permafrost can be replaced with natural fibers (eg. kenaf, industrial hemp), which are safer to humans by avoiding water sources contamination.

We will continue the development of a Tribal Transportation Corridor, where utilities and broadband infrastructure follow roads connecting all communities of the North Slope, potentially creating an Arctic-wide utilidor system[91,92,93].

Steps:

- Identify and develop gravel sites at AKP, PHO, and other villages.
- Secure funding from DOT, EDA, and other sources.
- Explore/invent innovative road construction approaches
- Construct evacuation roads in each community. Pave roads where feasible.
- Build raised walkways to schools and central areas.
- Plan and design the Tribal Transportation Corridor and utilidor system.

Evaluation Criteria:

- Gravel sites operational; transportation projects completed.

---

[90] https://www.cement.org/cement-concrete/applications-of-cement/#chapter=chapter4
[91] NSB, Atqasuk Transmission Line Project Update, 2013
[92] ADN, "New snow roads will link Alaska's road system to Arctic communities" (March 18th, 2018)
[93] ASTAR homepage

GOAL 3: COMMUNITY HEALTH AND WELLBEING

OBJECTIVE 3.1: Children and Elder Services

Responsible Parties: Tribal Social Services, ICAS, NSB, Indian Health Service (IHS)
Timeline: 2025–2027
Cost Estimate: $500,000–$1,500,000
Funding Sources: HHS ACF, IHS, Foundation Funds

Description:

All villages have a critical need for enhanced services for both children and elders. We propose strategic investments in senior center and clinics programs to provide essential services like eyeglasses, medicines, homemaker and hospice care. There's also a pressing demand for child care and day care centers to support families and improve the well-being of the younger generation, and give opportunity for parents to go to work - a concern which resonated across the North Slope. This can be done with Child Care Development Fund programs and other Social Services and Child Services programs.

Steps:

- Collaborate with healthcare providers to establish senior centers with medical facilities.
- Secure funding from IHS and other federal programs dedicated to elder care.
- Recruit and train local residents to provide elder care services.
- Develop infrastructure for new daycare centers or expand existing ones.
- Encourage and support families to start home daycare businesses.
- Partner with Iḷisaġvik College to centralize nursing and hospice training.
- Assist with accessing grants and navigating licensing requirements.

Evaluation Criteria:

- Senior centers and child care facilities established and operational.
- Increased availability of services for elders and children in the community.
- Parents being able to work with their children safe in childcare facilities.

GOAL 3: COMMUNITY HEALTH AND WELLBEING

OBJECTIVE 3.2: Healthcare and Mental Health

Responsible Parties: ASNA, ICAS, NSB Health Dept, Tribal Health Organizations
Timeline: 2025–2028
Cost Estimate: $5,000,000
Funding Sources: SAMHSA Grants, Indian Health Service (IHS), EDA, Foundation

Description:

We aim to establish a coordinated Arctic taskforce for mental health, suicide prevention, and substance abuse. This initiative will develop capabilities, information, and support systems across communities. By using traditional diversion and healing methods, we will immerse patients in traditional life and subsistence activities as a means of healing.

Steps:

- Form a taskforce with key stakeholders.
- Secure funding from SAMHSA, IHS, and other sources.
- Develop programs incorporating traditional healing practices.
- Implement support systems across communities.
- Train local health workers.

Evaluation Criteria:

- Taskforce operational.
- Improvement in mental health outcomes.

GOAL 3: COMMUNITY HEALTH AND WELLBEING

OBJECTIVE 3.3: Public Safety and Security: No Drugs, No Poaching, No Trespassing

Responsible Parties: NSB PD, VPSO (new), Alaska State Troopers, U.S. Coast Guard
Timeline: 2027–2030
Cost Estimate: $10,000,000
Funding Sources: DOJ, TSA, DHS, FEMA, DOI/BIA

Description:

The goal of a comprehensive North Slope Public Safety and Security program objective is to eliminate illegal drug traffic, eliminate poaching, eliminate trespassing throughout the North Slope communities. To achieve this we must (a) support local police force through federal tribal and state funding and establish Village Public Safety Officers (VPSOs) in every village to strengthen law enforcement, (b) establish technology and information networks to detect, identify, restrict and restrain threats to public safety, and (c) educate youth and adults on ways to cope with stress and adversity and seek comfort in family, culture and traditions.

We will enhance public safety by improving border control, monitoring vehicle travel over tundra, and preventing illegal boat travel in rivers. This includes enforcing regulations on illegal hunting and registered helicopter hunting through tribal hunting permits. We plan to strengthen policing by establishing K-9 units in every village, integrating services into Emergency Operations Centers (EOCs), and modernizing local search and rescue. Implementing hunter personal locator beacons (PLBs) and creating protections against falling through the ice are also priorities.

Steps:

- Create North Slope Public Safety Master Plan
- Establish Public Safety Information Networks. Integrate policing with EOCs.
- Enhance border control measures. Establish K-9 units in each village.
- Modernize search and rescue operations.
- Implement mandatory PLBs for hunters.
- Education and Training for
    a. Active shooter training.
    b. Drug use/abuse, meth.
    c. Health, Suicide, Drug Abuse

Evaluation Criteria:

- Improved public safety metrics.
- Reduction in illegal activities.

