Northwest Arctic Borough

Comprehensive Economic Development Strategy 2012 - 2017

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Recipient:
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163 Lagoon St.
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Introduction

> A comprehensive economic development strategy (CEDS) is designed to bring together the public and private sectors in the creation of an economic roadmap to diversify and strengthen regional economies. The CEDS should analyze the regional economy and serve as a guide for establishing regional goals and objectives, developing and implementing a regional plan of action, and identifying investment priorities and funding sources. A CEDS must be the result of a continuing economic development planning process developed with broad-based and diverse public and private sector participation, and must set forth the goals and objectives necessary to solve the economic development problems of the region and clearly define the metrics of success. (US Department of Commerce, Introduction, CEDS Summary of Requirements)

This CEDS discusses the current economic development challenges and advantages; and the problems and opportunities posed by external and internal forces affecting the regional economy.

An important part of this CEDS will be the continuing documentation of community and regional needs. This CEDS will support the planning and development efforts of regional organizations, agencies, and individuals. This CEDS has been prepared to meet the requirements of the federal Economic Development Administration (EDA), and inclusion in this CEDS will be an important part of their assistance qualification process.

The Northwest Arctic Borough Economic Development Commission and Department were established in 2002 to, "Promote Economic Development that is consistent with the traditional culture and values of the people of the region." This CEDS is an important part of this development.

There are four sections to this CEDS. The first begins the discussion of current realistic regional socio-economic conditions (Tab 2). The second focuses on each of our remote rural communities (Tabs 3 – 8). For years the Borough has sponsored village Comprehensive Development Planning multi-day work sessions. The city government leaders, tribal leaders, and interested community members participated. These Comprehensive Development Plans documents the community history, their vision, their goals and objectives, their development projects, their capital priorities, and priority community projects, and much more. The Borough continues to work with villages to update their Comprehensive Development Plans. The third section includes the Northwest Arctic Strategic Energy Plan (Tabs 9 & 10), our most recent regional data and strategies for addressing our tremendous energy burdens. The final section of this CEDS (Tabs 11 & 12) includes a description of four regional economic strategies.

Background: Regional Challenges and Advantages – Northwest Arctic Region

There are many dimensions of our region that need to be healthy in order for each of our communities and the regional economy to develop more effectively. This section provides a brief description of many of the dimensions that are important to consider in developing a Comprehensive/Regional Economic Development Strategy.

Regional History

The Northwest Arctic region is the home of the Iñupiat as it has been for thousands of years. The Iñupiaq language and culture developed and thrived in this and similar Arctic and semi Arctic regions. However, in recent decades, elders have been alarmed by how little **Iñupiaq** continues to be used by or even understood by young adult Iñupiat and their children. Today the Iñupiat, at more than 80% of the regional population, continue to depend upon their traditional way of life **harvesting** fish, animals, and plants. This is especially the case in the remote rural communities. These seasonal harvests continue to have a strong nutritional, cultural and social significance. However, in each of our communities the commercially produced commodities (arctic gear, supplies, vehicles, and goods in general) continue to become more and more popular.

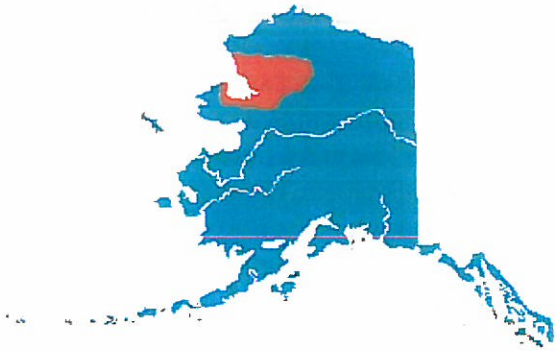
The current socio-economics of this region have been developed and impacted by a number of historic events over the past 200 years: 1818- Sailing on behalf of Russia, Otto Von Kotzebue, of Germany, sailed into and named the Kotzebue Sound. "Kikiktagruk", the indigenous name for the city of Kotzebue, was the traditional trading hub for this region. 1867- the United States purchased Russia's discovery claims for $6.2 million dollars. 1897/98- a false gold rush on the Kobuk River brought about 2,000 miners to the region, but most soon left for Nome. 1899- a US Post Office was established in Kotzebue. In the early 1900's missionaries of the Friends Church began establishing churches in Kotzebue and in traditional winter villages. 1958 – Project Chariot, US Atomic Energy Commission mobilizes on a plan to use a series of atomic detonations to create a harbor near Pt.Hope[1]. 1959- Alaska becomes the 49th State. 1962- Howard Rock began publishing the Tundra Times. 1966- AFN and the (non-profit) Northwest Alaska Native Association were founded. 1968- Oil discovered in Prudhoe Bay. 1970- Red Dog named by Bob Baker (NANA History Website)[2]. 1971- ANCSA passed. 1972- NANA Regional Corp, Inc. established. The non-profit Northwest Alaska Native Association becomes Mauneluk, later spelled, Maniilaq (NANA Website). 1976- Iñupiat Ilitqusiat program started; all of the ANCSA village profit corporations merged with the NANA Regional Corporation, with the exception of the Kikiktaruq Iñupiat Corporation in Kotzebue. 1977- Trans-Alaska Pipeline completed. 1980- NANA selects Red Dog Mine area (120 sq mi) and ANILCA passed. 1981- The Kotzebue Technical Center (later re-named the Alaska Technical Center) is built in Kotzebue. 1982- NANA signed operating agreement with Cominco (now Teck Alaska, or Teck) to operate Red Dog Mine; and Camp Sivuunniigvik was founded (NANA Website). 1982- UAF re-opens Chukchi Campus to provide higher education services to the region. 1986- January, Maniilaq Association submits petition to the State to form the NWA Borough; the State Local Boundary Commission officially detaches 2 million acres from the North Slope and moves it (including the Red Dog Mine) to NANA with a catch: a borough must be formed (NUNA, Vol VII, Feb 1986)[3]; June, the NWA Borough was incorporated as a First Class

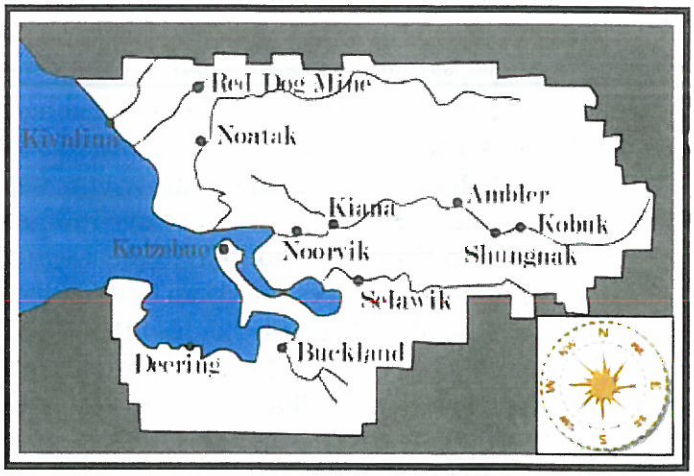
[1] *The Firecracker Boys* by Dan O'Neill (1994)
[2] NANA Regional Corporation Timeline Website: http://nana-dev.com/about/our_history/timeline
[3] February 1986, a special publication of the Maniilaq Association, NUNA, Volume VII, Number 1.

Borough and the REAA became a borough school district. 1987- the NWA Borough became a Home Rule Borough. 1989- NANA establishes the Robert Aqqaluk Newlin, Sr. Memorial Trust Scholarship program. 1989- Red Dog Mine begins production (NANA Website). 1999- Nikaitchuat Ilisagviat (Inupiaq Immersion) Program started by the Native Village of Kotzebue.

Census Population History (AK DCCED)[4]

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
1880	0	0	0	0	0	0	0	400	0	100	0	0	0
1890	0	0	0	0	0	0	0	0	0	0	0	0	0
1900	0	0	0	0	0	0	200	0	0	0	0	0	0
1910	0	0	100	0	0	0	193	121	0	0	210	0	0
1920	0	52	73	98	87	0	230	164	281	274	95	0	1,856
1930	0	104	183	115	99	0	291	212	198	227	145	0	2,277
1940	0	115	230	167	98	31	372	336	211	239	193	0	3,495
1950	0	108	174	181	117	38	623	326	243	273	141	0	11,254
1960	70	87	95	253	142	54	1290	275	384	348	135	3,560	82,833
1970	169	107	85	278	188	54	1696	293	462	429	165	4,434	124,542
1980	192	177	150	345	241	62	2054	273	492	535	202	4,831	174,431
1990	311	318	157	385	317	69	2751	333	531	596	223	6,113	226,338
2000	309	406	136	388	377	109	3082	428	634	772	256	7,208	260,283
2007	274	424	139	374	366	127	3248	490	625	808	260	7421	281,151
2010	258	416	122	361	374	151	3201	514	668	827	262	7,523	291,826





The Northwest Arctic Borough

The Northwest Arctic Borough (Borough) was incorporated as a first-class borough in 1986 and became a home-rule borough in 1987. In 1989 the Borough was recognized as the State's ARDOR (Alaska Regional Development Organization) for the NWA region. Physically the Borough is the second-largest borough in Alaska, comprising 35,898.3 sq. miles of land and 4,863.7 sq. miles of water (roughly the size of the state of Indiana). Most of the land within Borough boundaries (approximately 76%) is managed by the Federal Government, through transfers as a result of ANCSA (1971) and ANILCA (1980). These lands are federally classified as Refuges, Preserves, Monuments, Wilderness, and Parks[5].

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[4] The Alaska Department of Commerce, Community, and Economic Development Website: http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm & http://labor.alaska.gov/research/pop/popest.htm

[5] Federally Managed Lands all or partially within the boundaries of the Northwest Arctic Borough:

10% of the land within the Borough boundaries will belong to NANA (9.4%) or KIC (0.6%). The Borough will eventually have title to 1% of the land[6].

Alaska Native Claims Settlement Act (ANCSA) Land Status (AK DCCED)

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak
12(a) Land Entitlement in acres:	92,160	92160	92160	115,200	92,160	69,120	161,260	115,200	115,200	138,240	92,160
12(b) Land Entitlement in acres:	0 ac	0	640 ac	0	0	0	3,104	0	0	0	0
14(c)(3) Comment:	No Activ.	No Activ		N/A	In process	N/A	N/A	Proposed	None	Draft Map	N/A
14(c)(3) Status:	Fed towns	Fed town	Completed		Fed town	Complete	Completed	In process	Completed	In Process	Completed
14(c)(3) Agreemt Sign'd:	No	No	No	No	No	No		No	Yes	No	No
Map of Boundries done:	No	No	Yes	No	No	Yes	Yes	No	Yes	No	Yes

ANCSA 12(a) land entitlement to village corporation from Federal Government

ANCSA 12(b) land reallocation to village corporation from Regional Corporation

Under ANCSA 14(c)(3), village corporations must reconvey certain land to the local city government or to the state in trust for community development

The Borough was established in 1986 in part as an agreement with the State of Alaska's Local Boundary Commission[7]. The Commission detached 2 million acres from the North Slope Borough, that included the Red Dog deposit, on the condition that a borough would be formed in the NW Arctic. If it did not get formed the land would goes back to the North Slope. The new borough government could tax the Red Dog Mine and thus could provide funding for better government services for their residents. The Red Dog Mine deposit was mined out in 2012. In 2010 Teck began work preparing to mine the adjacent Aqqaluk ore deposit and it is currently in production. The Borough's annual budget continues to depend upon the tax base (a Payment in Lieu of Taxes) negotiated with Teck.

The Borough is made up of eleven communities which have developed along the waters of Kotzebue Sound, the Wulik, Noatak, Kobuk, Selawik, Buckland and Kugruk Rivers. Most of the

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- Alaska Maritime National Wildlife Refuge (part of the Chukchi Sea unit)
  - Chamisso Wilderness
- Bering Land Bridge National Preserve (part)
- Cape Krusenstern National Monument
- Gates of the Arctic National Park and Preserve (part)
  - Gates of the Arctic Wilderness (part)
- Kobuk Valley National Park
  - Kobuk Valley Wilderness
- Koyukuk National Wildlife Refuge (part)
  - Koyukuk Wilderness (part)
- Noatak National Preserve (part)
  - Noatak Wilderness (part)
- Selawik National Wildlife Refuge (part)
  - Selawik Wilderness (part)

[6] Nov 15, 1996, NANA REGION LAND OWNERSHIP, publication

[7] NUNA, Volume VII, Number 1; February 1986; a special publication of the Maniilaq Association, (Emil Notti was the State Commissioner) "Local Boundary Commission Approves Land Detachment" by Rob Rawls

Borough lies north of the Arctic Circle. The area experiences a transitional climate, characterized by long, cold, windy, blizzard prone winters and short, cool summers. Temperatures range from -52 F to +85 F. Snowfall averages 47 inches, with total precipitation of 9 inches per year. In the past decade, tide waters that normally were frozen before the fall storms have washed out parts of waterfronts; and sudden warming spells have allowed sheets of thick ice to break over the shore into building; spring break up ice jams have dammed up rivers, flooding the communities up river[8].

Population by Race (AK DCCED)

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Pop in 2000	309	406	136	388	377	109	3,082	428	634	772	256	7,208	260,283
White	40	13	8	26	13	5	600	16	31	25	14	888	188,009
Alaska Native/ Amer Indian	262	389	127	359	364	102	2,194	401	571	732	242	5,944	18,941
Black	1	0	0	0	0	0	10	1	0	1	0	15	15,199
Asian	0	0	0	1	0	1	56	0	0	6	0	64	14,433
Hawaiian Native	0	0	0	0	0	0	2	0	1	1	0	4	2,423
Other Race	0	0	0	0	0	0	24	0	0	0	0	26	5,703
Two or more races	6	4	1	2	0	0	196	10	31	7	0	267	15,575
Percent Native	86.7%	**96.8%**	**94.1%**	**92.8%**	**96.6%**	**93.6%**	76.7%	**96%**	**95%**	**95.3%**	**94.5%**	85.8%	10.4%
All or part AK Nat/Amer Ind.	268	393	128	360	364	102	2,365	411	602	736	242	6181	26,995
Hispanic	0	5	0	3	0	5	36	1	0	1	0	57	14,799

Population by Race (AK DCCED)

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Pop in **2010**	258	416	122	361	374	151	3201	514	668	827	262	7,523	[illegible]
White	29	11	11	24	8	13	512	13	25	33	14	846	192,498
Alaska Native/ Amer Indian	218	397	106	326	360	136	2355	487	590	708	247	6121	23,130
Other Race	0	0	0	0	0	0	24	0	0	0	0	26	5,703
Two or more races	10	8	5	10	6	1	242	12	49	87	0	448	23,645
Percent Native	84.5%	**95.43%**	**86.9%**	**90.3%**	**96.3%**	**90.1%**	73.6%	**94.8%**	**88.3%**	**85.6%**	**94.3%**	81.4%	7.9%

The population of the Borough in the 2010 US Census is 7,523 and primarily (81%) Inupiaq. The eleven communities within the Borough are: Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik and Shungnak. Also within the borough is Candle[9], an unincorporated seasonally populated gold mining community; and the Red Dog Mine, a census-designated place (CDP) within the Borough with 39 residents.

The Regional Hub

Kotzebue (3,154 – 2009 DCCED) is the largest community in the NW Arctic Region. Kotzebue is the air transportation, communication, technological, governmental, medical, educational, financial,

[8] Communities with water/ice concerns: Buckland- regular spring flooding; Deering- low to the tide water; Kivalina- late fall storms not stabilized by ice, are washing away their village; Kobuk- regular spring flooding; Kotzebue- late fall storms washing away front street & ice sheet damage; Noatak- river has moved away from the village – barge service disrupted; Selawik – low to sea level.

[9] Candle is the turnaround point for Alaska's first major dog mushing competition (starting in 1908): the 408 mile All Alaska Sweepstakes.

law enforcement, fuel, cargo, fish, game and wildlife management, and mail distribution hub for the NWA region.

Kotzebue does not have a natural deep water harbor[10] and therefore, the deep draft cargo and fuel barges must anchor from 15 to 25 miles outside of Kotzebue. From out there the cargo and fuel are lightered on to small barges and brought into Kotzebue or to regional villages up the waterways during the Kotzebue Sound's three ice-free months. All of the rest of the mail, fuel, and cargo must arrive in the region via air cargo. Most of it landing in Kotzebue at the Ralph Wein Memorial Airport[11] before air commuter services flies it out to regional villages. There are no roads within the Borough that connect any of the villages, nor are there any roads that connect any of the Borough communities to any population centers outside of the region. The longest road (52 miles) within the Borough is owned by an Alaska State sponsored corporation, the Alaska Industrial Development and Export Authority (AIDEA). AIDEA owns the "haul road, a shallow water dock, offshore conveyor concentrate loading facility, fuel distribution and storage systems, and other port facilities[12]." The AIDEA collects a toll[13] from the operators of the Red Dog Mine (Teck) for use of their dock facilities and road. Their contract requires Teck to maintain the road.

Employment Within the Region

For a decade the Red Dog Mine has been one of the largest zinc mines in the world. It is owned by NANA and located in the DeLong Mountains in the NWA Borough, about 80 miles north of Kotzebue. AIDEA financed the building of the 50+ mile road and port facility between the mine and the Chukchi Sea. The mining facilities are owned by Teck Alaska (formerly Cominco), a Canadian mining company. Teck maintains the DMTS (DeLong Mountain Transportation System) and pays an annual toll to AIDEA. The Red Dog Mine began operations in 1989. "As exploitation of the original Red Dog pit nears completion, the development of the directly adjacent Aqqaluq deposit is ramping up, and the first load of ore has been shipped from the port[14]." The Red Dog Mine has over 550 employees; 450 are employed directly by Teck, 56 by NANA/Lynden, which transports the ore to the port site; and 44 by NANA Management, which provides meals and lodgings for the mine employees. Of the 450 Teck employees, 220 are NANA shareholders or spouses; and of these, 110 reside within the Borough. 29 of the 56 NANA/Lynden positions are shareholders or spouses; and 22 of the 44 NANA Management positions are filled by shareholders or spouses. (see Red Dog Appendix)

Maniilaq Association is our region's largest private employer (536 in 2007)[15]. Maniilaq is the Native regional non-profit corporation for the NANA region and manages the health, social and tribal services for the people of the Northwest Arctic and Point Hope (in the North Slope Borough).

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[10] For the past three decades the City of Kotzebue has been lobbying the state for support for a deep water port at Cape Blossom, just south of Kotzebue.

[11] In the Fall of 2010 the DOT held a public meeting in Kotzebue to discuss concepts about expanding – lengthening the Wien Airport runway for safety. Our hub airport runway is one of the last in rural Alaska to be considered for expansion. The only option of expansion would disrupt boat and barge waterway traffic and therefore plans are on hold. In the recent past the community requested that the state help them move the airport up near Cape Blossom, but the state does not have funds to plan this development.

[12] Quote taken from Alaska Energy Authority fact sheet, June 2010: www.aidea.org/PDF%20files/PFS_DMTS.pdf

[13] Teck Alaska, Inc. pays a toll to AIDEA for the use of the road: http://www.bus-ex.com/article/alaska-industrial-development-and-export-authority-dmts-project

[14] http://www.bus-ex.com/article/alaska-industrial-development-and-export-authority-dmts-project

[15] McDowell Group study, pg. 11. See Average monthly employment in the 2007 McDowell table.

The Maniilaq Board of Directors is composed of at least one representative from every tribe within our region and Point Hope. Maniilaq manages all of their Tribal Health Clinics including the regional hospital in Kotzebue. It manages the social and counseling services, including prevention programs for substance abuse and suicide. It also manages many of the BIA (Bureau of Indian Affair) programs for the Tribes. Since about 2005, Maniilaq has embarked upon developing their infrastructure to better accommodate the elders of the region, and to reduce the number of our elders who needed to be cared for out of region. They have completed their second and third elder housing facilities and (in 2011) are completing a long term medical addition especially designed for elders.

Since 2001 the Keta Salmon fisheries has been growing. In 2009, 61 permits were issued. The Kotzebue Sound Fisheries Association sold over a million pounds to the Great Pacific Seafoods Inc. earning almost $373K (after a 1% fish enhancement tax) for local fishermen. In 2010, 65 permits were issued and they sold over 2 million pounds, earning over $816K (after the enhancement tax). (interview with Sally McClellan, November 2010).

A number of these fishermen, as well as many other entrepreneurs within this region, have successfully written business plans and have received small business grants, through the Borough's Small Business Grant Program.

In the Fall, hundreds of sports hunters from "outside" travel into the NW Arctic Region to hunt on the state and federal lands. Professional guides from outside the region accompany many of these hunters, and even more of these sports hunters are brought into the region by transporters. Transporters are pilots who fly the hunters out to hunting areas, drop them and their gear off and at the conclusion of their hunt, the transporters pick them up. Some of these transporters are residents of the NWA region but most of the transporters are from out of the region.

The number of tourism-related visits to the region declined when NANA's Arctic Tours closed in 2005. Recently some significant tourist related infrastructure has been developed[16] in Kotzebue, but as of the Spring of 2011, NANA is not planning to re-starting their Arctic Tours business.

The Sulainich Art Center sells art made within and around the region from a Kotzebue workshop and retail outlet located near the airport, across the street from the National Park Service Heritage Center. Sulainich is Iñupiaq for "a place to make things". In its first 11 years of operations it has put nearly two million dollars into the gifted hands of artists and craftsmen. This program was started in 2000, with funding support from NANA, Maniilaq, and the Borough. NANA leased the workshop/retail building for $1. It was remodeled with a HUD University Partnership Grant through the UAF Chukchi Campus, Rasmussen grants, and with Borough funds. It was incorporated as a non-profit corporation in 2008.

In 2012, the Economic Development Commission with support from the Borough Assembly began developing a program called the "Village Jobs Strategy". The focus of this program is to encourage villages to develop and manage a business that will utilized local resources to meet more of their basic needs, reduce dependence upon imports, and will employ more of their local residents.

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[16] Since 2005 the old museum has been torn down and a new Federal Parks Service Heritage Visitors Center and museum has been built; Sulainich Artist Center has its building and workshop across the street from the Center, and NANA will have completed their new hotel in 2012.

There is only one financial institution within the boundaries of the region. Wells Fargo maintains a facility in Kotzebue.

According to the 2000 US Census[17], when the Borough had a population of 7,208 people, the borough had a potential workforce of 4,535 (Age 16+). Of these, 2430 were employed. The largest employment by Industry was in Education, Health & Social Services (811); followed by Mining, Fishing, Hunting, Agriculture & Forestry (346); Public Administration (300); Transportation, Warehousing & Utilities (269); Retail Trade (164); and Construction (109).

Employment by Industry (AK DCCED)

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Ag, For, Fish, Hunt, Min'g	4	1	1	14	13	0	11	20	35	8	15	346	3,886
Construction	4	12	0	8	7	0	55	4	15	2	2	109	7,995
Manufacturing	0	0	0	0	0	0	5	0	0	0	0	5	2,542
Wholesale Trade	0	2	0	0	0	0	4	0	0	2	0	8	4,428
Retail Trade	**6**	**9**	**0**	**0**	**4**	**2**	**100**	**8**	**19**	**14**	**2**	**164**	**15,327**
Transp, Wareh, Utilities	14	7	8	15	5	7	158	5	16	24	10	269	11,809
Information	0	0	0	0	0	0	37	0	0	2	0	39	4,079
Finance, Insur, Real Est, Rental	1	0	2	0	0	0	61	6	0	3	0	73	7,654
Profes, Sci, Manag, Admin, Waste M	0	0	0	0	2	0	34	0	2	2	2	42	12,845
Health & Soc Svc	**35**	**30**	**15**	**31**	**25**	**12**	**483**	**43**	**56**	**40**	**30**	**811**	**24,532**
Arts, Entert, Rec, Accomd, Food Srvc	2	3	0	4	4	0	55	0	4	0	0	80	11,342
Other Service (not Public Adm)	2	8	3	9	8	0	114	5	10	14	8	181	7,156
Public Admin	7	22	15	18	14	8	135	15	24	19	10	300	12,142
Total	75	94	44	99	82	29	1,252	106	181	130	79	2,427	125,737

The percent of jobs dependent upon government funding is almost double in the NW Arctic Region compared to Anchorage.

Employment Data (AK DCCED)

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Private Wage & Salary wk'rs	30	40	13	42	37	6	720	41	84	61	37	1,350	89,023
Self employed Wk'rs	2	0	2	5	0	0	56	2	11	0	0	80	8,819
Govern Wk'rs (city, boro, st, fed)	43	54	29	52	45	23	474	63	86	69	42	995	27,646
Unpaid Family workers	0	0	0	0	0	0	2	0	0	0	0	2	249
Percent Govnm't jobs	**57.3%**	**57.5%**	**65.9%**	**52.5%**	**54.9%**	**79.3%**	37.9%	**59.4%**	**47.5%**	**53.1%**	**53.2%**	41%	**22%**

[17] As reported by the website of the Alaska Department of Commerce, Community and Economic Development: http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm

The high cost of utilities in our village and (according to Goldsmith) the small size of all of the communities in NWA region prevent most types of **businesses** from being successful[18].

Many small locally owned businesses certainly struggle to survive, but the very large (often international) mining companies appear to have a positive future. The Red Dog mine has been one of the largest zinc mines in the world. Even though The Red Dog deposit is near its end, Teck Alaska, Inc. has begun opening up its neighboring deposit, the Aqqaluk deposit. Next door to Aqqaluk is the Lik deposit. A hundred miles or so, to the East, in the Ambler Mining District, NovaGold reported claims assessed at several billion dollars worth of copper, zinc, lead, gold and silver[19]. The Alaska DOT (Department of Transportation) has invested $4M in a study to determine the most feasible route to build a road or railroad from the Ambler mine site to a port[20]. The DOT presentation to the Borough Planning Department, in April 2011, provided illustrations of at least two routes from the Amber Mining District to the East (the Dalton and Parks Highways) and at least three routes to the West, one of which terminated at Cape Blossom just below Kotzebue, on the Baldwin Peninsula.

There are relatively few employment opportunities in the villages outside of Kotzebue. Most of these village positions remain filled or if the position opens up, they get filled quickly. The NANA Village Economic Development Department is completing a survey that will provide an accurate list of all of the employment positions in each of our villages. They have drafted a survey and process and will be able to begin collecting this information soon.