GOAL 3: COMMUNITY HEALTH AND WELLBEING

OBJECTIVE 3.4: Food Security

Responsible Parties: Tribal Councils, USDA, Food Banks and Churches, NSB
Timeline: 2025–2028
Cost Estimate: $8,000,000
Funding Sources: USDA Grants, EDA, State Programs

Description:

We aim to preserve traditional subsistence hunting, fishing, and harvesting techniques to support families and maintain cultural practices. Initiatives include establishing local greenhouses, starting reindeer herding[94], and ensuring every village has water treatment plans. We plan to develop ice cellars, community meat and game processing centers, USDA-approved reindeer herding, elderly food distribution, WIC program coordination, and food banks.

Reindeer Herding was once very successful in the lands surrounding Barrow. In 1890 125 Siberian reindeer were introduced to Pt. Barrow to solve the problem of depleted game resources[95]. By 1935 the "Iñupiat Herd" had expanded to 30,000, stimulated by the decline in the whaling industry. By 1940 however, with the advent of the North Slope oil industry, supervision of the herds declined and were eventually absorbed into what is now called the Teshekpuk Caribou Herd, amongst others. Deer hunting is now an integral part of subsistence activities in Barrow, both for traditional and cultural purposes, but also as a means of supplementing the extremely high cost of food.

Steps:

- Support traditional hunting and harvesting.
- Build local greenhouses.
- Start reindeer herding programs.
- Develop water treatment plans.
- Establish processing centers and food distribution programs.

Evaluation Criteria:

- Increased food security.
- Successful implementation of programs.

[94] 2018-2023 Barrow Area-Wide CEDS.
[95] http://arcticcircle.uconn.edu/NatResources/reindeer.html

GOAL 3: COMMUNITY HEALTH AND WELLBEING

OBJECTIVE 3.5: Recreation

Responsible Parties: ICAS, NSB, City Governments
Timeline: 2025–2030
Cost Estimate: $10,000,000
Funding Sources: EDA, Treasury, SSBCI, National Parks Service, Foundation/Private

Description:

We aim to enhance recreational opportunities by establishing movie theaters, arcades, restaurants, coffee shops, central hang-out areas, and community Qargi for traditional song and dance in each community.

Steps:

- Identify community needs and locations.
- Secure funding and investments.
- Construct recreational facilities.
- Promote traditional cultural activities.
- Commission facilities for public use.

Evaluation Criteria:

- Recreational facilities operational.
- Increased community engagement.

GOAL 3: COMMUNITY HEALTH AND WELLBEING

OBJECTIVE 3.6: Culture and Traditions

Responsible Parties: Tribal Councils, IHLC
Timeline: 2025–2030
Cost Estimate: $8,000,000
Funding Sources: National Endowment for the Arts, EDA, Cultural Grants

Description:

We propose updating and constructing new Qargi in every community, which can share space with tribal offices. These centers will teach traditional arts, hunting, and host traditional camps in each village to preserve and promote our culture and traditions.

Steps:

- Plan and design new Qargi facilities.
- Secure funding from cultural grants.
- Construct or renovate Qargi in each community.
- Develop programs to teach traditional skills.
- Host traditional camps and events.

Evaluation Criteria:

- Qargi facilities operational.
- Increased participation in cultural programs.

GOAL 4: ENVIRONMENTAL STEWARDSHIP

OBJECTIVE 4.1: Climate Change

Responsible Parties: Tribal Environmental Coordinators, NSB DWM
Timeline: 2025–2027
Cost Estimate: $175,000,000
Funding Sources: NOAA Grants, EPA Grants, EDA, State Funding

Description:

Each village will develop a climate change mitigation plan addressing coastal erosion, storm events, and changes in subsistence species habitats. These plans will help communities adapt to environmental changes and protect their way of life.

Steps:

- Collaborate with environmental experts to assess climate impacts.
- Secure funding from NOAA, EPA, and other sources.
- Develop community-specific mitigation plans.
- Implement strategies for erosion control and habitat preservation.
- Educate residents on climate adaptation measures.

Evaluation Criteria:

- Completion of mitigation plans for all villages.
- Implementation of key adaptation strategies.

GOAL 4: ENVIRONMENTAL STEWARDSHIP

OBJECTIVE 4.2: Natural Resources

Responsible Parties: Natural Resources Managers, NSB
Timeline: 2025–2028
Cost Estimate: $3,000,000
Funding Sources: USGS Grants, BIA Natural Resources Funding, EDA

Description:

We will create detailed maps of natural resources, including gravel and mineral sites, through comprehensive environmental testing within a 20-mile radius of each village. This initiative aims to identify opportunities for grants to catalog tribal natural resources and determine traditionally honored and respected resources that should be protected instead of disrupted.

Steps:

- Conduct environmental testing around each village.
- Map and catalog natural resources.
- Identify grants to support resource identification.
- Engage communities to recognize protected resources.
- Develop management plans for resource preservation.

Evaluation Criteria:

- Resource maps completed for all villages.
- Key natural resources identified and protected.

GOAL 4: ENVIRONMENTAL STEWARDSHIP

OBJECTIVE 4.3: Environmental Management

Responsible Parties: Environmental Directors, NSB, Tribal Councils, EPA, USACE
Timeline: 2025–2030
Cost Estimate: $10,000,000
Funding Sources: EPA Grants, DOD/USCAE NALEMP, EDA, State Funding

Description:

We propose a regional environmental strategy that includes atmospheric monitoring, water resource testing, solid waste management, and addressing contaminants from Formerly Used Defense Sites (FUDS) and the Native American Lands Environmental Mitigation Program (NALEMP). This includes inspecting village heating oil tanks for containment, addressing glycol spill contaminants from power plants, and modernizing infrastructure with an active taskforce. Implementing Spill Prevention Control and Countermeasure (SPCC) programs in each village, conducting comprehensive soil contaminant testing, removing debris and old equipment, preserving wetlands through ordinances, and creating permafrost protection building guidelines are also priorities.

Steps:

- Establish a regional environmental taskforce.
- Secure funding from EPA, NALEMP, and other sources.
- Implement SPCC programs in all villages.
- Conduct soil and water contaminant testing.
- Remove debris and outdated equipment.
- Develop wetlands preservation ordinances.
- Create permafrost protection construction guidelines.

Evaluation Criteria:

- Environmental programs operational in all villages.
- Reduction in environmental hazards and contaminants.

GOAL 4: ENVIRONMENTAL STEWARDSHIP

OBJECTIVE 4.4: Subsistence and Wildlife

Responsible Parties: Wildlife Management Coordinator, NSB DWM, AK DF&G
Timeline: 2025–2030
Cost Estimate: $4,000,000
Funding Sources: US Fish and Wildlife Service Grants, EDA, State Programs

Description:

We aim to establish hunters' programs in each village to support animal harvesting, food preparation, and preservation. Setting up wildlife management departments in every village, providing wildlife management training, and facilitating knowledge sharing are key components. We will help fund and sustain organizations like the Alaska Eskimo Whaling Commission and Beluga Commission.

Steps:

- Establish wildlife management departments locally.
- Secure funding from relevant agencies.
- Implement hunters' programs and training sessions.
- Facilitate knowledge sharing between communities.
- Support and fund wildlife commissions.

Evaluation Criteria:

- Operational wildlife departments in all villages.
- Increased participation in subsistence activities.

GOAL 4: ENVIRONMENTAL STEWARDSHIP

OBJECTIVE 4.5: Tribal Lands

Responsible Parties: Land Management Directors, BIA, ANCs
Timeline: 2025–2027
Cost Estimate: $2,000,000
Funding Sources: BIA Grants, EDA, Tribal Funding

Description:

We will map and catalog tribal lands, enforce tribal land trespassing regulations, and ensure federal agency programs operating on tribal lands require tribal resolutions. Utilizing land-into-trust mechanisms will secure land for tribal government management. Owning land enables tribes to develop housing, infrastructure, and access federal grant-funded economic development opportunities. We will work cooperatively with ANCs to develop land resources.

Steps:

- Map and catalog all tribal lands.
- Enforce trespassing regulations on tribal lands.
- Utilize land-into-trust mechanisms for land security.
- Collaborate with ANCs on near and long term land development plans
- Require Federal Agencies seek tribal consent for programs on tribal lands.

Evaluation Criteria:

- Tribal lands mapped and secured.
- Enhanced tribal control over land management.

4.4 IMPLEMENTATION STRATEGY

Coordinating and implementing the actions outlined in this CEDS depends on a number of factors:

1. **Partnerships:** Responsible parties have been identified in each action, however we will need to formalize and strategize each task agreed on to establish ownership and responsibilities.
2. **Funding Availability:** Grant cycles rotate yearly for example and are mainly available to the ICAS and NSB. Raising venture capital can be easy or difficult, depending on the availability of funds. We hope the EDA will help raise or match capital funds raised.
3. **Workforce Development:** We want to be able to retain and create local jobs, but we cannot do this without identifying or training an appropriate workforce. The ICAS Workforce Development department and Iḷisaġvik College will need to be up to the task, with sufficient lead time to do the job.
4. **Infrastructure Development:** We also need to identify assets such as land, which for example is primarily in the purview of UIC. Redevelopment projects depend on who owns the land, with some opportunities for Brownfields grants filled in. There are a number of fractionated lands and even abandoned lots in Barrow which need to be identified and pursued for such purposes.
5. **Marketing and Sales:** Identifying customers who will use the new services and pursuing those customer markets is just as important as standing up the new operations and initiatives themselves. The tourism industry, for example, needs a coordinated marketing campaign.

In determining the timelines themselves, we considered the driving factors above in combination with the priority set by the community. For example, addressing the need for Infrastructure Investments, Housing and Utilities was the number one goal in our list, as it received the highest combined score of Concerns, Opportunities, Threats and Big Ideas. Otherwise, larger projects which are central to each Goal have been spaced out throughout the 5 years, with 2 large and 2 medium or smaller projects being pursued per year.

Certain goals were given a broad span of time, as can be seen for certain ongoing programs such as Community Cohesion and Tribal Representation, as they represent ongoing efforts with many variables, which would be best serve by establishing relevant offices, and so on.

A cross-cutting key to the success of this or any North Slope Economic Strategy, is the establishment of amicable local and regional trilateral agreements. Regional strategies need regional administrative bodies requiring large amounts of funding, agreements and compromises by all parties towards the pursuit of a better future.