A different situation seems to exist in the hub city of Kotzebue. All of the major employers in the region have most of their employment positions in Kotzebue. The Kotzebue Job Center announces dozens of entry level positions on the radio (KOTZ) every day. Many employers have difficulty keeping entry level positions filled. Starting around 2002, Maniilaq began building a complex of forty small apartment units. These apartments allowed Maniilaq to more effectively recruit regional village residents. In spite of filling these units up, Maniilaq and other major employers continue to have dozens of entry level job vacancies, while our remote regional villages continue to have a large percentage of working age adults without employment.

Leadership

The NANA region is known for its reputation for producing outstanding leaders for the state. Leaders from this region have contributed significantly during the Alaska Native Claims Settlement Act and have been effective organizers in the Alaska State Legislature. Leaders from this region continue to provide leadership throughout the state.

The region's largest and most influential organizations are Maniilaq Association, Inc. (Maniilaq); NANA Inc. (NANA), the Northwest Arctic Borough, and the Northwest Arctic Borough School District. The leadership and elected Board and Assembly members from these organizations have met for three or four days in what is called the Quad. During the Quad these four influential organizations identify common goals, work on priorities, coordinate state and federal lobbying efforts, select team members from affected organizations to develop strategies and work toward

[18] Local markets, measured by purchasing power, are smaller than the necessary threshold size for all but a few types of businesses. In the hierarchy of trade centers, most remote rural communities are at the bottom. Goldsmith pg. 26.
[19] NovaGold email, Thur Apr 14, 2011: NovaGold Completes Preliminary Economic Assessement for Ambler Project.
[20] DOT and NANA Dowl report to the NWAB Assembly Work Session, April 25, 2011

accomplishing these region wide goals. The Quad was often addressed by state wide political leaders. Our regional legislators regularly express their appreciation for this coordination of common priorities. In the summer of 2012 regional leaders are planning to involve more organizations in this kind of coordination effort by bringing their leadership together at the Regional Strategy Conference.

There are eight leaders from our four major organizations: the Borough Mayor, the Borough Assembly President; NANA CEO, the NANA Board of Directors Chair; Maniilaq CEO, the Maniilaq Board of Director Chair; School District Superintendent, and School Board President. These eight leaders meet regularly in what is called Northwest Arctic Leadership Team (NWALT). When they meet they can coordinate the funding and/or staffing for projects of common interest.

In the Summer of 2008, when the cost of fuel rose to record levels, concerned residents raised funds from NANA, Maniilaq, the Borough, and many other organizations to sponsor a late July, three day Northwest Arctic Regional Energy Summit in Kotzebue. Most of the funding was used for travel to ensure that every village could bring their leaders and representatives to the summit. The summit allowed regional residents and organizations to coordinate lobbying efforts and to coordinate their voices. By the Spring of 2009, the Borough, with support from NANA, and Maniilaq[21], sponsored the Northwest Arctic Energy Steering Committee. It was composed of representatives from each village in the region. The Borough hired an Energy & Resource Coordinator to oversee and coordinate all Energy related issues and to oversee the Energy Steering Committee.

The administration, staff, and Assembly members of the Northwest Arctic Borough and the North Slope Borough meet together in an annual Joint Borough Assembly meeting. Every other year they hold a three day conference together called, the Arctic Economic Development Summit. In 2011 they began coordinating their governments' position on the Outer Continental Shelf oil exploration, as well as a number of other common concerns.

Although recently dormant, the Northwest Arctic Education and Workforce Development Consortium is over a decade old. It is made up of concerned residents and leaders from our educational institutions, Quad organizations, as well as others. Consortium members meet to share developments, challenges, opportunities, concerns, and other issues pertaining to education and workforce development.

The Breakfast Club was organized around 2007 and funded by NANA and NWALT to allow residents, mostly leaders and interested staff to learn about current issues. When state, national or other important leaders are coming to town, a breakfast club meeting may be organized by the host organization where the guest can spend time introducing the reason for their visit, etc. Following the Breakfast Club, it is not unusual for their host to escort them down to our local radio station, KOTZ, and to discuss the reason for their visit, live, on the radio. KOTZ, a public radio station, is the only radio station that broadcasts news around our region and beyond.

Communication

In the early 1990s, GCI, Inutek (a local tech group associated with Maniilaq Association) and OTZ (the Kotzebue telephone cooperative) teamed together in order to provide DSL at a reasonable cost

[21] Per discussion with Ingemar Mathiasson, Energy Coordinator for the NWAB April 5, 2011

to every house in every one of our villages. In 2012, internet speed has continued to be a concern: a 256kb advertised speed, actually downloads at about a 5-23kb speed, rarely as fast as 29kb. Some folks can invest $1K into satellite dish hardware and software and can subscribe to much faster speeds. However, these speeds often come with Gb download limits. The company that won the ARRA (American Recovery and Reinvestment Act) grant to supply "Broadband" service to the NWA Region is using the ARRA funds to supply these dish hardware and software products to qualifying customers.

Land line phone service to every household[22] has been available for decades now. Since 2010 GCI has installed cell phone towers in all of our regional villages. Residents in each village are able to subscribe to cellphone service, including texting, internet and email services. AT&T, OTZ telephone, and ACS also have a significant number of cell phone customers in Kotzebue.

Cable TV is not available in most remote villages, however, Dish network TV is available from all over the region. Cable TV has been more successfully distributed in Kotzebue.

The Cost of Living

The Northwest Arctic is one of the most expensive places to live in the Alaska. In the 2009 McDowell Group study[23], "Kotzebue's 161 index number was the highest" of the community Geographic Cost Differentials. It is about 61% more expensive to live in Kotzebue than in Anchorage. The cost of living in our remote villages is much higher than Kotzebue. Even at 61% more expensive, residents from our surrounding communities regularly fly or drive their boats or snow machines into Kotzebue and stock up on groceries, fuel, and supplies.

6 Geographic Cost Differentials (Alaska Economic Trends Aug 09)

By community, 2008

Anchorage	**1.00**
Homer	1.01
Ketchikan	1.04
Petersburg	1.05
Valdez	1.08
Cordova	1.13
Sitka	1.17
Dillingham	1.37
Nome	1.39
Barrow	1.50
Bethel	1.53
Unalaska/Dutch Harbor	1.58
Kotzebue	1.61

Note: Anchorage was used as the base city and assigned a value of 1.00 from which comparisons of the other areas could be made. For example, Mat-Su's index number of 0.95 means that living costs there are 95 percent as high as Anchorage's; the Aleutian region's 1.50 index number means costs there are 150 percent as high as in Anchorage

[22] In the early 1970's in most villages, there was only one phone that served the whole village. In-state and long distance calls costs much more ($2+/min) as well. Author's personal experience.

[23] http://doa.alaska.gov/gds/home.html The Alaska Geographic Differential Study completed by the McDowell Group (Juneau, AK). Release of the 2008 study was made by the Department in May 2009.

The cost of fuel compounds the cost of everything in remote rural Alaska. The **real cost of fuel** was articulated by Ralph Andersen, representing the Alaska Federation of Natives, in his testimony given in 2008 to the Oversight Hearing, U.S. Senate Committee on Indian Affairs[24]:

> Most of our rural communities are not on any power grid and are dependent on petroleum for three major uses – space heat (homes, public buildings and businesses); transportation (aircraft, snow machines, outboard motors, four-wheelers); and electricity (lighting and appliances). Fuel oil prices in some villages have gone as high as $11 per gallon; and in the winter months, a village home can use four or five 55-gallon drums of oil for heating each month. This equals $2,000 per home/per month in Arctic Village, $1,650 in Hughes, and $1,375 in Illiamna. These prices cannot be met - now or over the long term. Just as significantly, everything in our villages is affected by the high cost of fuel, even more so than in our cities because of the economies of scale of serving remote locations. Groceries, toothpaste, medicine, diapers, clothes, lumber, automobile and truck parts – ***everything*** - has gone up in price. This is devastating to individuals and small businesses; especially when wages have not gone up in decades. As an example, air cargo prices in one area jumped another 32% in June after previous increases.
>
> According to a recent study by UAA's Institute of Social and Economic Research (ISER), people living in remote, rural communities are paying about 41% of their annual incomes on home energy use, compared to about 4% paid by people living in Anchorage.
>
> The rising cost of fuel has reached unprecedented proportions in rural Alaska. While all Americans suffer from the rising cost of gasoline, the impact in our rural communities threatens the very survival of many remote villages. Rural Alaska has the highest per capita power and fuel costs in the U.S.

In the Housing Characteristics Chart below, **only 1%** of Anchorage homes use Fuel oil. Most of the Anchorage homes (83,5%) heat with the much less expensive Natural gas. Almost 90% of the homes in the NW Arctic Region depend upon the much more expensive heating source: fuel oil.

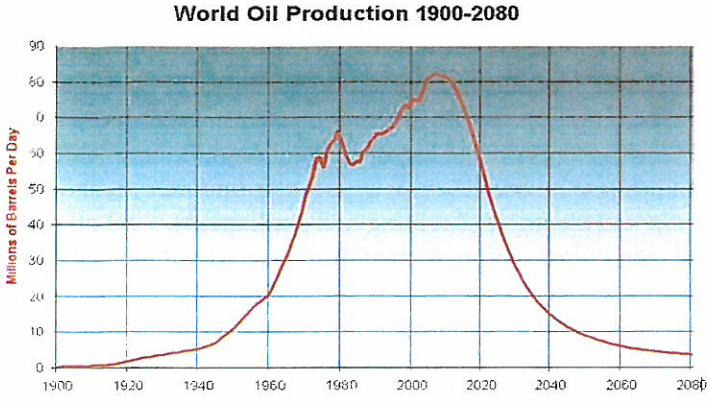
Housing Characteristics (AK DCCED) **Heat House using**

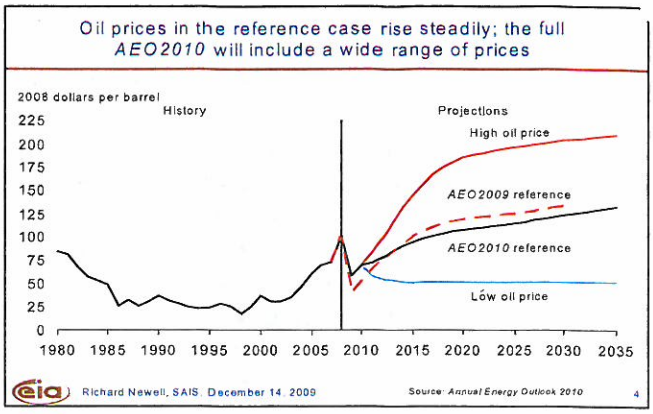
	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Electricity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	0.0%	0.0%	0.0%	0.0%	1.6%	13.1%
Fuel oil, Kerosene	**52.1%**	**100.0%**	**100.0%**	**93.6%**	**100.0%**	**85.2%**	**87.9%**	**85.0%**	**91.2%**	**97.7%**	**96.7%**	88.9%	**1.0%**
Wood	47.9%	0.0%	0.0%	6.5%	0.0%	14.8%	3.3%	15.0%	6.8%	1.2%	3.3%	6.4%	0.3%
Piped **gas** (utility)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.1%	**83.5%**
Bottled gas (propane)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	0.0%	1.5%	0.9%
Coal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	2.0%	1.2%	0.0%	0.4%	0.0%
solar energy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
using other fuel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	1.2%	0.7%
use no fuel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%

The above Census figures are estimates. Current housing conditions could differ significantly

% households sampl'd	48.0%	48.3%	47.5%	49.6%	47.5%	51.1%	46.9%	48.1%	49.0%	48.9%	50.0%	48.2%	14.5%

[24] Testimony; Alaska Federation of Natives; Ralph Andersen (CEO of BBNA); Oversight Hearing, US Senate Committee on Indian Affairs on The Effects of High Fuel Prices in Rural Alaska, Sustainable Energy Solutions, including Conventional and Renewable Energy, and Energy Efficiency and Conservation. Bethel, Alaska; August 28, 2008





The Hubbert's Peak illustration (above-left) predicts that the world is peaking in its ability to pump out and produce oil world-wide. Ingemar Mathiasson, the NAB Energy & Resource Coordinator, includes both charts in his regional presentations. He also includes this quote from Mike Bowlin, chairman and CEO of ARCO (now BP) in Feb 1999: "We've embarked on the beginning of the last days of the age of oil. Embrace the future and recognize the growing demand for a wide range of fuels or ignore reality and slowly—but surely—be left behind."

In the Executive Summary of the NANA Strategic Energy Plan (2008), it states:

> Diesel fuel is the primary source of energy for heat and power generation in the region. Total annual (non-transportation) energy consumption by communities in Northwest (Arctic) Alaska is estimated to be **5.3 million gallons** in diesel fuel or equivalent, not including the operations of Red Dog Mine and port. The majority (53%) of this energy consumed in the region is in the form of heating fuel.

As oil production decreases, prices will increase (see Annual Energy Outlook 2010 Chart above). Anchorage homes prices will probably stay relatively stable as they (90%) heat with natural gas, while the residents in the NW Arctic, probably already paying 41% (compared to Anchorage's average of 4%) of their cash income on home energy use, will continue to face high increases in heating and utility costs.

Alternative Energy Efforts

Fuel is delivered only in the summer for the whole year via barge at bulk prices. The price is determined by the shipping costs and the bulk fuel prices in Seattle at the time of delivery. In 2008 the average price of crude oil in the U.S. was $92/barrel[25]. The prices peaked during the Summer of 2008. The average U.S. price of a barrel of crude oil in June and early July 2008 was over $130, almost twice the price of crude in Summer of 2007[26]. In 2008 Alternative Energy options became a top priority for the residents of the NW Arctic region.

As a result of the 2008 NW Arctic Energy Summit, the NW Arctic Energy Steering Committee was formed and the Borough recruited and hired an Energy & Resource Coordinator. NANA collected

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25 http://www.inflationdata.com/inflation/Inflation_Rate/Historical_Oil_Prices_Table.asp

24 http://futures.tradingcharts.com/hist_CO.html

and assembled all of the current energy related data surrounding each local community and created a document called the NANA Region Strategic Energy Plan. The coordinator, working with the Steering Committee, community members, organizations, NANA and their NANA document, has developed a Northwest Arctic Strategic Energy Plan (SEP). This new 2011 SEP will help to further develop the SEP as each community within our region develops their own local SEP.

As of the Spring of 2011, the coordinator, NANA, the Steering Committee and community members are pursuing many alternative fuel efforts: the Borough and NANA are strong supporters of the proposed North Slope Propane refinery; NANA plans to bring up a gas exploration drilling rig to the Selawik Basin and to search in up to three locations for natural gas; several rivers and creeks are being considered for hydro electricity, especially Cosmos Creek outside of Shungnak and Kobuk; Wind-diesel hybrid systems, through a Borough Grant, hiring a NANA company, are being developed for Buckland and Deering; Hot Springs are being considered for their geothermal energy potential; and solar energy systems have been set up on the homes of some elders and data is being collected for use in future grants. Kotzebue Electric Association has one of the largest wind farms in the state. They will be using the wind and their generators' energy even more efficiently by utilizing a large flow battery (that should arrive the summer of 2011).

Education

Educational opportunities in the Northwest Arctic Borough School District are good and improving[27]. The District currently manages 12 schools, in all eleven communities, serving about 1800 students (pre-K to 12). Since 1997 the Borough and District have been working together to fund new schools or new school additions. Currently two more schools are at different stages of planning: in Kivalina and Kobuk. Over the past decade, the school population has experienced a slow decline. The District is the one of the largest employers of local residents (over 400) within the region. The district central office and the district wide maintenance office are located in Kotzebue.

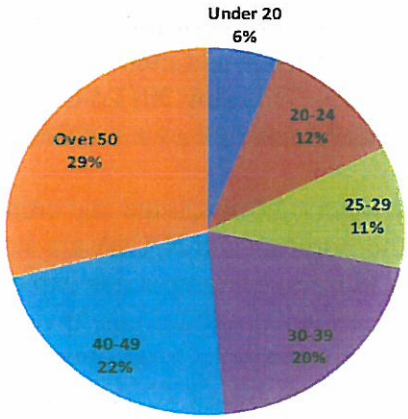
Schools: Grades PreK – 12 (AK DCCED)

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik
Students	61	164	34	113	122	46	741	156	207	264
Teachers	10	15	6	10	11	7	52	15	18	19

Since 2007, the School District has been working with UAF Chukchi Campus (based in Kotzebue), the state and the Alaska Technical Center, to develop a state magnet school. This secondary boarding school would have three areas of concentration: process technology; teacher education; and health careers. In 2010 the School District received $6 million from the state for planning.

The Alaska Technical Center (ATC), a post-secondary vocational technical center, is located in Kotzebue, and serves between 400 to 800 short and long term post-secondary students from the region. ATC has a 38 bed dormitory and food service program. The ATC has a director level administration, but is fiscally managed through the school district. The district receives state funding through the Alaska Department of Education and Early Development, and the ATC receives its state funding through the Alaska Department of Labor.

[27] In 2010 the NWAB School District was notified that it had been removed from the state's list of districts that needed intervention. The district was placed on the list in 2007, and from then the AK Dept of Ed monitored all aspects of district's instructional program. Because of student test score improvents, the state feels intervention is no longer necessary. The NWAB School District is the first district in the state where the intervention has been lifted.



Age Categories of UAF Chukchi Students

The UAF Chukchi Campus, in Kotzebue, serves approximately 400 full and part-time students within the region mostly through distance delivered education and support services. Of the five age categories recognized by the university, the largest two age categories served by Chukchi are the 40-49 and 50+ age groups. At UAF and UAA the largest category of students is the 20-24 year old age group.

For a decade Chukchi has been advocating the importance of distance learning for regional development. When students leave the region and earn their degrees, most of them do not return. Almost all of the students who remain in the region and earn their degrees through UAF's distance program, continue to make their home in the region. (See Appendix) Another interesting fact about UAF Chukchi students is that for more than a decade it is normal to have three times more women taking classes than men.

In the Winter of 2010, UAF Chukchi Director Harvey announced receipt of a HUD Grant that will allow the college, ATC, NIHA, the community of Buckland and the Cold Climate Housing Research Center (CCHRC) in Fairbanks to work together to design, build and to learn (from CCHRC) about putting together an efficient sustainable home in Buckland.

For the past 12 years the Native Village of Kotzebue has been sponsoring the Nikaitchuat Ilisagvait, the region's only Iñupiaq language immersion school. They serve about 20 students per year, mostly pre-school and early elementary aged. In the Fall of 2011 they had about 40 students on their waiting list.

Students from the NW Arctic Region can apply for many local scholarships.[28] The Borough has even adjusted its scholarship program to fund college course tuition of regional high school students. Maniilaq offers a number of full scholarships for those pursuing certified health positions and willing to return after school to work in the region.

[28] Many local organizations offer scholarships: NANA through Aqqaluk Trust; NWA Borough; Kotz Elec Assoc; Lions Club; Kikiktagruk Iñupiat Corporation; each of the village tribal organizations. Each scholarship targets specific criteria, but at least one is open for HS students taking college prep and voc tech courses. Most are aimed at full and part time college and voc tech students. For years the organizations have considered developing a single basic application form.

Social Assets

Most of the communities within the Borough are Dry: they do not allow the possession of alcoholic beverages within their city limits. Two of the communities (Kotzebue and Kiana), in the Fall of 2010, voted to allow their city to organize distribution centers for the sale of alcohol.

The Friends Church is the most prevalent organized religion in the Region. Just after the turn of the 19th century, a comity[29] agreement arranged by Sheldon Jackson amongst protestant church missions, accorded to the Friends Church the NWA region. According to Wikipedia, Alaska is the state that has the largest percentage of Friends Church members[30]. There are Friends Churches pastored and led by local or regional residents in every village in the region. The Friends annual meeting is often held in the same village and just before the annual NANA Shareholders Meeting.

Currently (in 2011), there are eight Alaska State Troopers and their families stationed in Kotzebue. When called, the Troopers fly out to serve the surrounding remote villages. In 2010 the Borough took over a grant and aggressively worked with the village city governments to recruit, select and hire VPOs (Village Public Officers) and worked with the Troopers to hire VPSOs (Village Public Safety Officers). By mid 2011, the Borough Safety Coordinator predicts that every village[31] will have a VPO or VPSO. The securing of housing and 4x4 transportation is currently still a challenge for maintaining some positions.

All of the villages have organized their own volunteer fire departments and volunteer search and rescue teams. The Borough supports each of the village groups with funding, training and equipment. Funding has been coming in over many years and sometime equipment qualifying for purchase one year, is not always compatible with equipment purchased five or ten years later. In one of our villages, the new hose fitting could not be used with the old fire hydrants and a building burned to the ground.

Housing Characteristics (AK DCCED) 2000

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Total Housing Units	98	89	61	133	80	45	1007	106	157	188	64	2540	100,368
Occupied Housing	79	84	42	97	78	26	889	100	136	172	56	1780	94,822
Vacant Housing	19	5	19	36	2	19	118	6	21	16	8	760	5,546
Seasonal use vacancy	2	0	9	3	0	11	47	0	6	1	1	565	1,107
Avg Household size	3.91	4.83	3.24	4	4.83	4.19	3.4	4.28	4.66	4.49	4.57	3.87	2.67
Avg Family House size	4.33	**5.19**	3.9	4.45	**5.5**	4.26	3.93	4.51	**5.19**	4.78	4.53	4.36	**3.19**

[29] "The leading denominations… concur that stewardship requires avoidance of overlapping mission fields" (pg 78) TOMORROW IS GROWING OLD Stories of the Quakers in Alaska, Arthur O. Roberts. The Barclay Press, Oregon 1978.

[30] http://en.wikipedia.org/wiki/Alaska#cite_note-36 wiki cite: "Association of Religion Data Archive". Thearda.com. http://www.thearda.com/mapsReports/maps/map.asp?state=101&variable=201. Retrieved 2010-06-02.

[31] Feb 2011 interview with NWA Borough, VPO Coordinator, Joseph Ballot.

Percent of Households that

lack complete **plumbing**	35.2%	**60.7%**	2.4%	30.1%	**90.9%**	29.6%	6.6%	39.0%	23.7%	38.4%	3.3%	22.4%	0.5
lack complete **kitchen**	32.4%	53.6%	2.4%	25.8%	90.9%	29.6%	6.8%	24.0%	22.3%	37.2%	3.3%	20.7%	0.6%
lack **phone** service	11.3%	25.0%	2.4%	4.3%	20.8%	22.2%	5.9%	15.0%	11.5%	29.1%	18.3%	11.5%	0.8%

The above Census figures are estimates. Current housing conditions could differ significantly

% households sampl'd	48.0%	48.3%	47.5%	49.6%	47.5%	51.1%	46.9%	48.1%	49.0%	48.9%	50.0%	48.2%	14.5%

Housing Characteristics (AK DCCED) **2010**

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Total Housing Units	99	101	61	143	99	51	1160	114	171	201	73	2707	113,032
Occupied Housing	75	98	44	101	85	36	954	114	153	186	62	1919	107,332
Vacant Housing	24	3	17	42	14	15	206	0	18	15	11	788	5,700
Seasonal use vacancy	4	1	2	0	4	12	96	0	8	3	1	542	542
Avg Household size	3.44	4.24	2.77	3.57	4.4	4.19	3.3	4.51	4.37	4.46	4.23	3.72	1.60

As the above table illustrates, a number of our regional communities have more crowded family homes and many homes lack plumbing.

There are no swimming pools, bowling alleys, nor movie theaters within the region. However, the City of Kotzebue maintains a Family Recreation Center, that includes a Boys and Girls Club, with one area for grade school children and another (upstairs) area for secondary students. The Rec Center also includes an adult workout area with saunas, racketball courts and a small gym. The Borough and UAF Chukchi Campus sponsor two public libraries within the region: one in Kotzebue, on campus, and the other in Selawik, in the K-12 public school.

As strong as the culture of leadership is in Kotzebue, a number of our remote village city and tribal government have been struggling to fund their administrative office costs. Most of the cities have instituted sales taxes[32] to help fund city expenses. To reduce expenses, most city administrators are paid less than $20/hour[33] and work around 30 hours per week. Some of our city administrators and staff are not part of the state PERS (Public Employee's Retirement System) because their villages cannot afford the extra cost of this benefit.

Workforce

In April 2007 ISER (Institute of Social and Economic Research, UAA) published Scott Goldsmith's research study, The Remote Rural Economy of Alaska. Some of the interesting changes[34] that he identifies for all of remote rural Alaska are very true for our Northwest Arctic remote communities: 1) The make up of our remote communities and of our region as a whole (from 1990 to 2000) has

[32] Percent sale tax per Alaska Department of Commerce, Community and Economic Development website: Ambler-3; Buckland-6; Deering-3; Kivalina-2; Kotzebue-6; Noorvik-4; Selawik-5; Shungnak-2; Kiana, Kobuk, & Noatak-none

[33] According to the Borough's Public Service Administrator, one city pays their administrator $12/hour. One of the city administrators with over 15 years of experience is paid over $20/hr.