Table 25: *CEDS 2025-2030 Proposed Project Prioritization Timeline.*

Task	Cost	Timeline					
		2025	2026	2027	2028	2029	2030
GOAL 1: VILLAGE SUSTAINABILITY AND RESILIENCE							
OBJECTIVE 1.1: Physical Infrastructure Development in All Communities	$ 50,000,000						
OBJECTIVE 1.2: Innovate Arctic Housing	$ 25,000,000						
OBJECTIVE 1.3: Enhance Utilities Infrastructure	$ 50,000,000						
OBJECTIVE 1.4: Emergency Preparedness	$ 95,000,000						
OBJECTIVE 1.5: Community Cohesion	$ 500,000						
OBJECTIVE 1.6: Strengthen Tribal Representation and Sovereignty	$ 1,000,000						
GOAL 2: ECONOMIC GROWTH AND INFRASTRUCTURE DEVELOPMENT							
OBJECTIVE 2.1: Enhance Economic Development in North Slope	$ 50,000,000						
OBJECTIVE 2.2: Tribal Oil and Gas Resource Development	$ 50,000,000						
OBJECTIVE 2.3: Workforce Development	$ 15,000,000						
OBJECTIVE 2.4: Telecommunications and Broadband	$ 30,000,000						
OBJECTIVE 2.5: Tourism Infrastructure	$ 2,000,000						
OBJECTIVE 2.6: Transportation and Logistics	$ 50,000,000						
GOAL 3: COMMUNITY HEALTH AND WELLBEING							
OBJECTIVE 3.1: Children and Elder Services	$ 1,500,000						
OBJECTIVE 3.2: Healthcare and Mental Health	$ 5,000,000						
OBJECTIVE 3.3: Public Safety: No Drugs, Poaching, Trespassing	$ 10,000,000						
OBJECTIVE 3.4: Food Security	$ 8,000,000						
OBJECTIVE 3.5: Recreation	$ 10,000,000						
OBJECTIVE 3.6: Culture and Traditions	$ 8,000,000						
GOAL 4: ENVIRONMENTAL STEWARDSHIP							
OBJECTIVE 4.1: Climate Change	$ 175,000,000						
OBJECTIVE 4.2: Natural Resources	$ 3,000,000						
OBJECTIVE 4.3: Environmental Management	$ 10,000,000						
OBJECTIVE 4.4: Subsistence and Wildlife	$ 4,000,000						
OBJECTIVE 4.5: Tribal Lands	$ 2,000,000						
TOTAL PROJECTS	**$ 655,000,000**						

5. EVALUATION FRAMEWORK

To avoid duplication, the Evaluation Criteria have been incorporated into each Goal and Objective in Section 4 of this document. In general terms, we measure the performance and impact of the task by:

Evaluation Criteria:

1. Confirming the critical steps towards achieving the objective have been completed.
2. Confirming that grant applications, capital, and project funding is pursued or secured.
3. Measuring distinct metrics, such as:
    a. Economic Activity: revenue generation, grants secured, cost savings, funds kept within the village, new business creation, new business facilitation endeavors, new revenue streams secured, etc.
    b. Environmental Impacts: hazard mitigation, deployment of alternative energy technologies, ecological impact monitoring programs.
    c. Social Impacts: workforce trained, new educational courses created, number of students enrolled, entertainment options created, subsistence jobs, ie "subsistence as a profession" job creation, etc.
    d. Communication Channels: agreements, MOU/MOAs created, ordinances, information networks, websites, etc.

Resource Allocation:
In determining the best way to use resources, we have used each stakeholder organizations strengths and assets, while distributing load where possible, for example:

- **North Slope Tribal Governments:** Best employed in the role of leading CEDS activities, leveraging federal funding capabilities of the regional Tribal Government. They assure Traditional and Cultural ways of living and performing projects are obeyed.
- **NSB:** Be it Utilities, Roads, Housing the municipality has the best track record of delivering projects and safeguarding critical infrastructure throughout the region. They also have cost-matching abilities, which can be leveraged against large projects.
- **ASRC:** As the most successful regional corporation in Alaska, ASRC has access to discretionary capital and the good will to invest in local businesses and infrastructure.
- **Village Corporations:** As the majority landowners, ANCs are essential in allocating land and buildings for new developments, new construction, and repurposing. For example, In 1992 UIC allocated almost 250 homesite lots to shareholders for new home construction and owns a gravel mine, essential to road and infrastructure development.
- **Iḷisaġvik College:** A prolific institution always adapting to meet the needs of Barrow's changing workforce, the college works closely with the ICAS, ASRC, and UIC to determine workforce needs.

6. ECONOMIC RESILIENCE

6.1 Planning and Implementing Economic Resilience

Economic resilience is broadly defined as the ability to withstand and recover quickly from a disruption to the economic base. We will use the FEMA national resilience framework to identify those segments of the North Slope economy, which need to be protected or strengthened.

The **Department of Homeland Security (DHS) has identified 16 Critical Infrastructure Sectors (CISs)** that are vital to the United States' security, economy, public health, and safety:

1. Chemical Sector
2. Commercial Facilities Sector
3. Communications Sector
4. Critical Manufacturing Sector
5. Dams Sector
6. Defense Industrial Base Sector
7. Emergency Services Sector
8. Energy Sector
9. Financial Services Sector
10. Food and Agriculture Sector
11. Government Facilities Sector
12. Healthcare and Public Health Sector
13. Information Technology Sector
14. Nuclear Reactors, Materials, and Waste Sector
15. Transportation Systems Sector
16. Water and Wastewater Systems Sector

The **Federal Emergency Management Agency (FEMA) has established 6 Recovery Support Functions (RSFs)** under the National Disaster Recovery Framework to facilitate coordination and collaboration among federal agencies during disaster recovery:

1. Community Planning and Capacity Building
2. Economic Recovery
3. Health and Social Services
4. Housing
5. Infrastructure Systems
6. Natural and Cultural Resources

These RSFs are designed to support state and local governments in rebuilding and revitalizing communities affected by disasters, ensuring a comprehensive and integrated approach to recovery.