[34] Based upon an analysis of 1990 to 2000 US Census Data available on the Alaska DCCED's website: http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm

2000 Population by Age (AK DCCED)[35]

	Anchorage	Kotzebue	Fairbanks	Juneau	Deering	Noatak	Ambler	Kiana	Kivalina	Noorvik	Shungnak	Selawik	Kobuk	Buckland
19 & Under	31.91%	42.83%	32.84%	29.91%	41.91%	45.33%	45.63%	46.13%	48.01%	48.42%	51.17%	52.46%	54.13%	55.17%
20 to 59	59.96%	50.97%	58.24%	60.85%	48.53%	46.73%	44.98%	44.85%	43.5%	42.9%	41.8%	40.93%	39.45%	38.92%
60 & Over	8.13%	6.20%	8.92%	9.05%	9.56%	7.94%	9.39%	9.02%	8.49%	8.68%	7.03%	6.61%	6.42%	5.91%
Median Age:	32.4	25.9	27.6	35.3	27	22.7	21.8	22.4	20.8	21.2	18.8	18.9	17.4	17.8
Pop. Age 18 and over:	184,412	1,855	21,324	22,294	82	246	180	215	211	352	132	401	52	198
Pop. Age 21 and over:	173,564	1,729	19,586	21,153	75	224	162	205	187	319	123	350	48	172
Pop. Age 62 and over:	18,082	158	2,376	2,365	11	29	26	31	27	52	18	48	5	19

2010 Population by Age (AK DCCED)[36]

	Anchorage	Kotzebue	Fairbanks	Juneau	Deering	Noatak	Ambler	Kiana	Kivalina	Noorvik	Shungnak	Selawik	Kobuk	Buckland
19 & Under	28.86%	36.46%	28.81%	26.15%	32.79%	45.53%	39.53%	42.66 %	46.52%	45.21%	46.18%	47.04%	46.36%	50.48%
20 to 59	59.12%	53.20%	60.16%	59.48%	53.28%	44.94%	47.29%	44.32 %	44.65%	46.11%	41.98%	46.20%	44.37%	44.47%
60 & Over	12.02%	10.34%	11.03%	14.37%	13.93%	9.53%	13.18%	13.02 %	8.82%	8.68%	11.83%	6.76%	9.27%	5.05%

become more Alaska Native; 2) Our Borough's remote communities have almost an average of 14.5% higher proportion of children and an average of over 13.3% fewer working-aged (20-59 yr old) adults than our urban cities and even our regional hub, Kotzebue[37]; and 3) In our region, the NW Arctic as a whole (see chart below), for every 100 females there were more than 114 males. Without Kotzebue, only in our remote communities, for every 100 females, there were 126 males. Compare this to Anchorage: for every 100 Native men, age 18 and over, there are 114 Native women (pg 7, Goldsmith).

2000 Population by Gender (AK DCCED)[38]

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Male	156	218	71	224	194	54	1556	365	365	401	130	3,847	131,668
Female	153	188	65	164	183	55	1552	269	269	371	126	3,361	128,615
# Males per 100 Female	102	116	109	137	106	98	100	136	136	108	103	114	102

2010 Population by Gender (AK DCCED)[39]

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Male	131	233	67	192	176	76	1631	268	375	431	131	4029	148,209
Female	127	183	55	162	196	75	1570	246	293	398	131	3494	143,617
# Males per 100 Female	103	127	122	119	90	101	104	109	128	108	100	115	103

[35] Table calculated from data on the Alaska Dept of Commerce, Community and Econ Dev; http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm

[36] Table calculated from data on the Alaska Dept of Commerce, Community and Econ Dev; http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm

[37] Calculations based upon data from the website of the Alaska Department of Commerce, Community and Economic Development. The average percentages of 10 NWAB remote villages are compared to the average percentages of Kotzebue, Anchorage, Fairbanks, Juneau and Soldotna.

[38] Table calculated from data on the Alaska Dept of Commerce, Community and Econ Dev; http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm

[39] Table calculated from data on the Alaska Dept of Commerce, Community and Econ Dev; http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm

The College of Rural and Community Development, UAF, funded the McDowell Group to survey every major NWAB employer in order to find out what skills our employers needed from our students. In January 2010 they released their publication[40]. The quote below is from their comprehensive survey of NWAB's major employers:

> Employers said that **work readiness** and soft skills are among the most important preparations a worker could obtain through education and training. In the NWAB and in other studies around the state, McDowell Group has repeatedly heard from employers that too many job seekers do not understand the basic demands of employment. Problems with punctuality, attendance, and organization, and lack of "soft skills," such as social graces, communication, language, personal habits, friendliness, and optimism, were mentioned by nearly half of the interviewees as contributing factors in high turnover rates for NWAB workers. Basic academic skills, such as math, reading, computer skills, and information retrieval skills are also critical. (McDowell Group, Chukchi, pg. 25)

The percent of All 16+ Not Working (Unemployed & Not Seeking) was 46.4%. In Kotzebue the percent Not Working was 36.8%. In the communities outside of Kotzebue, the percent Not Working was 59.3%. The official unemployment rate for the borough was reported as 15.6%.

Employment Data (AK DCCED -2000 Census)

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NAB	ANC	NAB Villages
Total Potential WkForce (16+)	141	220	91	203	235	65	1985	258	434	446	165	4,535	192,782	2258
Total Employment	75	94	44	99	82	29	1255	106	181	130	79	2,430	134,240	919
Unemployed (seek'g wk)	29	48	9	13	28	0	136	36	44	68	30	447	9,110	5
Percent Unemployed	27.9%	33.8%	17.0%	11.6%	25.5%	0.0%	9.8%	25.4%	19.6%	34.3%	27.5%	15.6%	6.8%	24.9%
Adults not seeking work	37	78	38	91	125	36	594	116	209	248	56	1658	49432	594
Percent not working	46.8%	**57.3%**	**51.7%**	**51.2%**	**65.1%**	**55.4%**	36.8%	**58.9%**	**58.3%**	**70.9%**	**52.1%**	46.4%	**30.4%**	**59.3%**

Employment Data (AK DCCED -2010 Census - 2005-2009 American Community Survey 5-Year Estimates)

	Ambler	Buck-land	Deer-ing	Kiana	Kiva-lina	Kotze-bue	Kobuk	Noatak	Noorvik	Sela-wik	Shung-nak	NAB	Anchor-age	NAB Villages
Total Potential Wk Force (16+)	216	283	51	214	280	2,271	80	323	391	471	209	5,170	218,558	2518
Total Employment	76	105	29	95	139	1,274	33	128	150	123	78	2,529	151,793	956
Unemployed (seeking wk)	43	73	6	35	48	333	11	83	75	99	41	903	11,395	514
% unemployed	36.1	41	17.1	26.9	25.7	20.7	25	39.3	33.3	44.6	34.5	26.3	7.4	0.3496599
Adults not seeking wk	97	105	16	84	93	664	36	112	166	249	90	1,738	55,370	1048
% not working	**64.8%**	**62.8%**	43.1%	**55.6%**	**50.4%**	43.9%	**58.8%**	**60.4%**	**61.6%**	**73.9%**	**62.7%**	**51.1%**	30.50%	**62.03%**

[40] McDowell Group, Anchorage, AK; Chukchi Region Workforce Needs Study; Prepared for: Rural Community and Native Education, UAF, and the NWAB School District; January 2010.

The Percent of the Borough Population living Below Poverty was 17.4%[41]. Most residents still rely upon the seasonal harvest that this land provides (caribou, moose, reindeer, sea mammals, birds, the fur bearers, berries, greens, fish, and so much more).

Income Levels (AK DCCED – 2000 Census)

	Ambler	Buckland	Deering	Kiana	Kivalina	Kobuk	Kotzebue	Noatak	Noorvik	Selawik	Shungnak	NWAB	ANC
Per Capita Income	$13,712	$9,624	$11,000	$11,534	$8,360	$9,845	$18,289	$9,659	$12,020	$8,170	$10,377	$15,286	$25,287
Median Household Income	$43,500	$38,333	$33,333	$39,688	$30,833	$30,750	$57,163	$30,833	$51,964	$25,625	$44,375	$45,976	$55,546
Median Family Income	$43,571	$40,000	$43,438	$41,667	$30,179	$20,313	$58,068	$31,667	$52,708	$27,639	$41,000	$45,230	$63,382
Persons in Poverty	35	49	8	40	99	36	401	93	51	262	102	1243	18682
Percent Below Poverty	14.3%	11.9%	**5.8%**	11.2%	26.4%	28.6%	13.1%	22.0%	**7.6%**	**34.4%**	**35.8%**	17.4%	**7.4%**
Percent Households sampl'd	48.0%	48.3%	47.5%	49.6%	47.5%	51.1%	46.9%	48.1%	49.0%	48.9%	50.0%	48.2%	14.5%

These figures are estimates based on a sample, and are subject to sampling variability.
Current socio-economic measures could differ significantly

Tragically, from 2004 to 2006, "the Northwest Arctic census area had the highest overall rate of suicide deaths." (pg 5)[42] From 1996 to 2004[43] the average suicide rate (per 100,000) for the entire United States was 10.84; for all Non-Native Alaskans it was 16.74, and the average for all Alaska

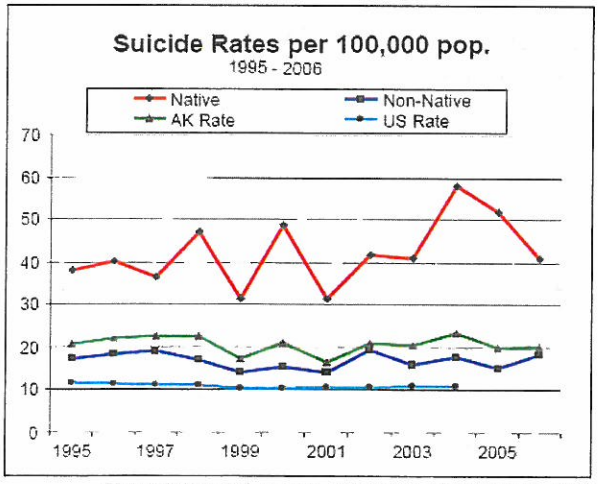


Figure 4: National, Alaska, and Alaska ethnic suicide rates

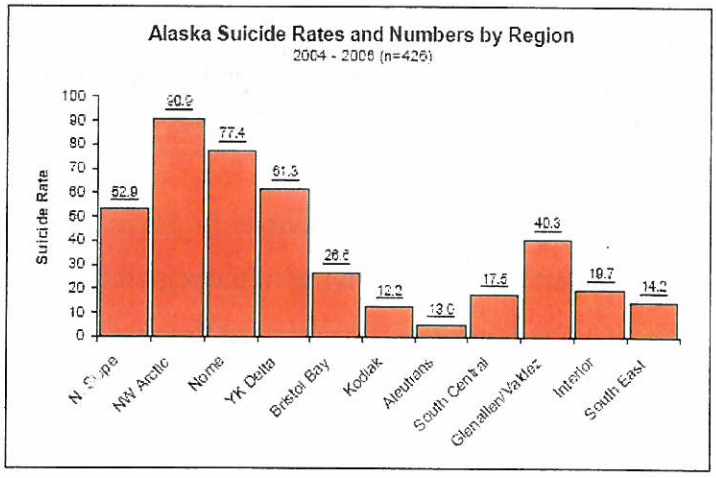


Figure 8: Rates of Suicides by EMS Region

[41] NWA Borough's 17.4% Percentage of Poverty Level was generated from the AK DCCED website: http://www.commerce.state.ak.us/dca/commdb/CF_CUSTM.htm It also show that only two regions: Aleutians East Borough (21.8%) and Lake and Peninsula Borough (18.9%) had higher Percentages of Poverty Levels. Low Poverty Levels were in Juneau City & Borough (6%), Ketchikan Gateway Borough (6.5%), Kodiak Island Borough (6.6%), Anchorage Municipality (7.4%), and also the North Slope Borough (9.1%), and Bristol Bay Borough (9.5%).

[42] Alaska Suicide Follow-back Study Final Report, Study period September 1, 2003 to August 31, 2006; http://www.hss.state.ak.us/suicideprevention/pdfs_sspc/sspcfollowback2-07.pdf prepared for the Statewide Suicide Prevention Council; submitted by the Alaska Injury Prevention Center (AIPC), Critical Illness and Trauma Foundation, Inc., American Association of Suicidology.

[43] Suicide Prevention Council website: http://www.hss.state.ak.us/suicideprevention/statistics_pages_sspc/AKsuiciderate_nativenonnative96-05.htm

Natives was 39.0. In the Northwest Arctic census area the rate was 90.9, the highest region in the state.

More people are **migrating out** of the Northwest Arctic, than moving in. From 2000 to 2010, there have been 1,189[44] more people who have moved out of our region than have moved into our region. For the past 2 decades rural Alaska as a whole has been experiencing a net migratory population loss. In the decades of the 1970's and 1980's rural Alaska was experiencing a net migratory increase. The over the past decade, in spite of the steady migration out of our region, the population of the Northwest Arctic Borough has grown to just over 7,600. This has been because our birthrate has been much higher than our death rate. In the 2009 State of Alaska publication, "Rural Population Report, *The Trends are Changing*"[45] reports that in 2008, "Alaska's highest birthrate was recorded in the Northwest Arctic Borough at 29.1 *(per 1000 population)* and was 75% above the Alaska average rate." (Rural, pg. 5). In spite of our region's natural growth (births minus deaths), just as most other rural school districts, our school district's school attendance population has been shrinking. In FY'09, "eleven schools were at or below the state threshold of minimum attendance of 10 (students)." (Rural, pg. 14). Fortunately none of these schools facing closure are within our region.

Summary data points

Below is a list of the major data points addressed in this document's previous 20 pages.

Our Borough Economic Development Commission has studied this and other information in the development of our Regional Comprehensive Economic Development Strategy (CEDS). The Commission believes that our CEDS contains some of our best strategy for addressing many of our region's economic challenges.

Below is a summary of the previous 19 pages:

-The Iñupiat have been thriving in the region for **millennia.**-p.1

-The Iñupiaq **language** is being used less and less.-p.1

-The Iñupiat still depend upon the abundant **seasonal harvests** of the land, air and sea.-p.1

-Imported **commercial products** continue to become more and more popular.-p.1

-The **Iñupiat Ilitqusiat** (way to live) program is honored.-p.1

-Most of the **land** in Alaska and most of the land in the NWAB is owned by the **federal** government[46]-p.2

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[44] Page 10. Alaska Economic Trends, April 2012. Alaska's Highly Migratory Population. Published by the Alaska Department of Labor & Workforce Development. http://www.labor.alaska.gov/trends/apr12.pdf

[45] Rural Population Report, The Trends are Changing; the Alaska Department of Commerce, Community and Economic Development; November 2009 http://commerce.alaska.gov/dca/pub/Rural_Population_Report_2009_web.pdf

[46] According to an October 1998 report by the United States Bureau of Land Management, approximately 65% of Alaska is owned and managed by the U.S. federal government ...Of the remaining land area, the State of Alaska owns 24.5%; another 10% is managed by thirteen regional and dozens of local Native corporations ... Various private interests own the remaining land, totaling less than 1%. http://www.answerbag.com/q_view/139564

-The **tax base** that base metal mining provides has provided millions of dollars of services and improvements for the residents of the NW Arctic. -p.3

-Seven of the eleven communities are more than **90% Iñupiat**. The Borough (in 2000) was over 85% Iñupiat; in 2010: over 81% Iñupiat. Anchorage is a little more than 10% Native.-p.4

-Both Alaska and the Borough have one major regional **hub:** Anchorage and Kotzebue. The services flow from the hubs and the wealth for the state and region pours into the hubs.-p.4

-There is no **deep water port** or harbor in the NW Arctic Region. –p.5

-There are **no roads** connecting any of our villages. -p.5

-There are no roads connecting any of our villages to any community outside of our region. -p.5

-The **longest** (50+ mile) **road** within the Borough is owned by a state (sponsored) business, which receives a toll for its use. -p.5

-Just like the rest of Alaska, the main source of revenue comes from the extraction of a non-renewable **natural resource**. Just as the oil in Prudhoe Bay is running dry; so the zinc at Red Dog is emptying out. The state set up a permanent fund, the region has not. -p.5

-Both the state and the Borough are planning to receive revenues from **new sources** of non-renewable resources (gas & the Aqqaluk deposit). -p.5

-**Maniilaq** Association manages Tribal and Health Services for the region and Point Hope.-p.5

-The rich tasty Keta **Salmon** harvest in Kotzebue has doubled from 2009 to 2010. From 1M lbs to 2M lbs. The industry also increased the price they pay fishermen, per lb.-p.6

-The Borough sponsors a **Small Business** Grant Program, a regional **Artist** Center, and a **multi-media** training program. **Tourism** is relatively dormant.-p.6

-The largest employment by **industry area** (more than twice as big as mining and fishing) is Education, Health and Social Services.-p.7

-In all 10 of our remote villages, there are more **government jobs** than Private Wage & Salary jobs. In Kotzebue there are over 30% more Private/Salary jobs, and in Anchorage there are more than 300% more Private/Salary jobs, than Government jobs. -p.7

-The high cost of utilities and small population prevent most types of **businesses** from being successful in rural Alaska. -p.7

-The **Ambler Mining** District assessment shows several billion dollars worth of minerals. One of the DOT routes could provide a **road** between Kotzebue and at least one of the upper river villages.-p.8

-The NWAB has a culture that cultivates **leadership** (Quad, NWALT, Energy Summit, AEDS, etc.) and is continuing to produce leaders for our state.-p.8 & 9

-KOTZ **Radio Station** allows residents in all of the regional communities to stay in touch with each other.-p.9

-**Internet** speeds are relatively slow, but might improve for some with ARA Stimulus funds.-p.9

-Kotzebue, where the costs are some of the lowest in the whole NW Arctic Region, is the **most expensive** hub in all of Alaska: **61% more expensive** than Anchorage. –p.10

-The **real cost of fuel** increases effect heating costs, electricity, water & sewer, transportation and cargo costs, and thus everything we import.-p.11

-Residents in remote rural communities are spending about **41%** of their annual income on **home energy**. In Anchorage people pay about 4% of their annual income on home energy.-p.11

-Anchorage depends upon fuel oil for **only 1%** of their homes; almost 90% of the households in the NW Arctic Region rely upon fuel oil.-p.11

-When **world oil** production begins to decline it will do so quickly and prices will rise fast.-p.12

-The NW Arctic **Energy** Steering Committee is active and has developed a NW Arctic Strategic Energy Plan.-p.13

-The NWAB School District is developing a **Magnet School**. -p.13

-The Alaska Technical Center **(ATC)** not only provide voc-tech training but has a dorm program. P.13

-UAF **Chukchi** allows residents to stay home and earn a college degree in a number of areas.-p.14

-Chukchi serves a higher proportion of **older students,** and about 3 times **more women** than men.-p.14

-CC, ATC, NIHA, and CCHRC will be designing a **cold climate home** with Buckland.-p.14

-The Native Village of Kotzebue has been sponsoring the **Nikaitchut** Iñupiat immersion school for over a decade. –p 14

-Relative to Kotzebue and especially to Anchorage, our remote **rural homes are crowded**. -p.16

-Each adult in our villages has **higher number of dependents** to be responsible for. -p.17

-In our remote villages our **men out number women**: for every 100 females there are 126 men; of the Native population in Anchorage: for every 100 males there are 114 females.-p.17

-The major employers within the NW Arctic report that the most basic fundamentals of **work readiness**, soft skills (punctuality, attendance, communication, etc.) contribute to high job turnover rates.-p.18

-Nine of our eleven villages have over 50% of their adults **not working**; our largest remote village has almost 71% not working!! Only 30.4% of the adults in Anchorage are not working. -p.18

-The percent of residents living below **poverty** is mixed: four villages had lower percentages than Kotzebue (17%); and two of these villages had percentages as low as Anchorage's (7%)!!! However, a couple of our villages had around 35% of their residents living below poverty!-p.19

-We have the highest **suicide** rate per capita in the whole state.-p.19

-As in the rest of rural Alaska, in the past two decades, more people have been **migrating out** of our region than moving in. 1089 more have moved out than moved in from 2000-2010.-p.20

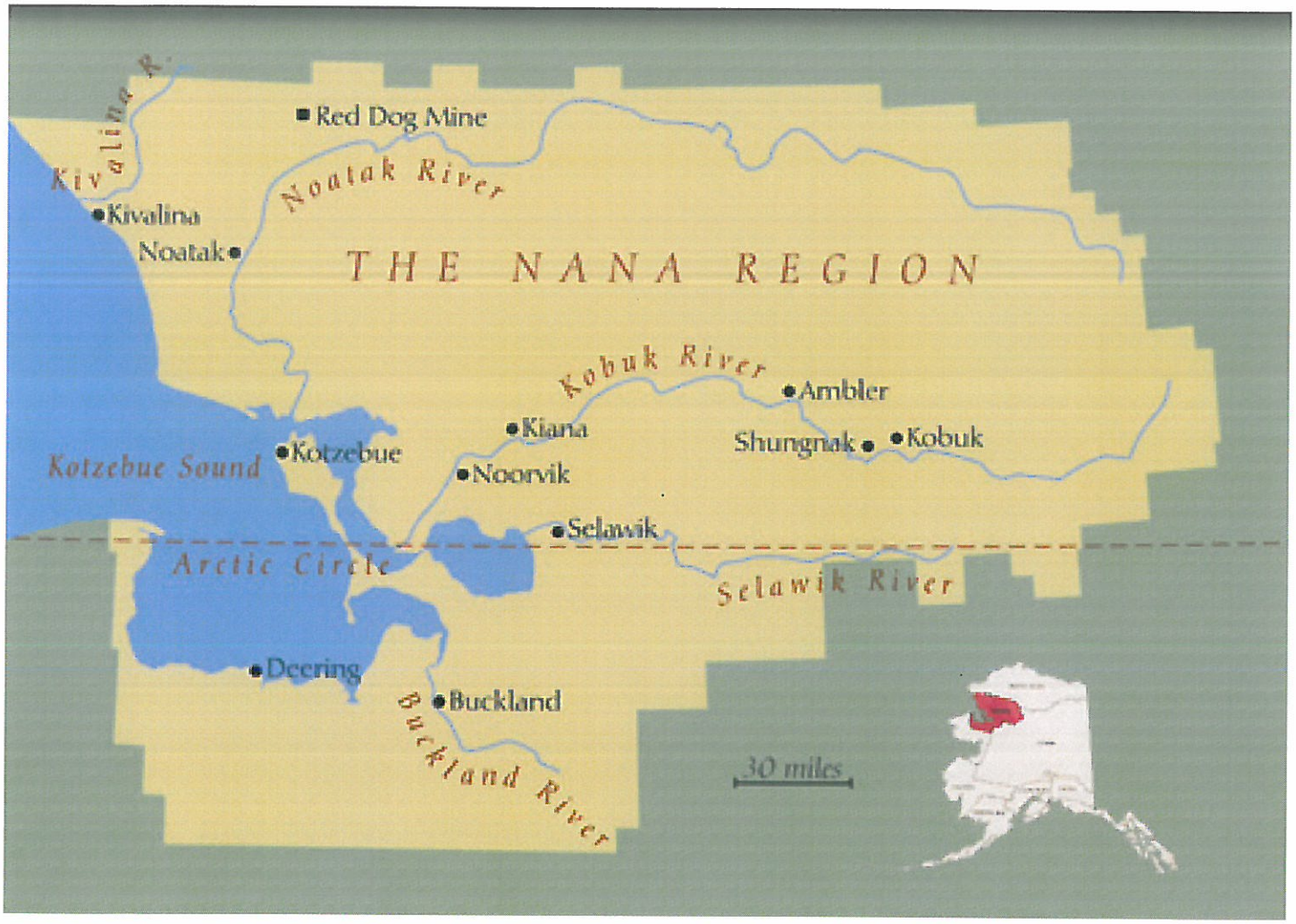
-Our schools are losing population, however, none of our village schools are on the population threshold of closing. In 2009, 11 rural schools faced closure.

-The NW Arctic Region had the highest **birthrate** per capita in the whole state.-p.20

The Communities

of the

Northwest Arctic Region



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Ambler

Ambler and airport

Ambler close up.

Ambler is named after Dr. James M. Ambler, U.S. Navy, surgeon on the U.S.S. Jeannette, who perished in 1881 in the Lena River delta while with the Arctic expedition under the command of Lt. Comdr. G.W. DeLong (1879-1880.) Ambler was permanently settled in 1958 when people from Shungnak and Kobuk moved downstream because of the variety of fish, wild game and spruce trees in the area. An archaeological site is located nearby at Onion Portage. A post office was established in 1963. The City was incorporated in 1971.

The Ambler Traditional Council is the federally recognized tribe of Ambler. 86.7% of Ambler's population is Alaska Native or part Native.

Ambler is located on the north bank of the Kobuk River, near the confluence of the Ambler and the Kobuk Rivers. It lies 45 miles north of the Arctic Circle. It is 138 miles northeast of Kotzebue, 30 miles northwest of Kobuk and 30 miles downriver from Shungnak. However, Ambler is close enough to the coast that it is often impacted by large maritime storms; during which extended periods of warm winter weather with rain and/or heavy snows and high winds may occur. Ambler residents report that winter winds can create large snow drifts 10 to 15 feet in height. Temperatures average –10 to 15 during the winter; 40 to 65 during summer. Temperature extremes have been recorded from –80 to 112. Snowfall averages 80 inches and precipitation is 16 inches total per year.

Ambler is located at the base of Jade Mountains and the Cosmos Hills; small mountain ranges paralleling the southern slopes of the Brooks Range. The rocks in these mountains are mineral rich and contain large ore deposits. Bornite, reportedly one of the world's richest copper deposits, lies on the north side of the Cosmos Hills. Major jade deposits are found in the Jade Mountains. Serpentine rocks, commonly containing asbestos, have been mapped in both these ranges. The asbestos has apparently been eroded from these rocks and transported throughout the area by glaciers, water and wind.

Ambler is located in the Kotzebue Recording District. The area encompasses 9.5 sq. miles of land and 1.3 sq. miles of water. The 2009 DCCED Certified Population of Ambler is 261. The

population over the past 10 years appears to be declining. 62% of the resident population 16+ years old worked in 2009. Local Government was the main industry, employing 62% of the area's workers. More workers were employed in office and administrative support, than in any other occupation. During the 2000 U.S. Census, there were 98 total housing units, and 19 were vacant. 2 of these vacant housing units are used only seasonally. The average family household size was 4.33. The median household income was $43,500; per capita income was $13,712; and 14.3% of residents were living below the poverty level.

In June of 2003, there were 58 fulltime jobs including 24 with the school district, 9 with Maniilaq, 9 with the IRA, 6 with the City, 8 for the local stores, 1 postal worker and 1 village public safety officer. Another 8 residents commuted to the Red Dog Mine. Ambler Air provides charter & scheduled flights. Five residents hold commercial fishing permits. Subsistence is a major part of the local economy. Chum salmon and caribou are the most important food sources. Freshwater fish, moose, bear, and berries are also harvested. Birch baskets, fur pelts, and jade, quartz, bone and ivory carvings are sold in gift shops throughout the state.

Ambler's major means of transportation are by barge, plane, small boat and snowmachine. There are no roads linking the City to other parts of the state nor to other villages. A State-owned 3,000' lighted gravel airstrip, with a 2,400' gravel crosswind airstrip, is located one and a half miles from the City. Daily scheduled services are provided out of Kotzebue, and air taxis provide charter flights. The airstrip has recently undergone major improvements, although we understand that air service may be intermittent in the spring, or after heavy rains, until the runway surface dries. The Kobuk River is generally navigable from early July to mid-October; although barge access during this period can be infrequent, depending on the water levels. Crowley Marine Services barges fuel and supplies to Ambler each summer that the depth of the Kobuk River will permit. Boats are used for inter-village travel and subsistence activities.
Ambler has two local governments. The City of Ambler was incorporated in 1971 as a second-class city. The City of Ambler collects a 3% sales tax and a use fee for water and sewer. Since the City was incorporated it has maintained a mayor-council form of government. The council consists of seven elected members. The city maintains the local law enforcement, water, sewer and local operations of city needs.

The Ambler Traditional council consisting of seven members and coordinates programs such as Housing Improvement, New Housing, General Assistance, Job Training, Adult Vocation and Realty. The Tribe that the council represents is made of the Inupiat people of the Northwest Alaska. The tribe originally established a sovereign form of government that they used to conduct their daily lives before the movement of western settlers in the area. Their duties include the social welfare of the Inupiaq Native members of Ambler, Indian Child Welfare Act, and Health Initiative.

Maniilaq Association is the regional non-profit corporation that is contracted from three primary public entities, the Indian Health Service, the Bureau of Indian Affairs and the State of Alaska. The corporation represents the twelve federally recognized tribes in the Northwest Arctic Region. They primarily provide health, social, tribal, traditional, environmental, and substance services. They manage the Maniilaq Health Center in Kotzebue, as well as the clinics located in each of the villages.

In 1971, the Alaska Native Claims Settlement Act (ANCSA) was passed that established NANA, the local regional for-profit corporation. ANCSA provided for additional municipal land

selections and planning under section 14C (3). The Corporation is a profit organization with 10,300 shareholders. NANA services the 2,268,414 acres of land that was granted to the shareholders when the act was passed.

Ambler Top Three Capital Improvement Priorities 2010-11[1]

1) Grizzly Bridge replacement & Gravel expansion of Airport. The bridge, between town and the airport, is in a hazardous state & unsafe. ID a gravel source and complete airport safety extension.
2) All Water/Sewer projects: Washeteria Completion; Solid Waste Management Improvement. a) Replace existing water & sewer lines that have frozen and busted; repair service entrances (arctic boxes); Repair unsanitary household plumbing. b) Complete Washeteria for safe water and sanitation; c) dump/landfill fencing, trash segregation area, code compliancy.
3) Heavy Equipment Storage Building to protect equipment from severe conditions and vandalism; and in order to maintain equipment.

Water, Sewer & Sanitation System

The status of community water, sewer, and sanitation systems in our smaller communities is important to the health and wellness of our communities. This Ambler status snapshots is provided by the state Rural Utilities Business Advisor (RUBA)[2], Margaret Hansen, Report – January 2011

The main source of water for the community is a 167' well near the Kobuk River. Water is pumped 940 feet to the treatment facility and stored in a 210,000-gallon insulated tank, then piped to most homes. An 80' standby well is also located at the water treatment plant. Sewage is collected via six and eight inch arctic pipes and flows to a facultative lagoon through two lift stations where it discharges to a natural watershed, then the Kobuk River. Last year the city had to file an Department of Environmental Conservation accidental discharge/spill notification report due to a leak in their sewage lagoon. They repaired it using 40 sand bags and hauled frozen leakage to the dump site. Currently, 53 homes are served by the piped water and sewer system. Funds have been requested to connect the remaining 13 homes and offices to the piped system. A new water treatment plant, washeteria, and sewage lagoon have been funded. The landfill is not permitted. Here is the status of the projects: The plans for the sewage lagoon, lift station, and force main are complete. The intent was to finish construction of these during the summer 2006 but due to asbestos in the gravel, Northwest Alaska Native Association (NANA) has not released any usuage of their gravel as yet. The washeteria project no longer has funding attached since the IRA did not sign for the approval for the pass through funds. The city has applied for an Community Development Block Grant to complete the washeteria but that was not funded. The Water Treatment Plant design is 100% complete. The city used the funds that was previously allocated for the south loop extension for the water treatment plant and sewage lagoon projects due to increased costs because of the hold up on the gravel situation. They have laid down pipes to the new lagoon and now waiting for new pumps for the new liftstation so they should have the lagoon open and operating before winter sets in. Next season they will focus on the new water plant building. The Ambler City Council have turned over the water plant operations to Alaska Rural Utilities Collabrative (ARUC)starting August 1st, 2010. ARUC inspected the furnaces for the water plant to make sure they are in good working order and ordered replacement parts as well.

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[1] Compiled with the residents and submitted to the state for the residents of Ambler by the Public Services Department of the Northwest Arctic Borough, in July 2010.

[2] http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm

Water Distribution, Source & Treatment Systems[3]:

Water System Operator:	**City**
Washeteria Operator:	Under construction
Piped Water System:	Yes
Central Watering Point (Haul):	No
Multiple Watering Points:	No
Water Truck (Delivery):	No
Individual Wells:	No
Community Well Source:	Yes
Surface Water Source:	No
DEC Water Permit Number:	300214
Water Is Filtered:	No
Water Is Chlorinated:	Yes

Sewage Collection Systems:

Sewer System Operator:	**City**
Piped Sewer System:	Yes
Honeybucket Haul:	No
Honeybucket Pits:	Yes
Individual Septic Tanks:	No
Community Septic Tank:	No
Sewage Pumper:	No
Sewage Lagoon:	Yes
Sewage Lift Station:	Yes
Outhouses:	Yes

Refuse/Landfill System:

Refuse Collector:	**Individuals**
Landfill Operator:	City
DEC Landfill Permit:	No
Type of Landfill:	Class 3

Electric Utility:

[3] http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm

Electric Utility Name:	**AVEC**
Utility Operator:	REA Co-op; City
Power Source:	Diesel
FY 2009 Rate:	79.6 (Only data for PCE Communities is available on this system)
Power Cost Equalization (PCE) Subsidy:	Yes
FY 2009 Total kWh Generated:	1,245,599 kWh
FY 2009 Power Cost Equalization (PCE) Rate:	63.47 cents/kWh (For consumption up to 500 kWh monthly)
FY 2009 Average Effective Residential Rate:	16.17 cents/kWh
	Link to the most current PCE Report: www.akenergyauthority.org

Bulk Fuel:

Tank Owners

(Number of tanks / Total capacity): AVEC (100,800 gals.); Northwest Arctic Schools (29,000); Ambler Air Service (2,153); Village Council (238,100); Nunamiut Aviation Fuel (12,000)

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Buckland

Buckland, Airport and road toward landfill.

Buckland close up.

Buckland Community Comprehensive Development Plan 2006-2016[4]

Nunachiaq (translates into English as "new place" or "new site"), or the Buckland, area has been inhabited since time immemorial by Inupiaq people and families for at least the past 10,000-15,000 years. The English name of *Nunachiaq* is Buckland after a Professor Buckland that lived in California. The ancestors of the *Nunachiaq* area are a proud group known as the *Kangigmiut* – with a traditional area including the *Kuuk* (or Buckland River), the *Kiwalik* River, the *Kauk* River and the shores of *Siffik* (or Elephant Point Bay along the Escholtz and Spafarief Bays). The ancestors of *Nunachiaq* lived a lifestyle with seasonal home sites that best took advantage of the environment for both hunting and gathering. For example, people have for generations traveled to and lived at Elephant Point to harvest beluga, camped along inland flats for berries and greens, and lived down river for fishing and birding. The community of Buckland continues to have a strong connection to the environment and river.

Figure 1: Leo Augrook and family at Elephant Point, 1938. State of Alaska Virtual Library.

The community has moved permanent sites along the river at least five times in recent memory. These sites include Elephant Point, Igloo Point, *Nunachiaq* ("new site") and across the river from the present site of Buckland. The physical presence of many fossils at Elephant Point and *Sissiivik* (south side of Elephant Point) indicates prehistoric occupation of the area by Inupiaq people. Other old sites include Trail Creek caves by Candle. One of the oldest *Kangigmiut* community sites is *Makkasraq* (about 1 mile upriver from

[4] Except for where noted, this entire Buckland section was reproduced from the Buckland Community Comprehensive Development Plan 2006-2016, which was put together with the Buckland Residents, Organizations and Community, Native Village of Buckland, and the City of Buckland, by: NWA Borough Planning Department; and Maniilaq Association, Kotzebue, AK 99752; Tom Okleasik, Principal; Northwest Planning & Grants Dev; Nome, AK.

present Buckland) where archeological items have been excavated including pottery, caribou bones and seal oil lamps.

The current site of Buckland, on the west bank of the Buckland River and 30 miles from the mouth of Escholtz Bay, was permanently settled in 1952. The site is about 75 miles southeast of Kotzebue, at approximately 65.979720° North Latitude and -161.12306° West Longitude [Sec. 26, T007N, R012W, Kateel River Meridian]. This site is located in an area subject to flooding during spring break-up due to ice jamming.

The Inupiaq successfully lived in harmony with this unique arctic environment that is characterized as a transitional climate zone with long, cold winters and cool summers. Temperatures have ranged from -60 to the 85 degrees Fahrenheit; however, there has been warming with noticeable warmer winters and summers, e.g. temperatures ranges are generally from -40 to 90 degrees Fahrenheit. Annual precipitation averages 9 inches and annual snowfall averages 40 inches.

The Inupiaq people take great pride in the sustained ability to harvest the resources of the land, sea and river in a traditional and respectful manner. The *Kangigmiut* (indigenous people of Buckland) developed relationships, strategies and tools for fishing, hunting and gathering that made them one of the conserving societies ever known. *Kangigmiut* culture, arts and humanities were expressed through songs, dances, legends, ceremonies, skin boat building, and language. The *Kangigmiut* successfully cultivated a community with an economy based on beluga, moose, caribou, salmon, ptarmigan, rabbit and waterfowl, and all that the land and water have and continue to provide.

The coastal and inland Inupiaq of Northwest Alaska had established tribal governance and trade systems hundreds of years prior to "European discovery of Alaska" by Russian explorers in 1732. By 1778, the English explorer Captain Cook had sailed the coast and charted some of the coastal areas in Northwest Alaska. The *Kangigmiut* did not allow Captain Cook to come to shore during contact in their traditional area. In the 1800s, exploration by outsiders began in earnest.

In 1818, the Kotzebue Sound was "discovered by Europeans" by a German Admiral, Otto Von Kotzebue, while sailing for the Russian Navy. In 1867, Alaska was purchased by the US from Russia. 1884, the Organic Act was adopted by the US Congress that formed a rudimentary form of government in Alaska. In 1885, Dr. Sheldon Jackson became the first federal superintendent of public instruction for Alaska, with the task of organizing a free school system for Native American, Eskimo, and white children with the purpose of teaching western lifestyles and mainstream American skills. In 1892, Dr. Jackson with government aid brought the first reindeer into Alaska from Siberia.

Figure 2: aerial view of Elephant Point, July 1938, including Lomen Brothers reindeer facilities. State of Alaska Virtual Library.

In 1897, the Alaskan gold rush began. In 1898, the Kobuk River gold rush began when Captain Cogan of the whaling ship *Alaska* greatly exaggerated a prospector's Kobuk gold discovery to encourage people to book passage on the ship's return to Alaska. These accounts, as well as a number of others that flooded the

US news, turned out to be lies. Nonetheless, a fleet of ships left the west coast of the US during the spring of 1898, bound for Kotzebue with almost 2,000 would-be prospectors on board.

In the early 1900's, the Bureau of Indian Affairs assisted local people in starting a herd at Buckland. The Lomen Brothers, based out of Nome, also had a reindeer herding operation, company store and warehouse on the eastern bank of the river in Buckland. In 1906, the US Congress passed the Native Allotment Act which provided for conveyance of 160 acres of public land to Alaska Native adults; however, few tracts were issued because the Bureau of Land Management refused to recognize subsistence use of land as proof of "use and occupancy."

In the 1920's, the community moved three times: (a) first with the reindeer herd from Old Buckland (one mile down river) to the present location (on the south side of the river) in order to pasture and slaughter the village's reindeer herd. Then (b) relocated 30 miles upstream or 18 air miles up stream on the south fork of the Buckland River where fuel was more readily available. Then (c) relocated to Elephant Point at the mouth of the Buckland River where Loman Brothers had located a reindeer slaughtering house, but the site lacked a regular fuel supply. In the 1930's, the people gradually returned to the present site on the north side of the river where the BIA school was built.

Citizenship to Alaska Natives was granted with the passage of the 1924 Citizenship Act. During the 1950's, tribal members in Buckland experienced language shift to English from Inupiaq with schools and western institutions utilizing duress with families and children to use English as their first language. Today, the majority of residents are mono-lingual in English and a major movement for bilingualism needs to occur for using the unique *Kangigmiut* Inupiaq dialect in the community with current and future generations.

On December 30, 1950, the Inupiaq people in Buckland voted to duly ratify by vote (17 for and 13 against), to reorganize its traditional form of tribal government to an Indian Reorganization Act (IRA) Council (Constitution and Bylaws of the Native Village of Buckland, Alaska). The constitution and by-laws were prepared during the 1940's with the help of Arthur Nagazruk. An updated constitution was drafted and accepted by the tribal membership during the 1990's and is still under ratification by the US Secretary of the Interior as of 2006.

The village moved from Elephant Point to the current site of Buckland beginning in 1952, due to erosion and flooding. The IRA offices are in a building that was constructed from the Buckland Native Store that was disassembled and moved from Elephant Point during this time. The school was also moved during this time. Also in 1952, Paul Hadley received a substantial loan of reindeer from the federal government through the BIA. The herd prospered and the loan was repaid in just five years.

On January 3, 1959, Alaska was proclaimed a state of the union by President Dwight D. Eisenhower. On June 1, 1966, the City of Buckland was incorporated as a fourth class city. Original council members were Louis Hadley, Sr., Fred Armstrong, Sr., Marvin Thomas, Jimmy Geary, Sr., and James Parrish. Today, the City of Buckland is classified as a second class city. The Northwest Arctic Borough administers a comprehensive plan, land management regulations, and subdivision ordinance that apply to development within the community. Buckland is classified as a village zone under the Borough's comprehensive plan and land management regulations.

In 1971, the tribal members of Buckland settled land and resource rights, through the Alaska Native Claims Settlement Act, and formed state chartered Native corporations. In 1976, the Buckland Village Corporation merged with NANA, the regional Alaska Native Corporation. Also, during the 1970's, federal and state government poverty and community assistance programs provided new income and benefits to some Buckland families, particularly with the passage of PL 93-638 in 1974. A state-operated K-12 school was also built in Buckland during the late 1970's and no longer required local students to leave their home community for secondary (high school) public education.

Today, Buckland is rooted in Inupiaq values and relies on the historical and cultural relationship to the land, sea and river for subsistence. In addition to the archaeological, marine life and wildlife resources of the community, there are many other natural resources including metallic and nonmetallic mineral deposits. As western institutions have began and matured in Buckland, there have developed shared governmental and community development duties among the tribal government, city government, NANA Corporation, Northwest Arctic Borough and School District, and groups such as the Maniilaq Association and churches. The population of the village is majority Inupiaq.

Buckland Community Vision

Buckland is a safe community that respects
Elders, Children, Nature and Tradition.
Buckland strives for economic stability
by learning and being well.

Buckland Development Goals

Goal 1: To expand and improve housing, transportation, land and public safety infrastructure for community development, economic stability, and environmental preservation and protection

Goal 2: To plan and develop safe utility infrastructure and services for our growing community while protecting our environment and ensuring sustainability

Goal 3: To strengthen and enhance Buckland's traditional and modern way of life for enhancing our education, social well-being and health of our community while utilizing our Elders wisdom and knowledge

Goal 4: To develop and encourage responsible private investment and public capacity for promoting economic growth, sustainability, and local ownership and accountability

Top 10 Overall Community Development Projects for 2006-11

1. Water and sewer in the whole village with standardized piped systems
2. Multi-purpose IRA-City-Post Office building for better facilities, allow program growth, and additional village based jobs

3. Bridge across the Buckland River that provides access to land for development via existing community roads and an evacuation route for disasters
4. More communication equipment and services for search and rescue situations
5. Teach culture to youth and adults
6. Youth center building/facility for Head- and Early-Start program, youth recreation center, Boys and Girls Club, day care, and outside recreation park (playground, softball, etc)
7. Improve existing roads – foundation improvements and surface treat for dust control
8. Trail staking and maintenance
9. Acquire new heavy equipment
10. Alternative energy development

Top 10 Capital Project Priorities 2006-11

1. Water and sewer in the whole village with standardized piped systems
2. Bridge across the Buckland River that provides access to land for development via existing community roads and an evacuation route for disasters
3. Erosion control of river bank
4. Acquire new heavy equipment through collaboration of the city and IRA for new community projects and road maintenance – more for the village and work together to make equipment last longer and share costs (parts, maintenance, etc)
5. New housing units – additional construction
6. Improve existing roads – foundation improvements and surface treat for dust control
7. Alternative energy development – e.g. wind, hydro, natural gas, etc.
8. Build a hospice for Elders so they won't need to move away and can receive proper care locally
9. Youth center building/facility for Head- and Early-Start program, youth recreation center, Boys and Girls Club, day care, and outside recreation park (playground, softball, etc)
10. Multi-purpose IRA-City-Post Office building for better facilities, allow program growth, and additional village based jobs

Buckland Top Three Capital Improvement Priorities 2010-11[5]

*Priority 1 = most important	Buckland Capital Projects	Notes. Why a priority.	Local/Other Contact	Res. No.?	Cost
1	Water and Sewer project completion.	Provide additional funding to complete water and sewer project to provide sanitation facilities to the whole community. This project will adequately address sanitation issues in our village by providing safe water and the safe handling of sewer waste.	Darlene Hadley 494-2121; fax 2930 Floyd Herman Ticket, Mayor		Cost not known
2	Bridge across Buckland River	The Council is adamant about having a truck bridge as opposed to a "Honda bridge" to be used as an evacuation route and for further expansion of the City which would be out of the flood zone.	City/IRA		21,000,000.00 (estimated)

[5] Compiled with the residents and submitted to the state for the residents of Buckland by the Public Services Department of the Northwest Arctic Borough, in July 2010.

3	Day Care Facility & Ongoing support for payment of employees with M&I	There is a direct need for an adequate Day Care Facility for care of children whose parents work or otherwise busy with other chores.	City/IRA		250,000.00
4	New LED Street Lights	Installing these LED street lights in town would save the community in fuel and dollars for this safety feature.	City		17,000,000.00
5	Embankment stabilization	Erosion control measures from John Hadley's home in uptown area to the bend in the river by the IRA Offices	City		Cost not known.
6	Airport Expansion.	For airline and passenger safety, existing runway needs to be expanded. Several aircraft have run off the end of the runway because it is too short and too narrow.	City		Cost not determined.

Top 10 Community Projects/Activities Priorities 2006-11

1. More communication equipment and services for search and rescue situations
2. Teach Inupiaq and English (bilingual) for better communication and knowing our traditions
3. Buying and selling of Native crafts – economic development that supports bringing back traditional arts and crafts
4. Annual support and operation of a summer culture camp
5. Teach culture to youth and adults – e.g. sled building, skin sewing, making traditional Native hunting equipment (spears and other items), etc.
6. Fully funded trail staking and maintenance – to Kotzebue (49 miles), to Galahan (34 miles), to Selawik (39 miles), to Bear Creek (50 miles) and to hot springs (104 miles), to Kiwalik (23 miles), to Elephant Pt (30 miles)
7. Complete 14c3 land conveyance for community land base and growth
8. Tribal court development
9. Technical assistance to over-income families in home loans
10. Complete water shed plan and submit to the borough/state/federal government

Buckland's economy can be characterized as a mix of cash and subsistence (natural resource) activities. One person currently holds a permit for reindeer herding, but currently does not have a herd due it being absorbed by caribou. At one time, the herd was more than 2,000 reindeer and up to nine workers that were paid in meat. Some mining also occurs. One resident holds a commercial fishing permit. The sale or importation of alcohol is banned in the village.

Economic Development Priorities
Identified at public Joint City-Tribal Meeting Oct 2010 - DRAFT

1. **Cultural and Language Center**. To combine this center with the joint facilities plans for the Post Office, City and Tribal Office complex. The Cultural and Language Center would be a place where youth and developing artist would be able to learn skills of other Inupiat artists, teachers and craftsmen (carving, tanning seal, caribou, etc. skins; sleds, harpoons; sinew, rope, basic tools, sun glasses (caribou hooves style), drills, hooks and sinkers, prepare traditional foods and berries). It should be a place where photos, postcards, clothes, mukluks, art, etc. should not only be made, but sold. It should also include a recreation center for youth (Boys & Girls Club, food sales, games, small businesses/store spaces).

2. **Develop our own local resources**: Reindeer herd re-development; gravel pit and rock boulders; bottle mountain spring water.
3. **Transportation**: Bridge across the Buckland River; Road to Elephant Point
4. **Businesses**: Develop a community construction contracting business; develop a fisheries (Herring w/ roe; Cod, salmon sharks, crab, shrimp, etc.)
5. **Airport coffee shop**, hamburgers and fries; and place to wait for flights
6. **News media business**; where news, weather, about our community and region is covered and receivable on TV.
7. **Eco – Tourism**

Employment

The community's desire for economic stability includes the goal of advocating and obtaining higher wages for local employment. Employment is primarily with the tribe, school district, city, health clinic (Maniilaq), stores and Red Dog Mine (commute from Buckland to the mine with work camp rotations). The community hopes to create more jobs and to have more people from the village taking jobs that are currently occupied by other individuals from outside. People feel that higher education and post secondary training will assist in this regard. Local hire goals could be realized through local city/tribal ordinances that promote local hire.

The community infrastructure would benefit with a local grant writer (dire need) and program management positions. The city and tribe want to update and enforce local ordinances and laws with the result of increased taxes, review of charges of electrical generation by Kilowatt hour, rental rates review, indirect cost rates negotiation, and collections for existing city/public services. In regards to capacity building, bookkeeping and/or accounting, tax laws, grant reporting and requirements would aid local organizations.

The community needs training for positions that are already in Buckland including: grant writer, planner, business owner , freight direct service, appliance repair, mechanic- small engine, NANA corporate resource specialist, store manager, tour services, beauty salon, airline agents, B and B/accommodations- hotel workers, banking, restaurant workers, pilot for boats, store clerks, store stockers, information service technician-cable technician, postmaster, telephone technician, license vendor, mechanic-aircraft, pilot-aircraft, small business owner/operator, hunting and fishing guides, and janitor-contract.

Local training needs for existing public employment includes: wildlife/subsistence resource staff, heavy equipment operator, CDL driver, utility-water treatment operator, utility-sewage treatment operator, mechanic-heavy equipment and small engines, journeyman electrician, journeyman plumber, journeyman carpenter, laborers, city administration (accounting, power manager-clerk, and office skills), surveyor, utility-power plant operator, utility-bulk fuel operator, housing administration., housing maintenance, utility-landfill operator, public safety (VPO, VPSO), health-CHAP and injury prevention coordinator, health-nurse practitioner, HAZWOPER, search and rescue, and fire fighting (local and BLM).

Figure 3: Buckland River and boats docked on shore.

Transportation

The village of Buckland is located on the Buckland River. The village is not connected to any other village or town by a road or highway system, therefore making marine and air travel the main sources of transportation for both business and pleasure.

Residents utilize the sea and river as a main source of transportation. With subsistence such a high cultural and economic priority for the village, the people use the sea and river to go to and from fishing camps and subsistence sites. Marine travel is also used for pleasure as well as traveling to other villages and towns. In the winter months, the residents use the frozen sea, river and land as a means of travel by snow machines.

Crowley Marine barges in fuel and various lighter-age companies deliver cargo and supplies seasonally (barge service is available from late-June to October). There is a need for dock facilities, small boat harbor, dry dock facilities, boat ramps and equipment as well as a deep water dock for barges. The river bank is slowly eroding away and needs erosion control.

Figure 4: Buckland airport - Frontier twin-engine.

Incoming and outgoing cargo and freight is generally transported by air which is very expensive. Buckland is accessible year-round by plane through a State-owned 3,200' long by 75' wide gravel airstrip which serves a number of scheduled and chartered flights. Regional air services provide cargo, mail and passenger services. Buckland is approximately 30-minutes by small plane from Kotzebue. All bypass mail and fresh produce are delivered via commercial flights on a daily basis through small freight planes. The airport needs maintenance and some sort of shelter at the landing strip, particularly during the cold winter days. Strong crosswinds sometimes restrict the use of aircraft in the winter months.

There are very few roads that cover this area – there are 2.4 miles of existing roadway that serve the community residents, businesses and public facilities. The community roads are 10 to 40 feet wide, constructed at or above grade level, gravel and unpaved, and are used for day-to-day activity. Existing roads in Buckland are laid directly on the tundra and/or organic mats.

The roads do not have sufficient drainage and have no ditching – some are considered more like trails. Roads materials are gravel or sandy silt taken from various local sources. During spring, early summer and fall the roads become very soft and muddy making vehicular travel difficult. In general, the roads are bumpy with ruts and dips. Responsibility for road and trail maintenance is shared between the city and tribal governments. The airport is maintained by the State of Alaska Department of Transportation and Public Facilities.

Figure 5: Buckland community street.

Small boats, ATVs and snow machines are used extensively for local transportation. Many current and historic trails are along the Buckland River and are important today for inter-village/inter-region travel and subsistence uses. Trails are most often used in the winter and include routes to Selawik (74 miles) towards Elephant Point and crossing the Baldwin Peninsula, to Kotzebue (76 miles) towards Escholtz Bay and crossing Kobuk Lake, to Deering (50 miles) towards Sparief Bay and Cape Deceit, and to Bear Creek and Koyuk. The community trails (up to 300 miles) are in need of ongoing maintenance for public safety and growth in trail traffic is projected to increase with a growing population.

Figure 6: water intake equipment at the Buckland River.