By comparing our strategic goals with the Department of Homeland Security's 16 Critical Infrastructure Sectors (e.g., communications, emergency services, energy) and FEMA's 6 Recovery Support Functions, we find reasonable coverage of the CISs and near-perfect consideration of the key RSFs. Consequently, the CEDS effectively satisfies the planning and implementation requirements for economic resilience activities in the region.

The SWOT meetings highlighted the critical importance of developing a robust Arctic Resilience Framework, leading to the integration of distinct Economic Resilience, Emergency Management, and Disaster Mitigation projects throughout the Action Plan. In Image 31, we present a more detailed exposition of the key areas that the communities have grouped and prioritized for development.

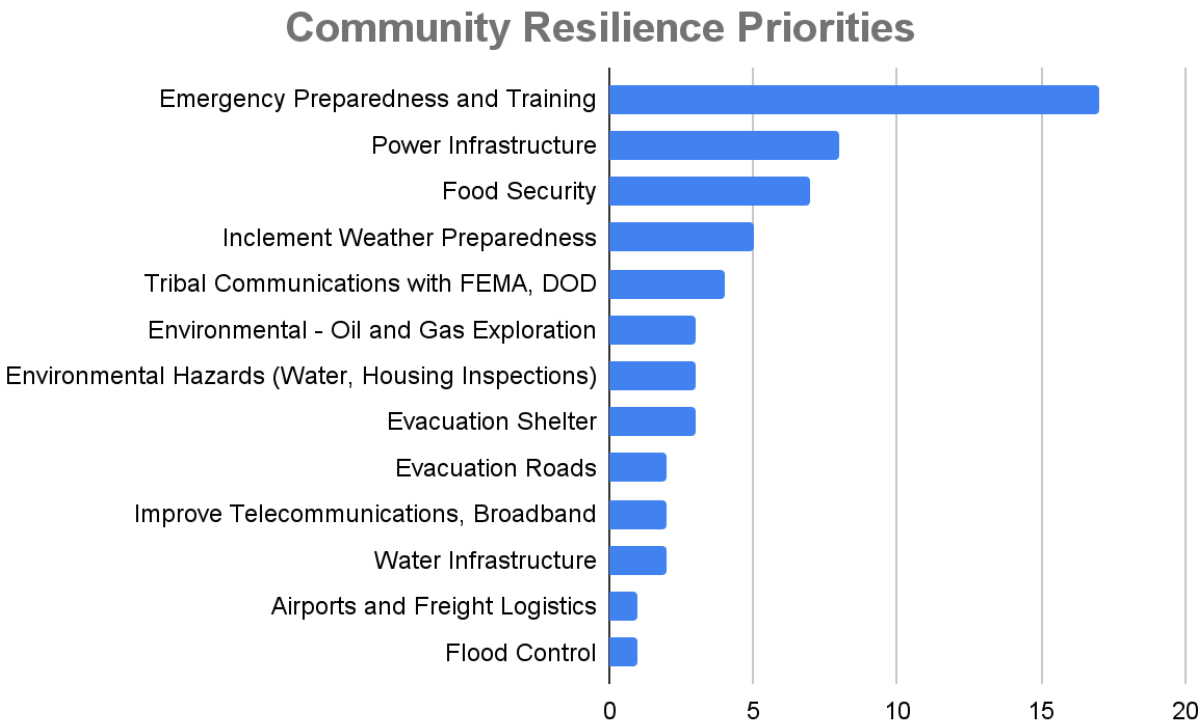


Image 31: *Collected Tribal Community Resilience Priorities.*

It is worthwhile keeping the specific topics listed here from the feedback received, from which we can subsequently develop an implementation framework. It will serve us to group certain topics together into thematic sections: (a) Emergency Preparedness, (b) Utilities, (c) Environmental and (d) Food Security:

Table 26. *Regional Economic Resilience Sectors identified through CEDS development.*

ER1	Emergency Preparedness	Emergency Preparedness and Training Inclement Weather Preparedness Tribal Communications with FEMA, DOD Evacuation Shelter Evacuation Road Flood Control
ER2	Robust Arctic Utilities	Power Infrastructure Water Infrastructure Improve Telecommunications, Broadband
ER3	Environmental Stewardship	Environmental - Oil and Gas Exploration Environmental Hazards - Clean Water, Housing Inspections
ER4	Food Safety and Security	Food Security Airports and Freight Logistics

Addressing these four sections, we will first provide context followed by implementation projects (as Economic Resilience Projects). The implementation strategies listed below stand alongside the Economic Strategies in Section 4.

6.1.1 ER1: Emergency Preparedness

Through persistent efforts, the ICAS EM department has successfully conducted training and assessments across various communities, highlighting the importance of a consistent and updated emergency management strategy.

The success of the information campaign is evident, as communities are increasingly recognizing and emphasizing the importance of emergency preparedness, including the need for planning, training, and the development of disaster mitigation initiatives, such as:

a. In 2018 ICAS created a regional Emergency Management Department and begun development of eight (8) local + 1 regional ICAS EOCs.
b. In February 2024, FEMA accepted the North Slope's first Multi-Jurisdictional Hazard Mitigation Plan, which is in the process of being adopted by all jurisdictions, cities, tribes and the municipality.
c. The NSB Risk Management Department has an extensive list of Hazard Mitigation Plans [96] following FEMA guidelines since 2015 and is being updated in 2024. Proliferation of these plans throughout stakeholders, CEDS partners and local businesses will bring awareness and nurture cooperation in times of crisis.

ER1: Emergency Preparedness Implementation Strategy follows:

ER1.1	**EOCs:** Complete goal of establishing Emergency Operations Centers and Cybersecurity programs in every community, inclusive of the development of local and Regional communications protocols during times of crisis.	Facilitate through FEMA THSGP, CISA TCGP and FEMA BRIC grants with endorsements from all tribes and support from the NSB Risk Management.
ER1.2	**G2G Communications:** Establish and maintain communications with federal entities, FEMA and DOD on matters of national disasters and national security.	ICAS is better positioned to establish communications with Federal agencies, with the NSB taking lead on State EM planning.
ER1.3	**Mitigation Planning:** Tribal Emergency Response Plans will include planing for evacuation roads and shelters, personal disaster preparedness kits.	Facilitate through BIA Tribal Climate Resilience, FEMA BRIC program, USDA and EPA programs.

[96] http://www.north-slope.org/departments/administration-finance/risk-management

6.1.2 ER2: Robust Arctic Utilities

The stability of the infrastructure necessary to maintain the communities of the North Slope is tenuous, to say the least. Power uptime is around 95% (service is unavailable for 36.53 hours per month), compared to the 99.95% utilities strive for throughout the US. There are frequent, village wide power interruptions which can last for days, such as power outs which took out heat and water overnight in Point Hope, a village of 900[97] and water quality and supply interruptions in Point Lay[98] and Wainwright through 2022 and 2023.

After these disasters, the Quintillion subsea fiber providing broadband to Barrow, Wainwright, and Point Hope was severed by an ice-scouring event near Oliktok Point in Prudhoe Bay.[99] The disruption, lasting 100 days from June 11th to September 19th, 2023, severely impacted the communities. Point of Sale (POS) systems, remote learning, and Automated Dispensing Cabinets (ADCs) became inoperable, and flights to and from Barrow were canceled due to failed booking software. Backup satellite systems for phone and medical services were overwhelmed, with bandwidth too limited to function properly. The demand for broadband services had grown approximately 50-fold since satellite communications were last used, outpacing system capacity.

In most circumstances the disasters are just under the level where FEMA would interfere leaving the NSB to transfer drinking water and effect emergency repairs.

ER2: Robust Arctic Utilities Implementation Strategy follows:

ER2.1	**Power:** Diesel power generators throughout the North Slope are to be assessed and modernized. Develop alternative power generation systems using natural gas, solar or wind with gravity, battery backups.	Facilitate through BIA, DOE, USDA and EDA grants. State and municipal funding to match federal investments.
ER2.2	**Water:** Start by inspecting and cleaning village water sources with regular monthly inspections. Distributed treatment plants throughout the communities, eg. 2 per block in utility cabinets as primary or as backups.	EPA, FEMA, USDA funding. State and municipal funding to match federal investments.
ER2.3	**Internet:** Create a redundant fiber ring to the subsea fiber to assure continuity of services. Setup and test LEO satellite backups at all critical infrastructure points, schools, hospitals and NSB Search and Rescue, Tribal offices.	Facilitate through FCC, NTIA, USDA and state broadband grants.

[97] Power outage left half of Point Hope without heat and water overnight this weekend, Arctic Sounder
[98] https://aidc.uaf.edu/news-archive/infrastructure-and-permafrost-degradation-in-point-lay-alaska/
[99] https://www.quintillionglobal.com/service-outage/

6.1.3 ER3: Environmental Stewardship

"Protection of the Environment" is an Iñupiat tenant and as stewards of the North Slope, the communities need a cohesive environmental perspective. Protection of the environment involves a number of matters both cultural and traditional but also relating to the nature of the Arctic, the permafrost and tundra. The subsistence uses involve both wildlife management, environmental and vegetation from whaling to caribou hunting, waterfowl, vegetation and include the protection of endangered species.

Protection of the landmasses involves the provision of clean air, water and solid waste disposal, furthermore inclusive of cleaning up abandoned military bases, discarded oil drums and management of past and new contaminated sites. While Oil and Gas Exploration is essential to the US economy, it must be carefully managed with operating protocols strictly enforced.

Responding to the impacts of weather, coastal erosion and consequential damage to infrastructure from lack of adequate drainage throughout the communities is costing time and money were resources could be directed elsewhere. The EPA and Army Corps of Engineers recently (2017) updated measurements of coastal erosion along Barrow and has presented preliminary plans for revetment wall. The plan involved the use of sheet pile, which are large metallic sheets driven into the coastline. This approach failed when used on the Port of Anchorage[100] and was rejected by the NSB and the local community and Rock Armor was requested, which has been used successfully in Wainwright. We will monitor progress as these agencies are working towards resolution of this critical concern.

Efforts to mitigate these environmental challenges are ongoing, but they require substantial collaboration between federal agencies, local authorities, and the communities themselves to ensure long-term sustainability and protection of our cultural heritage and natural environment.