Roads maintenance is a need, particularly equipment. The community has recently completed a Long Range Transportation Plan (LRTP) to include new roads and erosion control. The community wants to build roads and wishes to use the LRTP to obtain assistance from the BIA and State DOT for roads to proposed housing sites. Road maintenance is an ongoing need for safe clinic and other public facilities access. We are in need of snow machine crossings and bridges. Our roads need some type of drainage. We are interested in board roads. After the annual flooding season, the community would like the proper equipment to fix up the roads and keep them maintained.

Water, Sewer & Sanitation System

Water is pumped from Buckland River, treated (filtration and chlorination) in the washeteria building, and stored in an 182,000-gallon welded and insulated tank next to the washeteria/water treatment building. The water treatment system is designed to serve a maximum of 200 people (note: 2000 census population is 406), and has been in service since December 1986 (Buckland Utility Facilities Plan, LCG, Inc.). A water and sewer project is planned for 2007-2008 that will double the capacity of the community's water storage. Current average water usage is estimated to be at least 5,600 gallons per day (averaged over a one year period). The City has completed water system improvements and water operator training to meet state standards during 2006.

The current water collection method is labor intensive and unreliable. Water must be pumped from the river on a monthly basis. This generally creates a water shortage at the end of each cycle and results in insufficient water storage in the event of a fire.

Buckland does not have an adequate water supply or equipment necessary for fire fighting. The storage tank does not have sufficient capacity to fight fires if adequate delivery of water to fight a fire was available. The lack of piped water and fire hydrants make it difficult to fight fires appropriately. There is USDA-code red portable fire equipment based upon dry-chemicals for fire fighting and stored next to the water treatment plant in a Conex van.

Buckland does not have piped water and sewer system in each house and building, and some residents have water delivered to home tanks (220 gallon capacity), and most haul their own water. Only ten homes (teacher housing), and the school have fully functioning piped plumbing systems; 74 homes are not served (US Army Corp of Engineers, Environmental Infrastructure of Buckland, February 2004).

Residents use the central washeteria (built in 1987) for a main exterior watering point, Laundromat (4 washers and 3 dryers), public toilet (2) and shower (6) facility. The washeteria was recently improved in January 2006 with Denali Commission funding.

36 homes have "flush and haul" systems, although not all homes use them due to freezing and maintenance problems – estimated that 15 homes utilize the flush and haul system. The flush and haul system has been noted to be expensive to use by residents, and local people view it as a temporary solution to a permanent piped water/sewer system. 46 homes rely on honey buckets which is a container with a disposable plastic liner, e.g. garbage bag that holds human waste. The City pumps flush/haul waste tanks or hauls honey-buckets to the sewage lagoon. A flush/haul system has been problematic on the South side of town, and freezes and fails during the winter. Only 10 homes (teacher housing units) and the school have functioning plumbing which utilize the washeteria's piped system.

Figure 7: central watering point for hauling water at the washeteria building

There are two sewage lagoons in Buckland. (1) "In-Town Lagoon": located near the washeteria and upstream of the main community. In this lagoon, wastewater from the school, washeteria, and teacher housing is piped for treatment. (2) "West Sewage Lagoon": located about 6,500 feet west of town. Most honey buckets and flush and haul waste is disposed of in this treatment lagoon. The In-Town sewage lagoon is within the 5-year flood plain. When flooded, the wastewater mixes with the surrounding river water and creates a public health hazard. Wastewater is also believed to be leaking from the In-Town lagoon into the river, which creates health concerns since the drinking water is obtained from the river. In addition, the In-Town lagoon is in an area that is eroding and presents odor nuisances (Buckland Community Master Plan, Dames and Moore Inc., 1999).

Figure 8: in-town sewage lagoon.

A few homes used to use AlaskCan composting toilet systems; however, only one home is continuing to use it. This composting system increases electrical and home heating cost substantially, and one resident reported the system makes the home smell like a septic tank.

Major improvements are needed -- a new water treatment plant and sewage lagoon improvements are in the planning stages with the Army Corp of Engineers as the lead agency and estimated to be 90% done. Providing service to the 26 homes in the south side is the priority. Sewage and solid waste collection and disposal are needed in order for housing to be viable as well as bridges and roads to a site across the river.

The 2011 status of community water, sewer, and sanitation systems in our smaller communities is important to the health and wellness of our communities. This Buckland status snapshots is provided by the state Rural Utilities Business Advisor (RUBA)[6], Margaret Hansen, Report – January 2011

The water supply used by the City is taken from the Buckland River. It is treated with filtration and chlorination and stored in a central community storage tank. The water is then hauled to some homes by means of a light truck and small tanks. The residents are charged for this service. The community has a central washeteria, which is a combination laundromat, toilet and shower facility and provides a watering point for residents who haul their own water. The City met with VSW who coordinated the hiring of a project management firm to oversee all phases of the water/sewer project. The sewage lagoon project started last summer which was completed; currently, the sewer pipes have been installed from the washeteria to the sewer lagoon. The water pipes are being built from the washeteria to the clinic which will serve about 17 other buildings. The council passed a resolution saying that they would do inhouse plumbing if the residents pay their landfill, trash and sewer bills. The maintenance equipment storage building is completed. The foundation for the water treatment plant is done and the water tank shell is complete and also the construction camp. They hope to do in home plumbing for 17 homes which they expect to be done this winter. They are 13 million short to do this for the entire community.

Water Distribution, Source & Treatment Systems:

Water System Operator:	**City; Individuals**
Washeteria Operator:	City
Piped Water System:	No
Central Watering Point (Haul):	Yes
Multiple Watering Points:	No
Water Truck (Delivery):	Yes
Individual Wells:	No
Community Well Source:	No
Surface Water Source:	Yes
DEC Water Permit Number:	340125
Water Is Filtered:	Yes
Water Is Chlorinated:	Yes

Sewage Collection Systems:

Sewer System Operator:	**City; Individuals**
Piped Sewer System:	No
Honeybucket Haul:	Yes
Honeybucket Pits:	No
Individual Septic Tanks:	No
Community Septic Tank:	No

[6] http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm

Sewage Pumper:	No
Sewage Lagoon:	Yes
Sewage Lift Station:	No
Outhouses:	Yes

Refuse/Landfill System:

Refuse Collector:	**Individuals; City**
Landfill Operator:	City
DEC Landfill Permit:	No
Type of Landfill:	Class 3

Individuals dispose of refuse in dumpsters, which are hauled to the landfill. The solid waste disposal site is considered an open dump/landfill. DEC has approved the landfill for use, although it is not permitted. The landfill consists of two-diked disposal cells enclosed with chain-link fencing, and constructed in 1992 and considered to be at maximum. Currently, the landfill is seen as an unsanitary site, and a new landfill site is needed for waste disposal with a hazardous material storage and scrap metal storage area. The tribe is working on recycling (pop cans, florescent light bulbs, computers and lead-acid/household batteries) and closing out the current land fill with planning for a new site.

Buckland's top environmental priorities are: Safe Drinking Water, Safe Sewage Disposal and Treatment, Erosion Control, Contaminated Sites Identified, Contaminated site remediation plan, Certified Water Plant Operators, Spring clean up, Community Environmental Plan, Protected Watershed Plan, Bear Creek Mining Monitoring, and Environmental Policy/Ordinances.

Other priorities include: Acquiring heavy equipment needed for implementing environmental projects, Environmental Impact Statement, Healthy Subsistence Food, Healthy Wildlife Populations, Permitted Landfill, Developable Land, Fuel Spill Clean-up Materials, Fuel Spill Prevention and Response Plan, Environmental Education Programs, Hazardous Materials Collection Site (including storage for Lead-Acid batteries killed with Baking Soda), Hazardous Waste Response Team, Recycling Program, Used-oil/waste-oil Storage Site, Air Quality Monitoring, Adequate Supply of Water, Old Military Site Clean-up Plans, Knowledge of Fuel Spill Areas, Tank Farms With Secondary Containment, Remediate and Reclaim ponds and lakes used for sewage and garbage, and Safe tide water plan.

Environmental education is needed with the community. We support our annual spring clean up as it allows for a litter free environment. Ultimately a cleaner environment that allows for wildlife and aquatic life to move freely on their migrations is our goal. We hope to teach cooperation and responsibility to each other about keeping our land and water resources environmentally clean. There is a need for increased awareness on keeping the environment clean with the goal of having less trash thrown around. Also, community education is need for garbage separate to effectively use the land fill burn-box (e.g. separation of paper and cardboard from tin and other material).

We want protection for land animals, marine mammals and waterfowl. We wish for less wanton waste as it is not permitted. There is a need to gather harvesting statistics and a review of existing statistics and evaluate future harvests of game. Responsible development including land remediation by developers and a look at any Environmental impact development brings. We desire to participate in decision-making and an awareness of the decisions that are made in and around our area

Electric Utility:

Electric Utility Name:	**City of Buckland**
Utility Operator:	City (Contract to Kotzebue Electric Association)
Power Source:	Diesel
FY 2009 Rate:	51.9 (Only data for PCE Communities is available on this system)
Power Cost Equalization (PCE) Subsidy:	Yes
FY 2009 Total kWh Generated:	1,427,899 kWh
FY 2009 Power Cost Equalization (PCE) Rate:	29.53 cents/kWh (For consumption up to 500 kWh monthly)
FY 2009 Average Effective Residential Rate:	22.32 cents/kWh
	Link to the most current PCE Report: www.akenergyauthority.org

Bulk Fuel:

Tank Owners
(Number of tanks / Total capacity): Northwest Arctic Schools (62,500 gals.); City Power Plant (44,800); City Water/Washeteria (16,100); City Office/Clinic (14,800); Village Council Fuel Depot (151,800); Army National Guard (4,600); AK DOT (2,700)

Health Services

Health Care:	
Clinic in Community:	**Buckland Clinic (907-494-2122)**
Operator:	Maniilaq Association (907-442-3311)
Owner:	Maniilaq
Facility Status:	New – completed in 2004
Alternate Health Care:	N/A
Health Comments:	Buckland Clinic is a Primary Health Care facility. Buckland is classified as an isolated village, it is found in EMS Region 4A in the Maniilaq Association Region. Emergency services have coastal and air access. Emergency service is provided by volunteers and health aides

Buckland has a health clinic that serves the whole community. The clinic is operated and maintained by Maniilaq Association. The clinic provides limited health care for the community.

Figure 9: Buckland health clinic.

Routine medical examinations and minor health issues are taken care of on a daily basis by health aides which are village level staff and certified in ETT, EMT, CPR, First Aid, and Community Health. When needed, health aides communicate by telephone to the doctors in Kotzebue or by telemedicine. Emergency services beyond basic health services require medi-vac by charter planes.

Services such as dental, optical, and other specialized health services are only offered through itinerary providers or through the main Maniilaq health care facility located in Kotzebue. Some social services are accessible through the clinic, but major social problems are usually referred to Kotzebue.

There is a need to promote a combination of western and traditional healing resulting in more tribal doctors, midwives, and spiritual healers and more births in Buckland (instead of being sent to Kotzebue or Anchorage). In addition, health staff housing would be an incentive for recruiting health staff to Buckland.

Figure 10: clinic truck used for local health staff transportation and ambulance services.

Healthy children could be impacted by youth programs. Nutrition for our young people through the WIC (Women, Infant and Children) program and an elders food program is needed. Disability services are needed for home food delivery, chore service providers, personal care attendants, and local transportation (e.g. ATV and snowmachine). Public buildings (e.g. city office) and some homes are in need of handicap ramp access.

The community supports diabetes prevention for all age groups. This could be tied with weight loss programs to promote healthy lifestyles. The community also wants AIDS prevention and health education, family planning, parenting classes and counseling.

Social, Wellness and Public Safety Systems

Local Services & Facilities:	
Police:	City Village Police Officer; Troopers in Kotzebue (442-3222)
Fire/Rescue:	City/Buckland Volunteer Fire Department (494-2121); Project Code Red Equipment
Court/Magistrate:	None
Youth Center:	School facilities only

Community Hall:	City building
Senior Services:	Only the Elder lunch program with the school through Maniilaq
Gym:	School
Museum:	None
Library:	School Library

The residents of Buckland are in dire need of social programs. Recent and on-going drug and alcohol abuse has become an increased problem for village. Substance abuse programs are limited in the community and often people are sent to Kotzebue and Anchorage to receive assistance for addiction and substance abuse problems. Self respect could be improved with hopes of that there will be no suicides in our community.

Our children need reasons to live here instead of moving away by increasing job, vocational training and housing opportunities to make our community more livable. This includes promoting youth programs and building a Head/Early start program and facility, recreation/youth center, outside recreation park, public playground, Boys and Girls Club, and supporting our schools. Any or all of these programs and buildings may be part of a multi-use building.

Some local social programs we hope to develop or keep include establishing a local support system for our children, suicide prevention and youth recreation programs. Open gym is the only teen recreation program that we have.

Adoption and protection of our children is of concern and we strive to increase accessibility to family services from the State of Alaska and Alaska Legal Services in addition to the Indian Child Welfare Act (ICWA) which is need of training, office space, equipment and a faster process for our tribal members' adoptions.

We promote youth courts and tribal courts, and feel that there is a need for a tribal judge to assist us in our effort to prevent our children from being sent away for committing crimes. There is a need for daycare services and training for those community members that wish to provide this important service.

The city provides Village Police Officers (VPO) through sales tax to work within the community to take care of minor and routine police matters as well as provide the means for a safer community. There is a need for a public safety building for search and rescue, police (VPO and VPSO) and storage of equipment. We need land and gravel for the public safety structure. All facets of public safety are in need of more and adequate equipment with proper training. We desire a fire department/station, police, streetlights, trail staking, community CPR and injury prevention workshops (boating, ATV, etc), traffic laws, search and rescue, airport safety and communication equipment.

We have a Village Police Officer (VPO) but need a Village Public Safety Officer (VPSO) and a local Alaska State Trooper. Enforcement of city ordinances particularly as it relates to vehicles and local option laws are concerns. In terms of fire protection we need volunteer fire department, training and equipment and storage of equipment. Our local emergency response would benefit from volunteers and HAZWOPER training.

Social and public safety programs would have a huge impact on the welfare of the community as a whole. Safety officers, search and rescue, substance abuse programs, family and child social services are greatly needed to improve the lives of the people of Buckland.

The community value of wellness includes the goal of enforcement of local options law with the hopes of reducing alcohol and/or drug consumption. We aspire to promote sobriety with the expectation of peer and/or professional counseling, less domestic incidents/less clinic calls, alternative activities that promote health, increased student attendance, decreased FASD and more drug and alcohol education.

Our goals also includes having our people more spiritually, emotionally and psychologically well by seeking an increase in church and tribal gatherings as well as elimination or reduction of suicides and perhaps youth and elders programs to achieve the goal of a people who are physically well.

Substance abuse programs are a priority and are in need of a local counselor. Suicide prevention is a high wellness priority. We would like to see partnerships between Community of Buckland (City-IRA), Maniilaq Association (which provides this program and has the Maniilaq Recovery Center {MRC} and Juvenile Alcohol Safety Action Program {JASAP} and Indian Child Welfare Act {ICWA}), the Northwest Arctic Borough School District, and Buckland School.

We envision a new church building with a new public address system. We want a music program that could include music in Sunday school, vacation bible school. We desire a piano teacher and hope to build on religious programs that use music.

In terms of domestic violence, we need to continue supporting our existing safe houses for victims, a counselor, and financial assistance for victims.

Teen counseling is available (from Kotzebue) but the community needs a full time position to help address suicide prevention and promote healthy activities such as sewing, arts, and crafts classes. Adult recreation programs could include open gym, language classes, arts and crafts, and an Elders council. We hope that adults and children will spend time with elders. The community desires a park for adult recreation programs.

The community wants counseling services for adults with en emphasis on substance abuse and parenting skills. Our community could improve with training for the following positions: health-suicide prevention, health-tribal doctor, counselor-peer, counselor-drug/alcohol, BIA-general assistance caseworker, counselor-licensed and health-personal care attendant, and cultural and subsistence skills (summer camps, local instruction and workshops).

School and Education Systems

The community of Buckland has an elementary (pre-K-5th grade); middle school (6th-8th grade); and a high school (9th-12th grade). A new school was completed in 2000; however, it has already experienced overcrowding with student population growth. The high school students have the option of furthering their education elsewhere through state boarding schools or taking

distance education classes offered through the Chukchi College. Kotzebue also offers alternative learning education through the Alaska Technical Center.

According to the 2004 Northwest Arctic School District Site Visitation Report by the Association of School Boards, the following tables give attendance, drop out, graduation rates and academic performance statistics for Buckland.

School Area	2001	2002	2003
Attendance	94%	95%	94%
Dropout Rate	1.7%	1.6%	0%
Graduation Rate	*81%*	*86%*	*78%*

Percent of Buckland Students Proficient by Grade

2003 State Assessment Results	Grade 3	Grade 6	Grade 8	Grade 10
Reading	29%	13%	27%	14%
Writing	29%	21%	13%	57%
Math	28%	13%	0%	13%

Parents and community need to support and be more involved in teaching children their responsibilities and that they are responsible for their own actions to succeed in school and the workplace. We feel that having an attendance clerk at school will help ensure that our children are at school.

Our children need to be respectful and have more discipline to make better decisions to stay in school and keep their jobs in the future. Culturally appropriate discipline regularly implemented by parents and families may decrease future substance abuse and absences in school. Buckland's children need to be taught *Inupiat Illitqusiat* values and traditional skills. We seek to promote discipline with improved parental and community guidance. The community wishes our local people to know Inupiaq Values and where our parents, community and school support each other and help teach self-respect.

Our hope for healthy children includes having Early Head Start and Head Start, Infant Learning, and Cultural programs to ensure quality childhood education and prepare our children for the benchmark exams are early in age as we can. Education is an important value in our community and the community feels that when speaking of education the traditional institutionalized K-12 and post secondary education comes to mind. We believe people should be lifetime learners.

We endeavor to have a strong bi-lingual language program by including 9th through 12th grade bilingual programs and improving the local Inupiaq curriculum. We feel that community/parental involvement is necessary particularly by having youth, adult and elder programs. Adult bi-lingual programs are needed where all adults teach the children Inupiaq.

We desire more of our students passing the benchmark exit exam. We want improved graduation rates, a decrease in the student to teacher ratio, attendance incentive programs, good grade incentive program, increased parental/community involvement as well as regional counselor makes more visits to Buckland. More certified and credentialed local teachers with local staff

attaining a 30% increase in certified or credentialed hire of local people as well as more employer supported training.

For community members that are away to obtain post secondary education, we should provide social and cultural community support by sending them care packages. Job training and career ladders needs to be offered to our community members for the following educational positions: school teachers, teacher aides, school-maintenance and janitorial, tutors, BIA-higher education coordinator, school-secretary, and school-principal/administration.

We place value on a public library that is open to the public year round (we have a school library that is open only when school is in session). We feel that internet service can help us with our learning initiatives.

Figure 11: spring flooding in Buckland.

Land

Buckland is located in the Cape Nome Recording District. The area encompasses 1.2 square miles of land and 0.2 square miles of water. The City of Buckland is entitled to select up to 1,280 acres of land from NANA under ANCSA 14(c) 3. The majority of the land surrounding Buckland is owned by NANA, the federal government (BLM), and the State of Alaska.

The seismic zone for Buckland is 2B – meaning that predicted damage from earthquakes is moderate (Buckland Utility Facilities Plan, LCG, Inc.).

The City of Buckland is located within the flood plain of the Buckland River. The community is located approximately 10 feet above the normal summer river level and is situated on the inside of a river bend. Erosion along the riverbank south of town is proceeding at a rapid pace. The top of the bank has moved inland approximately 140 feet since 1972 (Buckland Utility Facilities Plan, LCG, Inc.). From US Survey 4482 data, it has been confirmed that the bank has been eroding an average of 4 feet per year. The US Army Corp of Engineers has estimated that in 30 years the erosion will impact several homes and undermine the road accessing the NIHA subdivision south of town.

The soil types typical of the Buckland community area consist of a surface layer of ice rich, peat, silts, and silty sands and gravel at depth. The topography of the Buckland area consists of low rolling plains cut by streams and numerous lakes (Buckland Utility Facilities Plan by LCG, Inc). The area is generally underlain by continuous permafrost. This contributes to extensive surface water during the summer months caused by perched water held at the surface by underlain impermeable permafrost. Aerial photographs reveal polygonal patterns in the ground surface in the areas around town. This suggests soils ribboned with ice wedges underlain with shallow permafrost.

R&M Consultants performed a foundation inspection in November 1977 and 48 holes were drilled between depths of 14.5 to 28.5 feet. The general finding was peat in the first 1-2 feet, underlain by gray silt at depths of 2.5 feet continuing to the bottom of the holes. Visible ice varied in many of the drill holes at varying depths, and organic material was occasional recorded. In various holes, intrusions of sand were encountered at deeper depths. These tests are confined to a

relatively small area and do not reflect the soil conditions in the outlying area of town where tundra covering exists.

Current land use within the city includes residential, utilitarian (roads, airports, public facilities) and traditional (subsistence). Buckland can expand its land base (for housing, public buildings, etc) to the west or east across the river (US Army Corp of Engineers, Environmental Infrastructure of Buckland, February 2004). Community land expansion to the west would require a large amount of fill since the area is wetlands and in the 5-year flood plain. Land expansion to the east would be at a higher elevation and outside of the flood plain, but requires a bridge across the river for safe year-round access.

The Northwest Arctic Borough administers a comprehensive plan, coastal management program, land management regulations, and subdivision ordinance that apply to development within the community. Buckland is classified as a village zone under the Borough's comprehensive plan and land management regulations. The Lower Buckland River has been identified as a special management area under the Northwest Arctic Borough Coastal Management Program (NWAB CMP) and requires additional protection for subsistence use, biological resources, and cultural resources (NWAB, 1998).

There are several land management and ownership problems that need to be addressed. For example, many public buildings and homes are located within platted road right-of-ways and easements, some homes are straddling property lines, some roads are crossing several properties, and many homes are without legal access. As well as guidance for developing housing in the community based upon flooding.

Environmental Scan

Trends in Buckland and Community Development

Positive

- ▲ Population growth particularly with younger ages
- ▲ Increase in the number of construction and project jobs
- ▲ Improvements to our community water and sewer progressing
- ▲ Increase in the number of local housing units
- ▲ Continue to life a strong and active subsistence lifestyle
- ▲ More small businesses coming up and developing

Negative

- ▼ Declining beluga whale population – potentially the herd is dying off with global warming – further study is needed
- ▼ Flooding of the river is more frequent and at higher levels – affecting our land base and community infrastructure
- ▼ Steady erosion with a growing impact to local homes and property

- ▼ Increasing price of fuel
- ▼ High cost of living
- ▼ Aging leadership – need to prepare young people
- ▼ More students are behind in academic performance – shown in education reports that Buckland students are behind and not up to testing standards for the past four years
- ▼ Losing our Native language and difficult to restart

Buckland Strengths

Cultural strengths

- ✓ Eskimo games and Olympics
- ✓ Subsistence activities
- ✓ Teach Inupiaq to young children
- ✓ Strength of our Elders in passing on our traditional way of life
- ✓ Sharing – both knowledge and Native foods
- ✓ Buckland re-teaching Eskimo dancing
- ✓ Working together as Native people

Community Strengths

- ✓ Everyone helps each other
- ✓ Local church
- ✓ Dry community (local option laws)
- ✓ Good local search and rescue
- ✓ Good hospitality – friendly
- ✓ Unity within the community
- ✓ Local leadership works together
- ✓ Communication and organizations work together (IRA and City)
- ✓ Number of people that participate and volunteers time for the community
- ✓ People work together during times of need and crisis – e.g. deaths, medi-vacs, search and rescue, etc.

Figure 12: Anthony Cravalho, Maniilaq Planner/Grant Writer, working with participants during the planning sessions.

- ✓ Pro community development support for improving income and lifestyle in Buckland
- ✓ Good progress in accomplishing past community priorities and plans
- ✓ Healthy children

Environmental strengths

- ✓ Local gravel source with a local access road
- ✓ Beautiful country
- ✓ Clean air
- ✓ Caribou and other wildlife for subsistence with few sport hunters for competition
- ✓ Only village on the Buckland River

- ✓ Drinking water is good and now up to standards
- ✓ City has daily refuse/garbage pick-up for less trash in the community

Unique things about Buckland to build upon for local development

- ✓ Access to gravel for home builders and projects
- ✓ Available land for new homes
- ✓ Tribal roads for community access
- ✓ Subsistence lifestyle and resources – meat, seal oil, greens – easy access and availability
- ✓ Local Inupiaq people – our history and dialect
- ✓ Willingness of the City and IRA governments to work together and make good public policy (e.g. land lot distribution for residential home construction)

Community Assets

- ✶ Buckland Elders
- ✶ Local people with skills for construction, heavy equipment operation, water treatment, etc.
- ✶ Local people and good government for moving the community forward with commitment
- ✶ Good school facility and building
- ✶ New health clinic
- ✶ New bulk fuel storage tanks and farm
- ✶ New airport with lighting
- ✶ Updated electrical power generators
- ✶ Washeteria with improvements
- ✶ Post office
- ✶ Internet access available locally
- ✶ Distance education system
- ✶ Community meeting space, office space and buildings
- ✶ Local environment – Buckland River, land and wildlife

Figure 13: Buckland post office

Internal Weaknesses to the Community (considerations to address)

- ◆ Lack family planning
- ◆ Drugs and alcohol abuse
- ◆ Flooding and erosion
- ◆ Sewer system – e.g. raw sewage in town
- ◆ Inupiaq language barriers to use and continuation among generations
- ◆ Need more involvement of local people in community meetings and decision making
- ◆ Run down heavy equipment

- Complacency among residents – use to the way it is and resistance to change
- Limited education
- Lack of jobs
- Lack of resident participation in meetings – will complain but not take action
- Lack community meeting space and aging community buildings for social programs – e.g. alcohol/drug recovery-AA meetings, counseling, youth programs, etc.
- Lack local youth activities that are healthy and educational
- Poor road conditions and lack of maintenance
- Limited community infrastructure
- Relying on others to provide services – dependency thinking and not doing ourselves
- Lack local banking services

External Challenges and Threats to Local Development

- Loss of funding for programs – e.g. cuts from Maniilaq, state and federal agencies
- Inadequate representation on regional and statewide boards and organizations
- State limits subsistence activities and levels – hinders our families sustainability
- Insufficient law enforcement
- Global warming and climate change
- Depletion of wildlife – e.g. beluga

Areas of Concern with Future Community Development

- Lack of adequate education
- Need more funds for college and training scholarships
- Need better services and access to community buildings for Elders and disabled persons
- Overcrowding of housing with continued population growth
- Additional housing for sufficient and adequate accommodation
- Larger property lots for homes
- Additional public safety and health clinic staff and services with a growing population
- Erosion control of the river bank
- Additional capacity of community infrastructure – e.g. for the electrical and fuel storage systems
- Contamination of the river with spillage of sewage waste and/or landfill
- Additional capacity for water and sewer service
- Surrounding lands in federal ownership that limits community growth – National Park Service and BLM
- Larger school – already experiencing overcrowding
- Strong leadership
- Bridge for expansion across the river

- More services for youth activities and positive development – there is a large youth population in Buckland
- Alternative energy sources – water and wind power – need studies and feasibility results for local development
- Cost of fuel and oil needs to be affordable
- Seasonal flooding
- Resource management for healthy wildlife – marine, birds and animals
- Day care
- More local college graduates

Opportunities for Development in Buckland

- ☆ Tourism development and projects
- ☆ Establishing sewing circles to teach others skills
- ☆ Low rent apartments for additional housing
- ☆ Street, building and other public signs written in both English and Inupiaq
- ☆ Early childhood education – e.g. Head Start and Early Start programs
- ☆ Hydro electric power
- ☆ Restart the reindeer industry
- ☆ Development of tribal roads for community land access
- ☆ Bridge across the river for community land expansion
- ☆ Grant writer
- ☆ Oil and gas development for local energy sources – Flats area
- ☆ Crosswind airport runway
- ☆ Additional retail and grocery store for competition
- ☆ Banking services in Buckland
- ☆ Native crafts – buying and selling for economic development and bringing back traditional arts
- ☆ Day care
- ☆ Four- or six- unit apartment for housing and business development (rentals)
- ☆ Alternative fuel wholesaler for barge delivery – lower prices
- ☆ Disaster planning for preparedness
- ☆ Housing appraisals and surveys – local real estate services
- ☆ Community complex for joint offices, meeting space, post office, Boys and Girls Club, etc.

Deering

Close up of the village of Deering. The airport is about a mile in-land.

Deering Community Comprehensive Development Plan 2006-2016[7]

The *Ipnatchiaq,* or Deering, area has been inhabited since time immemorial by Inupiaq people and families for at least the past 10,000-15,000 years. The current village site is located on the historic Inupiaq subsistence village of *Ipnatchiaq* (meaning bluffs in English). This site was and continues to be extensively used as a significant sea and fishing subsistence area and the Inupiaq people also lived upriver in a wooded area.

Figure 14: *Ipnatchiaq*, or Deering, estimated timeframe 1896-1913. Photo courtesy of the University of Alaska Fairbanks Archives and Alaska State Library.

Deering is located on Kotzebue Sound at the mouth of the Inmachuk River, 57 miles southwest of Kotzebue. It is built on a flat sand and gravel spit 300 feet wide and a half-mile long.

The Inupiaq successfully lived in harmony with the arctic environment that is characterized as a transitional climate zone with long, cold winters and cool

[7] Except for where noted, this entire Deering section was reproduced from the Deering Community Comprehensive Plan 2006-2016, which was put together with the Deering Residents, Organizations and Community, Native Village of Deering, and the City of Deering, by the NWA Borough Planning Department; Led by Tom Okleasik, Principal, Northwest Planning & Grants Development; Nome, AK 99762

summers. The average low temperature during January is -18 degrees Fahrenheit. The average high during July is 63 degrees Fahrenheit. Temperatures can be as extreme from a low of -60 to a high of 85 degrees Fahrenheit based upon past measurements. Snowfall averages 36 inches, and total precipitation averages 9 inches per year. The Kotzebue Sound (next to Deering) is ice-free only from June through mid-November.

The Inupiaq people take great pride in the sustained ability to harvest the resources of the land and sea in a traditional and respectful manner. The indigenous people of *Ipnatchiaq* developed relationships, strategies and tools for fishing, hunting and gathering that made them one of the conserving societies ever known. Inupiaq culture, arts and humanities were expressed through songs, dances, legends, ceremonies, skin boat building, and language. The Inupiaq successfully cultivated a community with a way of life and cultural economy based on moose, caribou, beluga whale, seals, salmon, tom cod, herring, ptarmigan, rabbit and waterfowl, and all that the land and water have and continue to provide.

The coastal and inland Inupiaq of Northwest Alaska had established tribal governance and trade systems hundreds of years prior to "European discovery of Alaska" by Russian explorers in 1732. By 1778, the English explorer Captain Cook had sailed the coast and charted some of the coastal areas in Northwest Alaska. In the 1800s, exploration by outsiders began in earnest.

In 1818, the Kotzebue Sound was "discovered by Europeans" by a German Admiral, Otto Von Kotzebue, while sailing for the Russian Navy. In 1867, Alaska was purchased by the US from Russia. 1884, the Organic Act was adopted by the US Congress that formed a rudimentary form of government in Alaska. In 1885, Dr. Sheldon Jackson of the Presbyterian Church became the first federal superintendent of public instruction for Alaska, with the task of organizing a free school system for Native American, Eskimo, and white children with the purpose of teaching western lifestyles and mainstream American skills. In 1892, Dr. Jackson with government aid brought the first reindeer into Alaska from Siberia.

Ipnatchiaq had imported Lapp reindeer introduced as herds for the community. Past herders from the community included Fred Goodhope, Elmer Davis, Charlie Clark, Mickey Thomas, George Moto, Harry Karmun and Edward Karmun. Up to seven *Ipnatchiaq* families were herding reindeer at one time in the past. The 1940 Reindeer Herders Act transferred ownership of herders to Native people only, in order to respect the original intent of Congress.

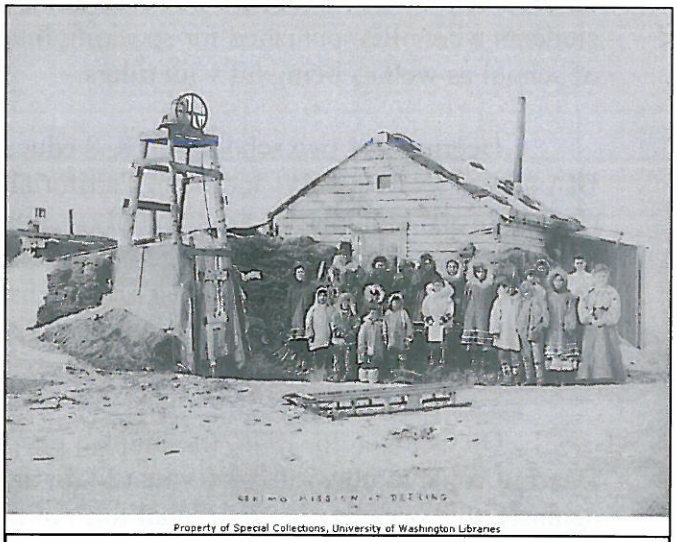

Figure 15: *Ipnatchiaq*, or Deering, 1905, mission and school children. University of Washington Libraries – Digital Collections

In 1897, the Alaskan gold rush began. In 1898, the Kobuk River gold rush began when Captain Cogan of the whaling ship *Alaska* greatly exaggerated a prospector's Kobuk gold discovery to encourage people to book passage on the ship's return to Alaska. These accounts, as well as a number of others that flooded the US news, turned out to be lies. Nonetheless, a fleet of ships left the west coast of the US

during the spring of 1898, bound for Kotzebue with almost 2,000 would-be prospectors on board.

Subsequent discovery of the gold fields in the Ipnatchiaq River drainage became the Fairhaven Mining District (by 1980, 277,000 troy ounces of gold were produced in the area). *Ipnatchiaq* as an established Inupiaq village became the principal port of entry for this district. In the early 1900's, families from *Ipnatchiaq,* or Deering, went by skin boat to *Oksik* with the missionary Delbert Replogle (the *Ipnatchiaqmuit* stayed at least a week in *Oksik* to discuss) to request relocating some families from both villages to a new site across from *Putu* – which became Noorvik. The *Ipnatchiaqmuit* (Deering people) were trying to escape the overrunning of their traditional village by thousands of gold prospectors and alcohol abuse introduced into the community. For example, miners took most of the wood in the community to operate dredge and thawing operations as well as their own heating; therefore causing a shortage to the Native people.

After 1914, all but five families returned to *Ipnatchiaq* from Noorvik – it is estimated that at least half of all people moved back. Many returned to work for mining operations and most importantly to continue traditional occupation and lifestyles that continue to thrive to this day. In 1901, the community established a supply station for Interior gold miners. The community was renamed during this period with an English name of "Deering" probably taken from the 90-ton schooner "Abbey Deering" which was in nearby waters around 1900, and later sank with a load of gold.

In 1906, the US Congress passed the Native Allotment Act which provided for conveyance of 160 acres of public land to Alaska Native adults; however, few tracts were issued because the Bureau of Land Management refused to recognize subsistence use of land as proof of "use and occupancy." However, it should be noted that many archeological digs have proven Inupiaq occupancy at Deering for centuries.

Citizenship to Alaska Natives was granted with the passage of the 1924 Citizenship Act. As early as the 1900's but particularly during the 1940's, tribal members in Deering experienced language shift to English from Inupiaq with schools and western institutions utilizing duress with families and children to use English as their first language. For example according to local Elders, the BIA school in Deering did not even allow students to speak Inupiaq on the playground; rather students were often punished for speaking Inupiaq that included sitting in a corner for a whole day of school as well as being hit with rulers.

Deering had two schools for K-8 education: BIA school (Native only) and State Territorial School (for white and half Native children only) – this lasted until the BIA recognized half white-Native children for enrollment at their schools in Alaska. Boarding schools were available in White Mountain, Sitka and Wrangell for grades 9-12.

Figure 16: old BIA school building in Deering.

On October 26, 1945, the Inupiaq people in Deering voted to duly ratify by vote (27 for and 0 against), to reorganize its traditional form of tribal government to an Indian Reorganization Act (IRA) Council (Corporate Charter of the Native Village of Deering, Alaska). On January 3, 1959, Alaska was proclaimed a state of the union by President Dwight D. Eisenhower.

In 1971, the tribal members of Deering settled land and resource rights, through the Alaska Native Claims Settlement Act, and formed a state chartered corporation: the regional Alaska Native Corporation – NANA. Also, during the 1970's, federal and state government poverty and community assistance programs provided new income and benefits to some Deering families, particularly with the passage of PL 93-638 in 1974. A local school (K-12) was also built in Deering during the late 1970's and no longer required students to leave their home community for public education.

The City was incorporated in 1970 (first city building next to the Deering Native Store), and is located on Kotzebue Sound at the mouth of the Ipnatchiaq River, 57 miles southwest of Kotzebue. The community is built on a flat, sand and gravel spit 300 feet wide and a half-mile long. It lies at approximately 66.074970° North Latitude and -162.71274° West Longitude. (Sec. 20, T008N, R019W, Kateel River Meridian).

Today, Deering is rooted in Inupiaq values and relies on the historical and cultural relationship to the land and sea for subsistence. In addition to the archaeological, sea life and wildlife resources of the community, there are many other natural resources including metallic and nonmetallic mineral deposits. As western institutions have began and matured in Deering, there have developed shared governmental and community development duties among the tribal government, City of Deering, NANA Corporation, Northwest Arctic Borough and School District, and groups such as the Maniilaq Association and churches. The population of the village is majority Inupiaq.

Deering Community Vision

To conserve and improve our traditional way of life
which allows us to continue our ancestral heritage
while successfully adapting to change, and
encourage our children to live our values and ways
with respect for years to come

Deering Development Goals, Objectives and Priorities

Goal 1: To improve our community's education, welfare and capacity for self-sustainability and safety of present and future members of Deering
Goal 2: To strengthen, preserve and utilize our health system and Inupiaq culture, traditions and values for promoting the well-being of the community and people (body, mind and spirit)
Goal 3: To improve, construct and maintain a healthy business and community environment with infrastructure for development and sustainability of employment and economy with equal opportunity

Goal 4: To develop, protect and conserve our land and environmental resources for responsible community expansion and transportation development that preserves our history and subsistence

Top 10 Overall Community Development Projects for 2006-11

1. Land use planning including zoning areas for industrial uses and housing expansion options
2. Alternative and renewable energy development (wind, solar, hydro, tidal) – lower electric costs and add capacity for future community growth
3. Improve our community capacity in order to have functioning organizations and programs
4. Village law enforcement to reduce crime and enforce laws including curfew – VPSO and VPO
5. Multi-purpose office building with the City and Tribe – additional office space to support more jobs in the community, centralize the utilities and local government offices
6. Dump site repairs – improvements to limit contamination of the environment, reduce tundra and sea ice garbage, and ensure it can contain trash
7. Erosion control with a plan and funding
8. Culture camp with youth and Elders to teach traditional knowledge including video production for preservation of knowledge
9. Cultural center with an arts and crafts workshop and sales center, display area for archeological objects, and tourism/visitors center including programs to teach adults and youth Native heritage and skills
10. Barge landing development

Top 10 Capital Project Priorities 2006-11

1. Erosion control with a plan and funding
2. Alternative and renewable energy development (wind, solar, hydro, tidal, coal) – lower electric costs and add capacity for future community growth
3. Dump site repairs – improvements to limit contamination of the environment, reduce tundra and sea ice garbage, and ensure it can contain trash
4. Road and bridge development via Smith Creek for a flood escape route, land expansion, and an alternate route to the airport
5. Multi-purpose office building with the City and Tribe – additional office space to support more jobs in the community, centralize the utilities and local government offices
6. Build new homes for more housing – e.g. new housing development at the old airport that complies with FAA regulations so not to interfere with the new airport
7. Cultural center with an arts and crafts workshop and sales center, display area for archeological objects, and tourism/visitors center including programs to teach adults and youth Native heritage and skills (e.g. sled building, skin sewing, carving, beading, etc)
8. Community engine and auto shop for repairing boat motors, snow machines, ATVs, and autos
9. Barge landing development
10. Airport terminal building for passenger waiting and secure freight storage

TOP THREE Village Priorities 2010-11 – Capital Improvements[8]

*Priority 1 = most important	Deering Capital Projects	Notes. Why a priority.	Local/Other Contact	Resolution No.?	Cost
1	a) Dozer b) Loader	a&b) Dozer and loader are needed for use on priority projects such as hauling gravel for local projects, snow removal, road maintenance, water & sewer projects and landfill maintenance for the health and safety of local residents.	Ron Moto, City Mayor 363-2136 Mike Jones, Admin.	Resolution to follow	**$500,000.00** **a)250,000.00-Dozer b)250,000.00-Loader**
2	Wind Generator (alternative/renewable energy)	Lower electric costs; add capacity for future community growth. Grant sought for wind generation system for community.			$100,000
3	Dump site repairs	To eliminate "fugitive" trash contaminating tundra and sea ice with garbage. Got burn box grant.	City/IRA (IGAP)	07-07	$125,000.00

Top 10 Community Projects/Activities Priorities 2006-11

1. Village law enforcement to reduce crime and enforce laws including curfew – VPSO and VPO
2. Job qualification training – e.g. driver's licenses, CDLs, 6-pack license, etc.
3. Improve our community capacity in order to have functioning organizations and programs
4. Training with local people for micro-enterprises and small businesses
5. Eco-tourism plan and development – such as 17-38 mile road to Ipnatchiaq Springs for tours
6. Culture camp with youth and Elders to teach traditional knowledge including video production for preservation of knowledge
7. School train and educate youth for local employment opportunities and realistic skills to successfully live in Deering – e.g. construction trades, small engine repair, City/Tribe jobs, teacher positions, Native arts and crafts, etc.
8. Natural disaster planning and training that incorporates disruption in air/freight service
9. Cemetery grave mapping and marking
10. Land use planning including zoning areas for industrial uses (heavy equipment storage, commercial development, etc) and housing expansion options (gravel fill along the river bank, old airport redevelopment, bridge to other lots, etc)

Water, Sewer & Sanitation System

The status of community water, sewer, and sanitation systems in our smaller communities is important to the health and wellness of our communities. This Deering status snapshots is provided by the state Rural Utilities Business Advisor (RUBA)[9], Margaret Hansen, Report – January 2011

The City of Deering operates the piped sewer and water haul system, as well as the central washeteria. The

[8] Compiled with the residents and submitted to the state for the residents of Deering by the Public Services Department of the Northwest Arctic Borough, in July 2010.

[9] http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm

City Council is the policy making body for the utility. Water is derived from the Inmachuk River; it is treated and pumped to a 400,000-gallon insulated storage tank. Residents pay to have water delivered to their homes. The sewage system is a vacuum system that is piped to a lagoon. A new washeteria, water treatmer plant, and sewage collection lines are completed. An additional water storage tank was completed in 2006 and upgraded lines from the tanks to the water treatment plant have been completed. The City has a DEC permit for the sewage lagoon, but DEC wants them to update it to reflect design changes made during construction. RUBA is working with the engineer and DEC to allow time for an in depth study to determine whether the system can be fixed, or needs to be replaced.

Water Distribution, Source & Treatment Systems:

Water System Operator:	**City**
Washeteria Operator:	City
Piped Water System:	Yes
Central Watering Point (Haul):	Yes
Multiple Watering Points:	No
Water Truck (Delivery):	Yes
Individual Wells:	No
Community Well Source:	No
Surface Water Source:	Yes
DEC Water Permit Number:	340222
Water Is Filtered:	Yes
Water Is Chlorinated:	No

Sewage Collection Systems:

Sewer System Operator:	**Ipnatchiaq Electric Co. (City-owned)**
Piped Sewer System:	Yes
Honeybucket Haul:	No
Honeybucket Pits:	No
Individual Septic Tanks:	No
Community Septic Tank:	No
Sewage Pumper:	No
Sewage Lagoon:	No
Sewage Lift Station:	No
Outhouses:	Yes

Refuse/Landfill System:

Refuse Collector:	**Individuals**
Landfill Operator:	IRA Council
DEC Landfill Permit:	Yes
Type of Landfill:	Class 3, 0132-BA006, Current

Electric Utility:

Electric Utility Name:	**Ipnatchiaq Electric Company**
Utility Operator:	City & Private Board
Power Source:	Diesel
FY 2009 Rate:	77.4 (Only data for PCE Communities is available on this system)
Power Cost Equalization (PCE) Subsidy:	Yes
FY 2009 Total kWh Generated:	711,319 kWh
FY 2009 Power Cost Equalization (PCE) Rate:	45.77 cents/kWh (For consumption up to 500 kWh monthly)
FY 2009 Average Effective Residential Rate:	31.60 cents/kWh
	Link to the most current PCE Report: www.akenergyauthority.org

Bulk Fuel:

	Tank Owners
(Number of tanks / Total capacity):	Village Council (88,600 gals.); City (84,500); Northwest Arctic Schools (36,800)

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Kiana

Kiana Airport and landfill

Close up of Kiana

Kiana Community Comprehensive Development Plan 2006-2016[10]

Kiana means "a place where three rivers meet." It was established long ago as the central village of the Kobuk River Kowagmiut Inupiat Eskimos. In 1909, it became a supply center for the Squirrel River placer mines. A post office was established in 1915. The City government was incorporated in 1964. Prior to the formation of the Northwest Arctic Borough in 1976, the BIA high school in Kiana taught students from Noatak, Shungnak and Ambler, who boarded with Kiana residents.

The Kiana Traditional Council is the federally recognized tribe of Kiana. 92.8% of the population are Alaska Native or part Native. . The sale or importation of alcohol is banned in the village.

Kiana is located on the north bank of the Kobuk River, 57 air miles east of Kotzebue. Kiana is located in the Kotzebue Recording District. The area encompasses 0.2 sq. miles of land and 0.0 sq. miles of water. Temperatures average -10 to 15 during winter; 40 to 60 during summer. Temperature extremes have been recorded from -54 to 87. Snowfall averages 60 inches, with 16 inches of total precipitation per year. The Kobuk River is navigable from the end of May to early October.

The 2009 DCCED Certified Population of Kiana is 374. The population over the past 10 years appears to be in slight declining. 64% of the resident population 16+ years old worked in 2009. Local Government was the main industry, employing 56% of the area's workers. More workers were employed as laborers, freight, stock, or movers, than in any other occupation. During the 2000 U.S. Census, there were 133 total housing units, and 36 were vacant. 3 of these vacant housing units are used only seasonally. The average family household size was 4.45. The median

[10] Except for where noted, this entire Kiana section is reproduced from the Kiana Community Comprehensive Plan 2006-2016, which was put together with the residents of Kiana for the Native Village of Kiana, Kiana Residents, Organizations and Community, by: NWA Borough Planning Department; and Maniilaq Association; Kotzebue, AK 99752.

household income was $39,688; per capita income was $11,534; and 11.2% of residents were living below the poverty level.

The economy depends on traditional subsistence activities, augmented by a cash economy. Chum salmon, freshwater fish, moose, caribou, waterfowl and berries are harvested. As of June, 2003, there are 49 fulltime jobs including 24 with the school district, 10 with Maniilaq, six with the City, five with the IRA, three at the local stores, three airline agents and one postal worker. The Red Dog Mine also employs 12 fulltime commuters at Teck Cominco, four for NANA Managment and one for NANA-Lynden. Kiana is one of the more modern villages in the Borough, and has three general stores. Two residents hold commercial fishing permits; seasonal employment also includes work on river barges, BLM fire-fighting and jade mining. There is local interest in constructing a whitefish and turbot value-added processing plant. The City is also interested in developing eco-tourism, primarily guided river trips to the Great Kobuk Sand Dunes.

The major means of transportation are plane, small boat and snowmachine. The State-owned Bob Baker Memorial Airport has a 3,400' lighted gravel runway. Daily scheduled flights and charter flights are provided. Crowley Marine Services barges fuel and supplies each summer, and local store owners have large boats to bring supplies upriver. Boats, ATVs and snowmachines are used extensively for local travel, and there are many trucks. A road extends along the river to Kobuk Camp, and a network of old trading trails exists.

Kiana Community Vision

All Katyaagmiut are proud and productive members of the village, the region, the state and the nation and are good stewards of our unique ecosystem.

Kiana Development Goals, Objectives and Priorities

Goal 1: To promote and develop economic well-being.
Goal 2: To enhance governance through capacity building.
Goal 3: To build and strengthen the capacity of our community and to meet community needs.
Goal 4: To create a healthy community.
Goal 5: To develop and improve the educational system and infrastructure and educate and train interested community members on the potential visitor economy.

Top 10 Overall Community Development Projects for 2006-11

1. Access to Gravel Source
2. Multi-purpose building for IRA-City-Post Office building for better facilities, allow program growth, and additional village based jobs
3. Native Store
4. Upgrade/Expand Water and Sewer
5. Bigger office complex for better facilities, allow program growth, and additional village based jobs

6. Work on building new homes for our tribal members, and home weatherization, renovations and/or additions
7. Grant Writer
8. New segregated landfill to limit contamination of the environment and ensure it can contain trash
9. Develop valley subdivision
10. Community Park for outside recreation activities

Top 10 Capital Project Priorities 2006-11

1. Multi-purpose building for IRA-City-Post Office building for better facilities, allow program growth, and additional village based jobs
2. Access road to gravel source
3. Native Store
4. Permanent home for Boys & Girls Club
5. Bigger Office Complex for better facilities, allow program growth, and additional village based jobs
6. Heavy Equipment
7. Work on building new homes for our tribal members, and home weatherization, renovations and/or additions
8. Develop Valley View
9. Upgrade / Expand Water and Sewer
10. New Segregated landfill

TOP THREE Village Priorities 2010-11 – Capital Improvements[11]

*Priority 1 = most important	Kiana Capital Proj	Notes. Why a priority.	Local/Other Contact	Resolution? No.?	Cost
1	Dump Trucks X 2	Need dump trucks to improve the health, safety and quality of life in the community. Kiana has ten project priorities and the top three are transportation projects, including building a road to a gravel source, developing Valley View Subdivision and repairing the barge and boat landings.	Crystal Johnson, E.D. City 475-2136. Brad Reich, Mayor	Resolution to follow.	$350,000.00
2	Dozer	City of Kiana is need of reliable equipment to complete water and sewer, airport, road and barge/boat landing projects.	Same as above.	Same as above.	$250,000.00
3	Grader	This equipment is needed to maintain streets and roads to reduce health and safety risks.	Same as above	Same as above	$250,000.00

Top 10 Community Projects/Activities Priorities 2006-11

1. Order Siren
2. ATV for Code Red
3. Need VPSO
4. Regulate Sports Hunting in area

[11] Compiled with the residents and submitted to state legislators in July 2010 for the residents of Kiana by the Northwest Arctic Borough's Public Services Department, Bob Schaeffer, Director.

5. More Training
6. New Bingo Hall
7. More Search and Rescue funding to provide services and equipment
8. More Local Jobs for community members
9. Community Park for outside recreation activities
10. Native Language

Water, Sewer & Sanitation System

The status of community water, sewer, and sanitation systems in our smaller communities is important to the health and wellness of our communities. This Kiana status snapshots is provided by the state Rural Utilities Business Advisor (RUBA)[12], Margaret Hansen, Report – January 2011

The City of Kiana operates the piped water and sewer system and maintains a central watering point where residents come to haul water to their residences. The City also maintains honeybucket pits and a sewage lagoon. The City Council is the policy making body for the utility. A 200,000-gallon steel tank is intermittently filled from two wells near the Kobuk River. Water is chlorinated prior to distribution through buried water mains. Piped water and sewer are provided to 75 homes, the clinic, school, and community hall. Kiana maintains a 6-inch buried gravity sewer system, which drains to a lift station and is pumped through a buried force main to the sewage treatment lagoon northeast of the village. A few households haul water and use honeybuckets or septic tanks. The landfill is located west of the sewage disposal lagoon. A water and sewer master plan is being completed for needed infrastructure improvements. They are currently having problems with the new lift station installed. ANTHC worked on the new lift station but still needs to make sure when a power outage occurs that the pump in this new lift station will automatically turn back on. The city reports that they have received a new pump and the lift station issues are fixed. They will have continue this summer with water and sewer projects. They will be replacing a majority of water lines for the east loop. This last quarter a water main froze leaving 5 homes without water/sewer for a couple of weeks. Only two are still without water/sewer which will be fixed this summer. Kiana is an ARUC community.