ER3: Environmental Stewardship Implementation Strategy follows:

ER3.1	**Wildlife:** Establish local wildlife and subsistence management departments.	BIA, FWS and USDA grants. Private/Foundation funding.
ER3.2	**Natural Environment:** Establish Environmental programs for clean air, water, solid waste and housing inspections, abandoned vehicle removal, etc	EPA, HUD funding, AK DNR, Brownfields
ER3.3	**Climate Change:** Climate change, coastal erosion, wetlands, permafrost, historical sites at risk due to erosion policies and measures studied, implemented, enforced.	DOI/BIA, EPA, FEMA, EDA, USDA

[100] ADN, Anchorage's port is falling apart. With the clock ticking, who will pay to fix it? (Aug 15, 2017)

6.1.4 ER4: Food Safety and Security

Ensuring food safety and security is essential for the North Slope's economic resilience. The region's remote location, harsh climate, and limited access to fresh produce require strategies that address both food transportation logistics and local production. These efforts must also respect Iñupiat traditions, as **subsistence hunting, fishing, and gathering remain crucial for both food security and cultural preservation.**

Protecting subsistence resources, such as hunting and fishing grounds, is vital, especially as environmental changes like coastal erosion and shrinking ice cover threaten these areas. Improving fish camps and infrastructure to support access to caribou and waterfowl migration routes can help ensure reliable food sources. However, modern methods like **vertical farming** and **indoor agriculture** are becoming increasingly important. These systems, already successful in other Arctic regions, offer year-round production of leafy greens, berries, and herbs, reducing dependency on expensive imports and improving access to fresh, nutritious food.

Reliable food supply chains are also critical. Air freight is the primary method of transporting food, but challenges like extreme weather and limited infrastructure cause delays and increase costs. Strengthening freight logistics and expanding airport facilities can improve food delivery reliability.

ER4: Food Safety and Security Implementation Strategy:

ER4.1	**Subsistence:** Enhance fish camp facilities, improve hunting grounds, and protect subsistence resources.	Funding through BIA, DOI, USDA, Private/Foundation grants.
ER4.2	**Freight Logistics:** Improve airport and freight facilities to ensure reliable food transport.	Funding: FAA, DOT, USDA Rural Development.
ER4.3	**Indoor Agriculture:** Develop vertical farming and containerized growing systems to produce local fruits, vegetables, and small livestock.	Funding: USDA, DOE, Private Partnerships, EDA.

6.2 Establishing Information Networks

Establishing effective information networks is essential for advancing economic resilience across the North Slope. These networks will enable enhanced communication and data sharing among local, regional, and national stakeholders, supporting informed decision-making, resource coordination, and long-term economic development. By creating a cohesive system for the flow of information, we ensure that communities are prepared to respond to evolving economic conditions and challenges.

1. Stakeholder Collaboration and Trilateral Agreements: The development of trilateral agreements between local, regional, and national entities is central to economic information sharing. These agreements will involve the ICAS, North Slope Borough (NSB), Arctic Slope Regional Corporation (ASRC), tribal organizations, and city governments. These groups will coordinate efforts and communicate effectively to ensure that economic resilience goals are aligned across all communities. Establishing regular meetings and creating a shared platform for data exchange will further enhance collaborative efforts.

2. Data Collection and Sharing: To support decision-making and planning, a centralized database will be developed to store and distribute real-time economic, environmental, and market data. This network will collect data from ongoing projects, workforce trends, subsistence practices, climate impacts, and market opportunities. The information will be accessible to tribal councils, local governments, businesses, and educational institutions, allowing for better coordination of development efforts across the North Slope.

3. Technology and Infrastructure Development: Improving broadband and telecommunications infrastructure is essential to the success of information networks in the North Slope. ASTAC and Quintillion will lead efforts to expand high-speed internet access, and redundancy measures will be implemented to ensure continuous service during outages. The development of tribally-owned telecommunication companies will be explored, ensuring that local infrastructure is resilient and adaptable to future technological needs .

4. Emergency Communication Systems: A key component of these networks will be the integration of emergency communication systems. The system will provide rapid dissemination of information during natural disasters, economic disruptions, and public health crises. Emergency Operations Centers (EOCs) in each community will house critical communications equipment, enabling timely responses to emergencies. In the event of broadband or communication line failures, backup satellite systems will ensure ongoing connectivity for critical services.

5. Workforce Development: Information networks will also support workforce development by connecting residents with training programs, job opportunities, and education. This will involve creating a regional job board, facilitating communication between Iḷisaġvik College and local businesses, and ensuring that economic development initiatives align with local workforce

needs. By enhancing local capacity, these networks will contribute to long-term economic sustainability.

6. Marketing and Outreach: A regional digital platform will be developed to promote the North Slope's assets, including local businesses, cultural events, and tourism opportunities. This platform will serve as a hub for external stakeholders, investors, and tourists, showcasing the unique opportunities available in the region. A specific focus will be placed on promoting the region's traditional and subsistence resources, native art as a way of communicating culture to further supporting economic diversification.

Implementation Strategy:

- **Collaborate with stakeholders** to formalize trilateral agreements and establish regular data-sharing protocols.
- **Secure funding** for broadband expansion and redundancy measures through federal and state programs.
- **Develop and maintain a centralized online platform** for regional economic data, job opportunities, and information sharing.
- **Establish backup communication systems** to ensure continuous connectivity for emergency and essential services.

By building strong information networks, the North Slope will improve coordination among stakeholders, enhance local capacity, and ensure the region's economic resilience in the face of changing economic and environmental conditions.

APPENDIX A. CEDS COMMITTEE ROSTER

Tribal Leadership and organizational designees from all North Slope communities.