Refuse/Landfill and Electric

Refuse/Landfill System:

Refuse Collector:	**Not available; Individuals**
Landfill Operator:	UIC Construction Inc.
DEC Landfill Permit:	Yes
Type of Landfill:	Class 3, 9940-BA003-16

[12] http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm

Electric Utility:

Electric Utility Name:	**AVEC**
Utility Operator:	REA Co-op; Village Council
Power Source:	Diesel
KiloWatt Capacity:	1,163
Rate/KiloWatt Hour:	30.6 cents/KWH
Power Cost Equalization (PCE) Subsidy:	Yes

Bulk Fuel

Tank Owners (Number of tanks / Total capacity): AVEC (120,300 gals.); Kiana Trading Post (51,400); Northwest Arctic Schools (107,700); City (94,300); City Firehouse (2,200); AK DOT (2,900); Blankenship Trading Post (7,100)

Communications

Communications:

In-State Phone:	OTZ Telephone Co-op, Inc.
Long-Distance Phone:	AT&T Alascom; GCI; OTZ Telephone
Internet Service Provider:	GCI (www.gci.net)
TV Stations:	ARCS
Radio Stations:	KOTZ-AM
Cable Provider:	City of Kiana
Teleconferencing:	Alaska Teleconferencing Network; Kotzebue Legislative Information Office

School and Education Systems

According to the Report Card to the Public by the Alaska Department of Education and Early Development for the 2005-2006 school year, the following tables give enrollment, attendance, drop out, graduation rates and academic performance statistics for Kiana School.

School Area	2006
Enrollment (Gr. PE-12)	127
Attendance	92.2%
Dropout Rate (Gr. 7-12)	5.4%
Graduation Rate	*69.2%*

Percent of Kiana Students Proficient by Grade

2006 State Assessment Results	Grade 3	Grade 6	Grade 8	Grade 10
Reading	50.0%	14.3%	30.0%	50.0%
Writing	40%	0%	30.0%	50.0%
Math	33.3%	0%	10%	33.3%

Parents and community need to support and be more involved in teaching children their responsibilities and that they are responsible for their own actions to succeed in school and the workplace.

Environmental Scan

Trends in Kiana and Community Development

Positive

- Population growth particularly with younger ages
- Increase in the number of construction and project jobs
- Improvements to our community water and sewer progressing
- Increase in the number of local housing units
- Continue to life a strong and active subsistence lifestyle
- More small businesses coming up and developing

Negative

- Loss of cultural knowledge
- Increasing cost of fuel/ freight
- Loss of Inupiaq Language
- Overall increase of Living
- Increasing Alcohol and Drug Importation
- Dusty roads
- Quality of Gravel Source
- Want to start the ECE Program
- Less funding for the 3-4 years old head start program

Kiana Strengths

Cultural strengths

- Coming together in time of need
- Sharing
- City Council / KTC Council / Elders Council
- Recycling Coordinator
- Volunteer Search and Rescue
- Volunteer Fire Department
- Boy's and Girls's Club (Youth Group)
- Softball League (Adult / Youth)
- Elder's Stories

Community Strengths

- School
- City/ Tribal
- Friends Church/ Baptist Church
- Clinic
- Water/ Sewer
- Stores (3)
- Solid Waste (Burn Box)
- Dock
- Airport
- Power Plant
- Gravel Pit
- Roads
- Playground
- Fire Hall and Fire Truck
- Voc. Ed. Building

Environmental strengths

- Recycling Coordinator
- Water Technician
- Rich in resources
- Natural Resources
- Yearly spring cleanup
- EPA / IGAP Program
- Kiana built on high ground

Unique things about Kiana to build upon for local development

- Local Talent (Sewing / Beading)
- Sled Maker
- Natural Resources
- Partnership with TKC for technology improvements
- Local sew mill

Community Assets

- New Clinic completed
- New Runway
- New Dumpsite
- Water Source
- New Roads
- City/KTC (Administrators, Members)
- Elders
- Churches
- School
- Store

Internal Weaknesses to the Community (considerations to address)

- Alcohol and Drug's
- VPO (Village Police Officer)
- Under age Driving
- Suicides
- Loss of Culture
- No community Building
- Parental involvement in education
- Lack of internal involvement

External Challenges and Threats to Local Development

- Alcohol and Drugs
- Lack of outside funding
- Outside Hunters
- Lack of communications with agencies
- Too many outside workers on local contract work
- Sub-contracts (As local hire)

Areas of Concern with Future Community Development

- High fuel cost
- High Electrical Cost
- Leadership accountability
- Project Sustainability and accountability (Reports)

Opportunities for Development in Kiana

- For story telling
- Ent. Web Site
- Developing Arts and Crafts
- Building
- Maximizing school community relationship
- Maximize intership with business and organizations

Kivalina

Kivalina and Airport on just part of their long Island. Close up of Kivalina

Kivalina has long been a stopping-off place for seasonal travelers between arctic coastal areas and Kotzebue Sound communities. It is the only village in the region where people hunt the bowhead whale. At one time, the village was located at the north end of the Kivalina Lagoon. It was reported as "Kivualinagmut" in 1847 by Lt. Zagoskin of the Russian Navy. Lt. G.M. Stoney of the U.S. Navy reported the village as "Kuveleek" in 1885. A post office was established in 1940. An airstrip was built in 1960. Kivalina incorporated as a City in 1969. During the 1970s, new houses, a new school and an electric system were constructed in the village. Prior to 1976, high school students from Noatak would attend school in Kivalina, and board with local families.

The largest storms of the year occur in late Fall. Too many times over the past decade the ice has not frozen hard enough before the storms begin and Kivalina has experienced unprecedented erosion of their townsite. The community has been in discussions about moving to a new site. In 2010, with state and federal funds, a stone revetment has been installed in an area that has experienced the worst erosion.

The Native Village of Kivalina is the federally recognized tribe of Kivalina. 96.6% of the population are Alaska Native or part Native.

Kivalina lies 80 air miles northwest of Kotzebue. Kivalina is located in the Kotzebue Recording District. The area encompasses 1.9 sq. miles of land and 2.0 sq. miles of water.and is at the east tip of an 8-mile barrier island located between the Chukchi Sea and Kivalina Lagoon. The Wulik River drains into the south end of the Kivalina Lagoon, and has provided the community with a fresh water source for many years. The Kivalina River drains into the west end of the lagoon. The climate in the Kivalina region is maritime with average annual temperatures ranging between –15° F and 57° F, and an average snowfall around 57 inches

The 2009 DCCED Certified Population of Kivalina is 460. The population over the past 10 years appears to be growing. 73% of the resident population 16+ years old worked in 2009. Local Government was the main industry, employing 55% of the area's workers. More workers were employed in construction as laborers, than in any other occupation. During the 2000 U.S. Census, there were 80 total housing units, and 2 were vacant. 0 of these vacant housing units are used only seasonally. The average family household size was 5.5. The median household income was $20,833; per capita income was $8,360; and 26.4% of residents were living below the poverty level.

Kivalina's economy depends on subsistence practices. Seal, walrus, whale, salmon, whitefish and caribou are utilized. The school, City, Maniilaq Association, village council, airlines and local stores provide year-round jobs. As of June 2003, there are 39 fulltime jobs in Kivalina including 20 with the school district, six airline agents, five with Maniilaq, three with the IRA, three with the store, two with the city and one with the Post Office. 10 residents commute to work for Teck Cominco at the Red Dog Mine. Six residents hold commercial fishing permits. Native carvings and jewelry are produced from ivory and caribou hooves. The major means of transportation into the community are plane and barge. The community needs a road to the proposed new City site, 7.5 miles away. A State-owned 3,000' gravel airstrip serves daily flights from Kotzebue. Crowley Marine Services barges goods from Kotzebue during July and August. Small boats, ATVs and snowmachines are used for local travel. Two main hunting trails follow the Kivalina and Wulik Rivers.

TOP THREE Village Priorities 2010-11 – Capital Improvements[13]

Priority 1 = most important	Kivalina Capital Proj	Notes. Why a priority.	Local/Other Contact	Resolution No.?	Cost
1	Relocation	Erosion still occurring; village surrounded by water; no room for expansion of infrastructure and/or residential/business development; landfill is too small to accommodate the waste the community generates; sewage pit is seeping into the lagoon and ocean creating an environmental hazard; fugitive trash is being scattered from the wind because there is no longer a barrier surrounding the landfill area creating an environmental hazard in the water, air and land.	Janet Mitchell, City, 645-2137, Colleen Swan, IRA 645-2153	Resolution #10-01	No current determination on cost of relocation.
2	Evacuation Road	While the rock revetment provides the city with an additional 10-15 years from erosion to the island, there is still a need for an evacuation road for escape leading to high ground because of the imminent threat of flooding. Additionally, a rod would also serve other purposes in many aspects including; an access road to gravel from Kisimagiuqtuq Hill for development; an access road to mainland in the event of relocating the landfill; easier access to the Kivalina River for fresh	Janet Mitchell City, 645-2137 Colleen Swan, IRA, 645-2153	Resolution #10-01	Have not heard a cost estimate on evacuation road.

[13] Compiled with the residents and submitted to state legislators in July 2010 for the residents of Kivalina by the Northwest Arctic Borough's Public Services Department, Bob Schaeffer, Director.

		water source; ease the difficulty of access for those who don't have boats for trout fishing and hunting for caribou both in Kivalina and Wulik Rivers and would minimize the use of the Port Road for hunting caribou by 4 wheeled ATV's.			
3	Erosion control, flood prevention	Erosion control is essential until such time the village is relocated. The lagoon still needs funding for studies, planning and construction of revetment. The south side of the island continues to erode every spring and fall. Several housing units are in imminent threat from the erosion activity on the lagoon side and the option to relocate the houding units is not an option as there is no room on the island for that purpose.	Same as above.	Same as above.	No cost determination.

Facilities, Utilities and Services[14]

General Description of Kivalina Facilities

Wells have proven unsuccessful in Kivalina. Water is drawn from the Wulik River via a 3-mile surface transmission line and is stored in a 700,000-gallon raw water tank. It is then treated and stored in a 500,000-gallon steel tank. Residents haul water from this tank; which can be difficult during winter, given that there are snowdrifts 20 to 30 feet high in the community. The water lasts the community only for a six-month period, and the washeteria is closed to the public when the last tank is down to 12 feet, and only the school uses the water, so it can last for the students through May. Water is limited to 30 gallons a day for the public during this period. One-third of the residents have tanks, which provide running water for the kitchen, but homes are not fully plumbed. The school and clinic have individual water and sewer systems. Residents haul their own honeybuckets to bunkers. A new landfill and honeybucket disposal site was completed. A master plan is being completed, which examines sanitation alternatives at the new community site. The business plan is completed. The vacated lot has been purchased so needs to confirm title to Northwest Arctic Borough(NAB), NAB transfer title to City, barge supplies to staging area for early start on construction in 2009 now for the wastewater treatment plant. Started work on wastewater treatment plant this summer but ran across some human remains and artifacts so had to bring out an archeologist which slowed project down but so only got the foundation and bin walls framed. This phase of the project is set to start this summer through 2011. They are now working on repairing the washeteria to fix the freezing drain pipe every winter.

Water Distribution, Source & Treatment Systems:

Water System Operator:	**City; Individuals**
Washeteria Operator:	City
Piped Water System:	No
Central Watering Point (Haul):	Yes
Multiple Watering Points:	No
Water Truck (Delivery):	No
Individual Wells:	No
Community Well Source:	No
Surface Water Source:	Yes
DEC Water Permit Number:	340117
Water Is Filtered:	Yes
Water Is Chlorinated:	No

[14] http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm

Sewage Collection Systems:

Sewer System Operator:	**City; Individuals**
Piped Sewer System:	No
Honeybucket Haul:	No
Honeybucket Pits:	Yes
Individual Septic Tanks:	No
Community Septic Tank:	No
Sewage Pumper:	No
Sewage Lagoon:	Yes
Sewage Lift Station:	No
Outhouses:	Yes

Refuse/Landfill System:

Refuse Collector:	**Not available; Individuals**
Landfill Operator:	City
DEC Landfill Permit:	No
Type of Landfill:	Class 3

Electric Utility:

Electric Utility Name:	**AVEC**
Utility Operator:	REA Co-op; City
Power Source:	Diesel
FY 2009 Rate:	72.5 (Only data for PCE Communities is available on this system)
Power Cost Equalization (PCE) Subsidy:	Yes
FY 2009 Total kWh Generated:	1,253,855 kWh
FY 2009 Power Cost Equalization (PCE) Rate:	56.67 cents/kWh (For consumption up to 500 kWh monthly)
FY 2009 Average Effective Residential Rate:	15.81 cents/kWh
	Link to the most current PCE Report: www.akenergyauthority.org

Bulk Fuel:

Tank Owners

(Number of tanks / Total capacity): AVEC (98,800 gals.); Native Store (135,800); Northwest Arctic Schools (49,600); AK DOT (2,700); Army National Guard (10,000); City Washeteria (7,800)

Kobuk

Kobuk Community Comprehensive Development Plan[15]

2006-2011

Kobuk was founded in 1899 as a supply point for mining activities in the Cosmos Hills to the north, and was then called Shungnak. A trading post, school, and Friends Mission attracted residents to the settlement. Due to river erosion and flooding, the village was relocated in the 1920s to a new site 10 miles downstream, which was previously called "Kochuk," they renamed it Shungnak. The few who remained at the old village site renamed it Kobuk. Ice jams on the River cause high water each year. In May 1973, a flood covered the entire village. In October 1973, the City was incorporated.

The Native Village of Kobuk is the federally recognized tribe of Kobuk. 93.6% of the population are Alaska Native or part Native.

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[15] Except for where noted, this entire Kobuk section is reproduced from the Kobuk Community Comprehensive Development Plan 2006-2011, put together with the residents of Kobuk for the Native Village of Kobuk, Kobuk Residents, Organizations and Community, by the NWAB Planning Department, Kotzebue, AK; and Maniilaq Association, Kotzebue, AK 99752

Kobuk is located on the North bank of the Kobuk River, about 7 miles northeast of Shungnak and 128 air miles northeast of Kotzebue. It is the smallest village in the Northwest Arctic Borough. It lies at approximately 66.90857° North Latitude and -156.88102° West Longitude. (Sec. 03, T017N, R009E, Kateel River Meridian.) Kobuk is located in the Kotzebue Recording District. The area encompasses 16.1 sq. miles of land and 0.7 sq. miles of water. The 2009 DCCED Certified Population of Kobuk is 122. The population over the past 10 years appears to be stable. 61% of the resident population 16+ years old worked in 2009. Local Government was the main industry, employing 54% of the area's workers. More workers were employed as laborers, freight, stock, or movers, than in any other occupation. During the 2000 U.S. Census, there were 45 total housing units, and 19 were vacant. 11 of these vacant housing units are used only seasonally. The average family household size was 4.26. The median household income was $30,750, per capita income was $9,845, and 28.57% of residents were living below the poverty level.

The economy of Kobuk is based on subsistence. Whitefish, caribou and moose provide the majority of meat sources. Cash employment is limited to the school, City and Maniilaq clinic. One resident works for NANA Management Services at the Red Dog Mine. Seasonal construction and BLM fire fighting provide some income. Kobuk's major means of transportation are barge, plane, small boat and snowmachine. A State-owned 2,360' by 58' lighted gravel airstrip is served by scheduled air carriers. Float planes land on the Kobuk River. Crowley Marine Services barges fuel and supplies during the spring and fall, when high water stages occur. There is a barge off-loading area. Boats, ATVs and snowmachines are used for local travel. There are many trails along the river for year-round inter-village travel and subsistence activities, including a 7-mile road to Shungnak.

Kobuk is located in the transitional climate zone. Temperatures average -10 to 15 during winter; 40 to 65 during summer. Temperature extremes have been recorded from -68 to 90. Snowfall averages 56 inches, with 17 inches of total precipitation per year. The Kobuk River is navigable from the end of May through October.

Kobuk Community Vision

Kobuk, a community of 120 people working together in harmony, are focused on the wellness of the community, the caring of children, and the safety and health of its citizens. While living independently, we respect the Native traditions and knowledge of Elders.

Kobuk Development Goals, Objectives and Priorities

Goal 1: To develop and improve the educational system and infrastructure and educate and train interested community members on the potential visitor economy.

Goal 2: To create more housing, improve transportation systems, develop a land use management plan and protect subsistence and remote location.

Goal 3: To have improved sanitation and waste management, sustainable clean low cost energy and environmental responsible development.

Goal 4: To have a healthy and thriving community by strengthening Native Culture, Traditional Knowledge, and Corporate Leadership.

Goal 5: To improve community health, safety, and wellness

Top 10 Overall Community Development Projects for 2006-11

1. New High School with Gymnasium
2. New Store
3. Multi-purpose Building "including recreation center"
4. Back-up Generator
5. Erosion/Flood Control
6. Bulk Fuel Storage
7. Housing "New and Renovation"
8. Trans porter Issue Resolution
9. Solar/Wind Power
10. Public Safety Building

Top 10 Capital Project Priorities 2006-11

1. New High School with Gymnasium
2. New Store
3. Multi-purpose Building
4. Back up Generator
5. Erosion/ Flood Control
6. Bulk Fuel Storage
7. Housing "New and Renovations"
8. Public Safety Building
9. New Post Office
10. Airport Shelter Terminal

TOP THREE Kobuk Priorities 2010-11 – Capital Improvements[16]

Priority 1 = most important	Kobuk Capital Proj	Notes. Why a priority. (per city/tribe reslns noted and 1/07 fax)	Local/Other Contact	Resolution No.?	Cost
1	a)Dozer b)Loader c) End Dump Trucks	These pieces of equipment are needed to work on village priority projects that includes water & sewer projects, new school addition/renovation construction, landfill and road maintenance. Existing equipment are old and always in need of major repairs. Because of logistical challenge, freight costs are very high.	City 948-2217 Elmer Ward, Mayor	Resolution to follow.	$1,000,000.00 a)Dozer-350,000.00 b)Loader – 350,000.00 c)End Dumps - 300,000.00
2	Electrical line & pole maintenance and new streetlights for new subdivision.	Some electrical poles are leaning and in trouble of toppling and poses a danger to village residents along with the lines that go through them. New streetlights are necessary for the new subdivision as well as other parts of town for safety reasons. Not under AVEC.	City 948-2217 Elmer Ward, Mayor	Resolution to follow.	$150,000.00
3	Multi-purpose community building	For feasibility study and/or match for additional competitive grant. Need for youth activities and programs. Usually hang out at private home. Also for other community activities.	Agnes Bernhardt, IRA 948-2203 Elmer Ward, Mayor 948-2217	Resolution to follow.	$100,000

[16] Compiled with the residents and submitted to the state for the residents of Kobuk by the Public Services Department of the Northwest Arctic Borough, in July 2010.

Top 10 Community Projects/Activities Priorities 2006-11

1. Transporter Issue Resolved
2. Solar/Wind Power
3. Boys & Girls Club
4. Men's Night
5. Game Night
6. Women Night
7. Inupiaq Language
8. Develop Small Tourism
9. Arts & Craft Shop
10. ATM/ Banking

Kobuk Business Environment and Current Licenses

The records below reflect current business licenses on file with the Department of Community and Economic Development, Division of Occupational Licensing, Business Licensing Section. These licenses may not represent actual business activity. For more information on a specific business, use Commerce's "Business License Search" website.

Business Name	SIC Codes (Primary - Secondary)
CITY OF KOBUK	447190 5500
DENALI VIEW CHALETS	531110 532490
KOBUK VALLEY COMPANY	488190
KOBUK VALLEY ELECTRIC COMPANY	221310 221111
MEEHAN RENTAL	531390
SKIN AND BONES	114210 900
WILD FUR ENTERPRISES	114210

Local Services & Facilities

Local Services & Facilities:

Police:	State VPSO (948-3222); Troopers in Kotzebue (442-3222)
Fire/Rescue:	Volunteer Fire; City Public Safety Building
Court/Magistrate:	City Public Safety Building cell
Youth Center:	Funds have been requested
Community Hall:	Community Bldg.
Senior Services:	Not available
Gym or Pool:	School gym
Bingo:	Not available
Movie Theater:	Not available
Museum:	Not available
Library:	School Library

School and Education Systems

School District and Schools Contact information for Alaska School Districts and Schools is available at the Department of Education and Early Development's Website

Schools Located in Kobuk:

School Name	Grades Taught	Number of Students	Number of Teachers
Kobuk School	P thru 8	33	4

According to the Report Card to the Public by the Alaska Department of Education and Early Development for the 2005-2006 school year, the following tables give enrollment, attendance, drop out, graduation rates and academic performance statistics for Kobuk School.

School Area	2006
Enrollment (Gr. PE-8)	33
Attendance	92.8%
Dropout Rate (Gr. 7-12)	0.0%
Graduation Rate	*N/A*

Percent of Kobuk Students Proficient by Grade
Standards Based Assessments

2006 State Assessment Results	Grade 3	Grade 6	Grade 8	Grade 10
Reading	*	*	60.0%	N/A
Writing	*	*	60.0%	N/A
Math	*	*	66.7%	N/A

1. *For the SBA assessments, results are not published when less than five students are tested at a grade level or two or fewer students are reported in an individual cell. Asterisks are used for instances where only two cells have values and fewer than three students are reported in any of those cells.

2. N/A indicates that a school did not test students in that particular grade for that administration.

3. Percentages reported are based on the total number of students tested, not the number of students enrolled in the grade.

Environmental Scan
Trends in Kobuk and Community Development

Positive

- *Population growth particularly with younger ages*
- *Increase in the number of construction and project jobs*
- *Improvements to our community water and sewer progressing*
- *Increase in the number of local housing units*
- *Continue to life a strong and active subsistence lifestyle*
- *More small businesses coming up and developing*

Negative

- Alcohol and Drugs
- Rumors
- No recreation for children
- No gym for kids
- Community building
- Don't like that kids 13 and 14 have to leave to get an education
- Drop out rate
- No High School
- Increasing cost of fuel and gas
- Low employment
- High turnover in the jobs
- Need another store
- Erosion control
- Increasing airfares/ freight
- Need medical assistance per lodging and meals
- Increasing in economic development
- Dumpsite control

Kobuk Strengths

Cultural strengths

- Individual Fish camps
- Teaching of preserving fish and meat (caribou, moose, etc.)
- Elders boat (need motor)
- Subsistence way of life

Community Strengths

- A lot of sharing
- Working together
- Native way of life
- What we learn from Elders
- Happy kids
- Community Organizations
- Search & Rescue
- Strong church Organizations
- Good Leadership

Environmental strengths

- Good water quality
- Air Quality
- Recycling pop cans
- Mining activities
- Good gravel source

Unique things about Kobuk to build upon for local development

- Tourism
- Parks and Trails
- Shee-fishing
- Private Lands
- Mining Industry
- Rich in Natural Resources
- Native Arts and Craft
- Native Culture (cutting fish, meat, etc.)
- Preserving Traditional foods
- Artisan Water Spring

Community Assets

- New Clinic completed
- New Runway
- New Dumpsite
- Water Source
- New Roads
- City/KTC (Administrators, Members)
- Elders
- Churches
- School
- Store

Internal Weaknesses to the Community (considerations to address)

- Lack/Loss of Inupiaq Language
- Alcohol and Drug Abuse
- No Day Care
- No recreational facilities for youth
- Not enough housing
- No High School/Gym
- High drop-out rates
- Lack of training for jobs

External Challenges and Threats to Local Development

- Industrial mining challenges
- No Land-use plan
- Flooding
- Migration route (changing yearly)
- Fear of changing

- Environmental changing
- Mineral toxic waste
- Air Quality
- High cost of living

Areas of Concern with Future Community Development

- Landfill (Need Burnbox)
- Community Growth
- Strengthening the Hunters and Guide Regulations
- Wanton waste on game animals
- Riverbank Erosion
- Electrical energy/ No back-up generator

Opportunities for Development in Kobuk

- Elders teach Traditional Inupiaq skills and values
- Plan for multi-purpose building
- Park with playground and picnic tables
- Replace 'outside' teachers with local teachers

City of Kotzebue
Revised Draft
Comprehensive Plan

February 16, 2012

Please submit comments on this draft by February 28, 2012 to:

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Betty Nelson, Recreation Department Director
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Copies of plan available from:
City of Kotzebue Planning Administration, 258A Third Avenue, PO Box 46, Kotzebue, AK 99752 (907) 442-3401

Abbreviations

ACMP	Alaska Coastal Management Program
AD	Anno Domini
ANCSA	Alaska Native Claims Settlement Act
ARWA	Alaska Rural Water Association
ATV	All Terrain Vehicle
AWARE	
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
ca	Circa
DMV	Division of Motor Vehicles
EMS	Emergency Medical Service
F	Fahrenheit
FAA	Federal Aviation Administration
DOTPF	Alaska Department of Transportation and Public Facilities
HDPE	High-density polyethylene
IC	Interim Conveyances
KEA	Kotzebue Electric Association
KIC	Kikiktagruk Iñupiat Corporation
KMC	Kotzebue Municipal Code
KRM	Kateel River Meridian
NAHASDA	Native American Housing and Self-Sufficiency Development Act
NANA	NANA Regional Corporation
NWAB	Northwest Arctic Borough
NWABSD	Northwest Arctic Borough School District
PVC	Polyvinyl chloride
TRAAK	Trails and Recreational Access for Alaska Grant Program
UAF	University of Alaska Fairbanks

Table of Contents

PART I: ABOUT THE PLAN

SECTION 1: INTRODUCTION

Change is a natural part of life, be it an individual's life or the life of a city. It is a fact that things change, and how we adapt to or manage that change will, in a large part, determine how successful our life is. For a city, management of change is a vital component of what a city does and has a direct effect on the "quality of life" of its citizens.