(Adding organizations and designees as they confirm attendance to CEDS meetings)

- Inupiat Community of the Arctic Slope
- Native Village of Barrow
- Native Village of Point Hope
- Native Village of Wainwright
- Native Village of Nuiqsut
- Native Village of Anaktuvuk Pass
- Native Village of Atqasuk
- Native Village of Kaktovik
- Native Village of Point Lay
- Ukpeagvik Iñupiat Corporation
- Olgoonik Corporation
- Nunamiut Corporation
- Atqasuk Corporation
- Arctic Slope Regional Corporation
- North Slope Borough
- City of Utqiaġvik
- Iḷisaġvik College

APPENDIX B. PUBLIC COMMENTS

Public comments collected during the public review and comment period October 10 - November 20, 2024, were transmitted to the CEDS Project Manager and copied here in whole. Comments relevant to the SWOT analysis were folded into our analysis.

1. Section 2 should just be graphs, so people can scan information quickly.

Removed tables and text and redesigned this section to be more pleasing and shorter.

2. Section 3 - SWOT analysis could use some intro text. It jumps immediately into talking about respondents with no introduction as to what's going on. What was the survey about and why? Needs motivation at the beginning.

Introductory texts added throughout the document with explanations of what the point of that section is.

3. Section 3.3 - 5, why are you representing 81% and 82% of the responses in the chart? Why not 100%?

Removed the statistic and replaced the text explaining that entries were grouped together by theme.

4. Goal 1 " Cost Estimate: $500,000 - $5,000,000 " wide range. Factor of 10.

Added text explaining $500k is for remodeling an existing property and $5M is for new development.

5. Goal 2 " There is a competent availability of jobs" what does a competent availability mean?

Changed "competent" to "reasonable availability of jobs".

6. Goal 4 "representing opportunities for diversifying the economy" how about 'broadening the economy". Overused term. What does it really mean?

Change made as suggested.

7. Goal 4.4 - Could use a few words describing the motivation for that section before jumping into the timeline chart.

Added section describing what affects the timeline and how this timeline was put into place.

8. Section 6 Summary Information - These sections are way too long and in my opinion are duplicated in the NSB comprehensive plan and UIC master plans. For economic development it will be better if the sections are short and easy to read.

Rewrote section in a completely different context, reflecting gt7FEMA's priority sections.

APPENDIX C. SWOT MEETINGS DETAIL RESPONSES

The SWOT data and analysis can be found here:

- AKP SWOT 2024 Analysis
- ATQ SWOT 2024 Analysis
- BRW SWOT 2024 Analysis
- BTI SWOT 2024 Analysis
- NUI SWOT 2024 Analysis
- PHO SWOT 2024 Analysis
- PLY SWOT 2024 Analysis
- WAI SWOT 2024 Analysis

APPENDIX D. ICAS RESOLUTION ADOPTING CEDS 2025-2030

IÑUPIAT COMMUNITY of the ARCTIC SLOPE

an IRA Regional Tribal Government

P.O. Box 934 · Barrow, Alaska 99723
Ph: (907) 852-4227 1-888-788-4227 Fax: (907) 852-2449

RESOLUTION 2025-01

Resolution Adopting the Regional Comprehensive Economic Development Strategy CEDS 2025-2030

WHEREAS, the Iñupiat Community of the Arctic Slope (ICAS) is a Federally Recognized Regional Alaska Native tribal government, established on August 26, 1971, governed by the Indian Reorganization Act of 1934, and a Tribal constitution as amended, that represents and is selected by the Iñupiat people of the Arctic Slope region; and

WHEREAS, ICAS is the regional tribe of the North Slope and the ICAS Tribal Council represents each village within the ICAS jurisdiction and is comprised of members from each of these eight (8) villages of the North Slope, (being Anaktuvuk Pass, Atqasuk, Barrow (Utqiagvik), Nuiqsut, Point Lay, Point Hope, Kaktovik, and Wainwright); and

WHEREAS, the authority of the ICAS Tribal Council is established by the ICAS Constitution, which provides that it exercise the sovereign rights and powers of ICAS for the benefit of tribal members, to conserve and retain tribal lands and resources including subsistence and environmental issues, to establish and carry-out justice systems including social services pursuant to Inupiat Tribal law and custom, and to increase the variety and quality of services provided to current tribal members and for our future generations; economic development to generate sustainable funding sources for ICAS as a regional tribal government is pursued to enhance the existing human resource services, community access, village transportation; and

WHEREAS, the Economic Development Administration (EDA) awarded ICAS a grant with Award number #07-86-077831 for the creation of the first ever North Slope Region Wide, Comprehensive Economic Development Strategy (CEDS), to which stakeholders from all communities of the North Slope are participants in the CEDS Committee; and

WHEREAS, the CEDS was compiled and presented to stakeholders and to the public for comment for a 30 day period on the ICAS website, and meets the EDA content guidelines.

NOW, THEREFORE, BE IT RESOLVED, that the Tribal Council of the Iñupiat Community of the Arctic Slope (ICAS) hereby approves and adopts the ICAS CEDS for 2025-2030 and will support the execution of the plan to the best of its abilities.

CERTIFICATION:

We, the undersigned here certify that the Iñupiat Community of the Arctic Slope Council of Thirteen members of whom 12 are present on this 6th day of February, 2025 and the resolution attachment was adopted by a vote of voting 12 for, and 0 voting against and 0 abstaining.

APPROVE:

Nicole Wojciechowski,
ICAS Tribal Council President

ATTEST:

Doreen Leavitt,
ICAS Tribal Council Secretary