In recognition of the importance of managing change, comprehensive plans are mandated for all organized municipalities by Title 29 of the Alaska State Statutes. The key elements of a comprehensive plan are summarized in AS 29.40.030:

> (a) The comprehensive plan is a compilation of policy statements, goals, standards, and maps for guiding the physical, social, and economic development, both private and public, of the first or second class borough, and may include, but is not limited to, the following:
>
> (1) statements of policies, goals, and standards;
> (2) a land use plan;
> (3) a community facilities plan;
> (4) a transportation plan; and
> (5) recommendations for implementation of the comprehensive plan.

A comprehensive plan provides a method to analyze past development, look at current issues and Community's views, and uses this information to establish policies guiding future development.

The City of Kotzebue has a long history of planning. From the City's incorporation in 1958 it has exercised certain planning powers and authorities and retained those planning, platting and land use authorities when the Northwest Arctic Borough was formed in 1986. Through a series of Borough ordinances, Borough code changes, and a Kotzebue City Council Ordinance, the City has been able to continue planning, platting and zoning activities. Kotzebue has exercised its planning authority through enactment of Ordinances which were codified as Municipal Code in 1975 and the Municipal Code had been regularly updated including the addition of Subdivision Ordinances in 2010. Thru the years a number of draft Comprehensive Plans have been completed starting in 1971 and the last Comprehensive Plan was adopted in 2000.

Changes have taken place in Kotzebue since 2000. These changes and the length of time since adoption of the last Comprehensive Plan make it prudent to look at the issues facing Kotzebue today and address these issues in an updated Comprehensive Plan. The Kotzebue Planning Commission took upon itself to update the Comprehensive Plan. The Planning Commission was joined by the Native Village of Kotzebue in the effort. It was decided that the 2000 Comprehensive Plan would be reviewed and that the 2000 Comprehensive Plan would serve as a basis for a new plan. This effort would be done in-house by the Planning Commission, the City's planning staff and the Native Village of Kotzebue.

This Comprehensive Plan is presented as an update of the 2000 Comprehensive Plan. The 2000 Comprehensive Plan was reviewed and those areas where it was required to address change an update was made to bring the plan into alignment with the present status and needs of Kotzebue. The most important area that was addressed in this update was the Goals presented in the 2000 Comprehensive Plan. These goals were reviewed and a status for each was determined. Some of the goals were met, some were partially met and some were not met. As a result of the assessment some of the 2000 Comprehensive Plan goals were carried over, some were dropped, and where needed and new goals were added.

This Comprehensive Plan is built upon the 2000 Comprehensive Plan but does not carry each section of the old plan over. The 2000 Comprehensive Plan stands as a separate document and serves as a reference for this Comprehensive Plan.

SECTION 2: CHANGE

It has been ten years since the last comprehensive plan and during that time Kotzebue has changed in many ways. Continuous improvements have occurred in infrastructure, problems have been solved but old needs still exist and new needs have arisen that require a reassessment of the goals of the city.

Since the last comprehensive plan much work has been done on the infrastructure of the city. These improvements include:

- Refurbishment of the old water storage tank,
- Construction of a new water storage tank,
- Replacement of several lift stations,
- Replacement of water main loops,
- Replacement of sewer mains,
- Replacement of the raw water line from Vortac Lake,
- Finishing of the Hillside road,
- Paving roads within the city,
- Completion of a new Landfill, and
- Expansion of the Sewer Lagoon.

Many other changes have taken place other than city infrastructure. Maniilaq completed a senior apartment complex, upgraded Emergency Medical Service (EMS) equipment, and started construction on an Elder Care Facility which is scheduled to be completed in 2011. Northwest Arctic Borough moved to new offices and the School District completed major additions to the High School/Middle School. The Alaska Department of Transportation and Public Facilities (DOTPF) has completed several projects including paving Fifth Avenue, Dust Control demonstrations, and the Shore Avenue Rehabilitation and Erosion Protection Project. Also, DOTPF has completed airport improvements to facilities and improved safety. The Native Village of Kotzebue completed the Hillside Road with assistance from the Bureau of Indian Affairs. Kotzebue Electric Association (KEA) expanded and improved its wind generation

capacity. These items all represent improvement for the city and they contribute to the betterment of life in the city.

There have also been changes that may be considered negative. The museum closed but a new Northwest Arctic Heritage Center opened. New businesses have opened but some others such as Hansen's Store have closed. The overall effect of the change has been to move the city forward. Some of the changes represent the meeting of the goals presented in the 2000 Comprehensive Plan.

SECTION 3: COMPREHENSIVE PLAN USE

A comprehensive plan can have many uses. The plans can be used to provide the city's citizens to have input in a means to learn about the long-range goals and policies of the city. They can be used as a base upon which city officials make decisions and a tool which city staff can use to insure the desirable development of the city. Another important use of a comprehensive plan is to show outside agencies, such as funding agencies, that proposed infrastructure or development projects are consistent with community desires through alignment with the goals and policies of the Comprehensive Plan.

SECTION 4: REVIEW OF THE 2000 COMPREHENSIVE PLAN

This Plan is a continuation of the planning history of the City of Kotzebue and as such is a continuation of previous comprehensive plans. As part of the development of this Plan a review of the goals of the 2000 Plan was conducted and the current status of those goals determined. A summary of determinations is present in Table 1.

Table 1: 2000 Goal Review Summary

2000 Land Use & Planning Goals	
Goal	**Status**
Goal #1 - Planning Ordinance - Adopt an Ordinance officially assuming Borough planning and zoning powers under Ordinance 89-21 AMI by November 20, 2000.	Complete
Goal #2 - Comprehensive Plan - Adopt this Comprehensive Plan by December 31, 2000.	Complete
Goal #3 - City Planner - Recruit for and hire a City Planner by March 31, 2001.	Complete
Goal #4 - Planning Commission - Re-establish the Planning Commission by June 30, 2001.	Complete
Goal #5 - Municipal Code - Revise/update the Municipal Code (especially zoning) under the Comprehensive Plan to be started by April 30, 2001 and completed by June 30, 2003.	Worked on but not completed. This remains a need for the City.

Objective #1 - Land Use Districts - Develop updated proactive land use designations, policies, and maps by October 1, 2001.	Complete but not adopted. Zoning map not done.
Objective #2 - Hillside Expansion - Develop land use requirements for hillside expansion by December 31, 2001.	Completed. Now covered under Section 18 of KMC. Adopted January 21, 2010.
Objective #3 - Hazard Waste disposal - Develop and implement a hazard waste disposal policy by March 31, 2002.	Complete but needs to be updated.
Objective #4 - Subdivisions - Develop and implement a new subdivision code by December 31, 2002.	Complete and adopted January 21, 2010.
Objective #5 - Recycling - Implementation of a recycling policy and system by December 31, 2002.	The Borough and Maniilaq have effort underway and the City does limited recycling through the Refuse Department. City received grant to study waste to energy system but this is not complete. This remains a need for the City.
Objective #6 - Other Zoning - Develop a Coastal Zone Management Plan for Kotzebue and consider minimum parking requirements for building and developments, vehicle registration, or other safety issues by June 30, 2003.	Kotzebue participated in the Alaska Coastal Management Program (ACMP) as part of Northwest Arctic Borough (NWAB) until the ACMP ended in July 2011. Parking is included in the KMC but other safety issues remain as a need.
Goal #6 - 14 (c)(3) Conveyance - Obtain 14 (c)(3) land conveyances from KIC by December 31, 2003.	Map of Boundaries was completed by KIC and accepted by City, the MOB was submitted to BLM on May 6, 2008. BLM must now survey boundaries. The process is held up because of legal action by FAA.
Goal #7 – Watershed Protection - Negotiate a new easement to protect watershed at Devil's Lake and Vortac Lake by December 31, 2004.	Assistance from ARWA and meetings the winter of 2008, must have 14(c)(3) conveyance from KIC and permission from NANA for the East side of Devil's Lake. This need still remains an open issue for the City.
Environmental Infrastructure Goals	
Goal	**Status**
Goal #1 - Current projects - Continue and complete the current projects in process by December 31, 2003 (includes sewer lagoon upgrade).	The City of Kotzebue has a Master Utility Plan for water and sewer. The last Master Utility Plan was done in 2005.
Goal #2 - Sewer Study - Complete an updated sewer alternative/expansion analysis and study by May 1, 2003.	Complete
Goal #3 - Hillside sewer - complete a hillside sewer service feasibility and alternative analysis study by May 1, 2003.	Complete
Goal #4 - Waste Water System - Develop/adopt a waste water treatment/drainage system by June 30, 2004.	Planned for future grants, supposed to be surface water drainage plan or control for City of Kotzebue. This has not been completed.

Community Expansion Goals	
Goal	**Status**
Goal #1 - Available housing - Obtain and make available land for housing within the municipal boundaries of Kotzebue starting in 2001 and continuing.	All developable City-owned lands have been declared excess and all but one lot has been developed. KIC completed a plan for the Hillside Subdivision but has not developed it.
Goal #2 - Hillside land use policies - Develop Land use policies for the hillside areas by October 1, 2002.	Subdivision Ordinance adopted January 21, 2010.
Goal #3 - Hillside infrastructure - Plan & design infrastructure for hillside expansion by July 31, 2003 (includes hillside water).	Priority for infrastructure has been water and sewer main with lift station upgrades to meet demand within the core of the city. Hillside remains a need.
Goal #4 - Gravel supply - Work with all parties to identify and develop gravel sources starting in 2001 and completing by December 31, 2003.	Work in progress with Drake Construction and KIC.
Goal #5 - Community water supply - Develop alternatives for expanded water supply for the entire community by April 30, 2004.	Waiting on 14 (c)(3) conveyance.
Goal #6 - Airport expansion/alternatives - Investigate and designate airport expansion/alternatives locations by September 30, 2004.	Final report completed in 2008 (PDC 2008).
Goal #7 - Senior/disabled housing - Support the Native Village of Kotzebue, Maniilaq or other plans for senior/disabled, affordable, independent living facilities by December 31, 2005.	The City has supported all elder development with two recent completions of elder housing.
Economic Development Goals	
Goal	**Status**
Goal #1 - Freight Improvements - Proactively support freight delivery efficiency improvements while promoting Kotzebue as the regional distribution hub throughout the Plan's tenure.	Work in progress with bypass meeting 3/13/08. Seeking Cape Blossom development.
Goal #2- Alternative Energy - Support development of alternative energy sources and types starting by December 31, 2001 and continuing throughout the tenure of the Plan.	Work in Progress with NANA, KEA and KIC, KEA has completed 17 windmills. The City is conducting a study for waste to energy conversion through a grant.
Goal #3 - Manufacturing - Support the Nunavik Manufacturing plant and like clean industries starting by December 31, 2001 and continuing throughout the Plan's tenure.	Plant failed.

Goal #4 - Fisheries Development - Support development of expanded Fisheries and Added Value products so that at least two new industries are started by December 31, 2003.	Ongoing progress with the revival of the Co-op. The key to maintaining and supporting and enhancing our fishery is value added which is whether we gill and gut so we are hauling less fish out, canning, smoking, if we could do something to enhance the product here is manufacturing environment, that is going to add value here and make jobs and enhance our economy.
Goal #5 - Tourism Development - Support balanced, controlled tourism development opportunities and complete an overall tourism development plan by March 31, 2004.	New National Park Service Museum completed and opened in the spring of 2010. Tourism Development Plan not completed.
Goal #6 - Education Industry - Continue to explore and support education as an industry with a specific study of a regional high school completed by December 31, 2004.	NWABSD is developing a Career Technology School through grant funding.
Goal #7 - User Friendly Community - Continue to develop a more user-friendly community by completing a specific plan to do so by the end of December 2004.	Paving and sidewalks have been added and a park is planned for central area of town. Plans are being developed for improvements to Swan Lake. Shore Ave. will address some issues. A specific plan has not been developed.
Goal #8 - Regional Economies - Participate in regional economic endeavors to assure Kotzebue's interests are protected and enhanced while contributing to the region by entering into appropriate agreements with NANA, Cominco, NWAB and others by July 31, 2005.	City secured funding for Cape Blossom road study. DOTPF has funds towards construction and is planning the road. More funding is needed. Airport relocation study was completed. Deep Water port studies are in process.
Goal #9 - Communications and Technology - Expand on communications and information technology, participate in E-commerce, and export technical expertise by December 31, 2005.	Progress made in internet for the region and in homes. A new fiber optic cable is planned to reach Kotzebue in 2012.
Goal #10 - Trade Agreements & Zones - Investigate trade agreements, enterprise and free trade zones, or other avenues to open direct trade with Russia and the Far East by December 31, 2005.	NANA made attempts but there has been no success. The city has not made any attempts in this area.
Quality of Life Goals	
Goal	**Status**
Goal #1 - Education - Develop a proactive community-wide approach to excellence in education at all levels, including an emphasis on drug and alcohol abuse awareness.	Continuous goals of NWABSD, City donates $50,000 a year to Student Activities and the use of half the Recreational Center to the Boys & Girls Club.
Goal #2 - Recreation - Develop a plan for increased recreation of all types, for all ages, including playground upgrading and safety and an indoor swimming pool by October 30, 2002.	Work in progress with Fairground development, Grant writing and pursing state and federal funds for the small boat harbor. FY 2011 Operating and Capital Budget for Recreation Center was $336,750. Recreation Plan not completed.

Goal #3 - Small Boat Harbor - Expand on capacity and security for small boat harbor and provide alternatives for winter boat storage by September 30, 2003.	Work in progress with fairground development, Grant writing and pursing state and federal funds for the small boat Work in progress. Small Boat Harbor improvements are not in the planning stage. Dredging for harbor will provide fill for fairground development.
Goal #4 - Transit Study - Update the 1981 Transit Study for public transportation by February 15, 2005.	Asphalt roads have been secured but future road waiting on upgrades to all water and sewer lines. Recently applied for $5.5 million for paving. Transit plan was not updated.
Goal #5 - Caregivers - Support all efforts to develop a better system of caregivers and care giving, and to provide respite care by December 31, 2005.	Ongoing Maniilaq goal with home assistance now available.

PART II: KOTZEBUE TODAY

SECTION 1: NATURAL SETTING

A. Location

The City of Kotzebue is located on the Baldwin Peninsula in Kotzebue Sound just northeast of the Bering Strait some 549 miles northwest of Anchorage. Kotzebue lies on a 3-mile long spit at the northwest end of Baldwin Peninsula that varies from about 1,100 feet in width to 3,600 feet in width. It is located at Latitude 66 degrees, 54 minutes North, Longitude of 162 degrees, 38 minutes West, and is approximately 26 miles north of the Arctic Circle in Northwest Alaska (see Kotzebue Vicinity Map and Figure 1-2A). The current "core" community is located on land designated as a town site under the Alaska Native Town Site Law of 1926 and contained in four US Surveys starting in 1952 (see Figure 1-3A Kotzebue Core Map).

B. Geology

The Baldwin Peninsula is composed of unconsolidated Quaternary sediments. These sediments are primarily eolian, glacial and marine in origin. Illinoian glaciers deposited till and outwash over marine sediments. Loess (windblown silt) was deposited over the glacial sediments during the retreat of the Illinoian glaciers. Sea level rose following the glacial retreat, and in some areas, marine sediments were deposited over the eolian silts.

Late Wisconsin and Holocene sediments are primarily re-transported loess and thaw-lake deposits and comprise the surface soils that cover virtually all of the Baldwin Peninsula and the surrounding lowlands. The glacial sediments also consist primarily of silts. The oldest sediments exposed in the coastal bluffs of the peninsula are marine clays, silts, and fine sands upon which the glacial sediments were deposited.

A petroleum exploration well, drilled 10 miles east of Cape Blossom near Nimiuk Point in 1974, encountered bedrock at a depth of 900 feet. The nearest bedrock outcrops at sea level are on the Choris Peninsula to the southeast, at Ekichuk Lake on Hotham Inlet to the northeast, and at Cape Krusenstern Lagoon.

C. Terrain and Soils

1. Topography: The Baldwin Peninsula presents a gently rolling, sometimes flat topography, the surface of which is marked by polygonal ground and thaw lakes. Broad morainal ridges, rising up to 150 feet above the general surface, form the topographic backbone of the peninsula. This rolling topography typically is bordered at the coast by bluffs 20-100 feet high. The core developed area of Kotzebue, and that south of town, is composed of a series of former beach ridges.

2. Flood Plain: Kotzebue participates with the Federal Emergency Management Agency (FEMA) to regulate building within flood zones. Flood prone areas are divided into

three main categories. Zone A represents areas located within the 100 year flood, and is limited to areas adjacent to Shore Avenue, Swan Lake and the Lagoon. Zone B represents areas located between the 100 year flood and the 500 year flood. The third category is Zone C which is areas with minimal flooding.

3. Soils: *Soils of the City of Kotzebue*, was a study completed in 1971 by the U.S. Department of Agriculture, Soil Conservation Service, for the area of the town site of Kotzebue. This study shows four main types of soil located in Kotzebue. The majority of the land contains "very gravely sand" where in upper elevations the dirt has good drainage, lower elevations have a poorly drained version of the "gravely sand." Another type of soil is silt loam, which is "poorly drained, non acid soils with thick mats of organic material over stratified silty and sand alluvium." The last type of soil common to this area is peat, which is a poorly drained, neutral soil found in areas occasionally inundated by seawater.

4. Permafrost: The Baldwin Peninsula is located within the zone of continuous permafrost. A review of air photos indicates wet tundra, thaw lakes, polygonal ground and beaded drainage which are all indicative of permafrost. A well drilled on the spit at Kotzebue in 1949 and 1950 encountered the bottom of permafrost at a depth of 238 feet. A well drilled near Nimiuk Point in 1974 encountered an interpreted bottom of permafrost at a depth of 284 feet.

   The presence of permafrost and ice in poorly drained, fine-grained and organic soils requires consideration of potential engineering problems that may result in the thermal equilibrium of such materials disturbed. When such soils are caused to thaw, the excess moisture generated by the melting of ice may cause the soil mass to become unstable. This may result in differential settlement, subsidence of the ground surface, and movement of the soil mass either laterally or down slope. These phenomena can, of course, severely damage structures such as roads and buildings.

   During the summer, when the active layer of approximately 2-3 feet is unfrozen, the low bearing capacity of such soils presents severe limitations. Further, if the surface organic mat is damaged, the ultimate result may be degradation of the underlying permafrost and consequent soil instability. During freeze up, such soils are subject to severe frost heaving caused by the build-up of large masses of segregated ice within the active layer.

   Ground temperatures increase during the months of May and June and start to decrease in August. At about four to six feet from the surface, ground temperatures remain at about 20° F. The surface temperatures vary from 45° F in July and August to 15° from January through April.

D. Vegetation

The predominant vegetation type on the Baldwin Peninsula is moist coastal tundra. Moist tundra ecosystems usually form a complete ground cover and are extremely productive during the

growing season. They vary, from almost continuous, uniformly developed cotton grass tussocks with sparse growth of other sedges and dwarf shrubs, to stands where tussocks are scarce or lacking and dwarf shrubs dominate. In the northern area, it is often dissected by polygonal patterns created by underlying ice wedges. Few trees grow on the Baldwin Peninsula, particularly near Kotzebue.

E. Hydrology

The lakes that dot the surface of the peninsula and the surrounding lowlands appear to be thaw lakes that formed from the thawing of permafrost. These lakes are typically shallow and freeze to the bottom in winter (with some exceptions, such as Devil's Lake, the community of Kotzebue's main water source). A beaded drainage pattern indicative of permafrost and ground ice is apparent at scattered locations. While the geology of the peninsula does not appear favorable to the occurrence of springs, one was observed during a 1982-1983 field reconnaissance.

In general, soils on the Baldwin Peninsula are poorly drained. The active layer, which may thaw to a depth of about two feet in the summer, typically is saturated. The combination of fine-grained and organic soils, gentle to flat slopes, and permafrost at the base of a shallow, active layer, all contribute to poor drainage conditions. The flat spit area upon which Kotzebue is built is the same, and when the snow melts faster than runoff, pooling and minor drainage problems occur.

F. Climate

1. Temperature: Kotzebue's transitional climate typifies tundra and marine regions. During the ice-free season, May through October, a maritime climate prevails. Skies are mostly cloudy, daily temperatures are relatively uniform, and the relative humidity is higher. Average summer high temperature is about 58° F, with 85° F. being the hottest temperature recorded. When Kotzebue Sound freezes, the climate characteristics approach continental type. Daily temperatures vary, skies are cloudy only about half the time, and relative humidity is lower. Average cold temperatures are around –15° F with an extreme low recorded at –52° F.

2. Precipitation: The Kotzebue area receives only very light precipitation, with the total rainfall for a normal year about 8 inches. More than half of the yearly precipitation occurs in July, August and September. The average annual snowfall is about four feet, with snowfall generally occurring in every month except July and August.

3. Visibility: Local visibility exceeds three miles 92% of the time and exceeds one mile 97% of the time. About 93% of the time ceilings are above 1,000 feet. Visibility occasionally is limited by heavy fog during the summer, and high wind and blizzards during the winter. In an average year, visibility is limited to less than one-quarter mile on approximately 20 days. An average of roughly 60 per cent of these days occurs between April and July. Fog occurs approximately 90 days per year.

4. Sunlight: Since Kotzebue is located about 26 miles north of the Arctic Circle, the day lengths vary dramatically between summer and winter. In June and July, there are six weeks when the sun does not drop below the horizon. Conversely, in the winter the days are short, with the shortest day only having about 1.7 hours of sunlight. The low angle of sunlight, especially in the winter, distributes the rays over a larger area, which reduces their concentration. South facing slopes receive more direct sun rays and more heat.

5. Winds: Winds in the Kotzebue area vary with the seasons. The prevailing annual wind direction is from the east (September through April). During the summer months westerly winds are dominant. The average wind speed at KEA's wind farm is 14.1 miles per hour, with summer storms commonly producing wind speeds of 28 miles per hour for six-hour periods. Winds in the winter can be even stronger. The ten-year high wind speed is estimated to be 64 mph, and winds greater than 55 miles per hour have been recorded from all directions except the north and northeast.

G. Marine and Land Resources

1. Oceanography: Kotzebue Sound is a relatively shallow body of water that is protected from deep-water waves because of this shallowness. The Sound has a tide range of only about 1.5 feet. However, strong winds can cause sea level changes of over 6 feet, and storm surging is a problem in the Chukchi Sea. Kotzebue has experienced surges that have severely eroded the beach and portions of Shore Avenue (Front Street).

   Sand and gravel from the Noatak and other rivers is deposited into the Sound creating areas of shallow water depth near Kotzebue, although that same current actually keeps a channel open at the Kotzebue dock. These shallow waters create a shipping problem for barges bringing or distributing supplies. Ocean going vessels typically anchor about 15 miles offshore of Kotzebue, and are met by local river barges having a shallower draft for navigating the waters in and around Kotzebue.

   There is little information about currents in the Sound but they flow generally counterclockwise and average about 0.5 knots so they are not generally a problem. However, the ice movement during the nearly nine months that the Kotzebue area is surrounded by frozen waterways, can create problems. Ice gouging is an offshore phenomenon that occurs when ice masses ground near shore and develop trenches as the ice drags on the bottom (the "pack-ice" is constantly in motion).

   Likewise, ice ridging, a process involving the collision and shearing of ice sheets can cause gouging and create damage to any structures or shoreline. The shore fast ice in the Chukchi Sea is less extensive and less stable than in the Beaufort Sea, creating more problems for off shore and near shore developments.

2. Wildlife: Mammals, Birds and Fish: In addition to the plants and vegetation used by local residents in their subsistence lifestyle, hunting and fishing remain a vital part of the economy and lifestyle in Kotzebue. The last survey of subsistence use, conducted in

1999 by the Alaska Department of Fish and Game, found that the statewide average was 325 pounds per person but for western Alaska the average was 664 pounds per person. It appears that Kotzebue is a high subsistence use area compared to the resource harvest of other Alaska communities of similar size.

a. Land Mammals – The land animals can be broken into two main categories, the big game and the fur bearers. The big game mammals located in this region include moose, caribou and bear. Big game is used for both clothing and food for the residents of the region, and is supplemented by the reindeer herds. Fur bearers are used for sale or trade, clothing and for subsistence foods creating an important resource in the area. These include wolves, fox, lynx, mink, marten, wolverine, land otter, beaver, and muskrat.

b. Marine Mammals – The waters of Kotzebue Sound and the adjacent Chukchi Sea, during various seasons, contain several species of marine mammals. These are used for food and are an important aspect of the cultural heritage. The main marine mammals found in this region are the bearded seal, ringed seal, walrus, beluga whale and other whales. A historic location for taking seal is on a point across the entrance to Hotham Inlet from Kotzebue (Sheshalik). Polar bears rarely venture this far south but have been seen in inner Kotzebue Sound. While these marine mammals are protected by the Marine Mammal Protection Act as amended, Alaska Natives are allowed to take them for customary and traditional purposes. However, because of international treaty arrangements this sometimes requires special cooperative agreements between the federal government and the Native people (e.g., those of the Alaska Eskimo Whaling Commission, the International Whaling Commission, and the Alaska Eskimo Walrus Commission).

c. Birds – Most birds are present in the area only between May and September. These birds come to the area primarily to breed and nest. Many come from as far away as Antarctica, South America, and Asia. Because of the proximity to Siberia and the effect of prevailing winds, there is an interchange between the Asiatic and North American flyways. Migration patterns vary with the weather and food supplies. Thus, occasionally rare Asiatic species will appear in and around Kotzebue. These birds are categorized into four main groups: seabirds, waterfowl, shorebirds, and upland birds. Grinnell identified some 150 species of birds in the eighteen months spent gold hunting in Alaska. All of these birds and their eggs are used for subsistence purposes in the Kotzebue area. However, the Migratory Bird Treaty Act and the Russian and Canadian protocols require the protection of some migratory waterfowl species when they become endangered (e.g., Spectacled Eider, Black Brant, etc.).

d. Fish – Fish form an important diet for residents of the region. The fish are usually dried or frozen and sometimes used for dog food, although this is less common than in the past. Fish are caught by seining, hooking techniques or sport fishing. The Kotzebue Sound and lakes and rivers are used for commercial and subsistence fishing. The region is an important habitat for more than 50 species including Arctic

Char, Whitefish, Dolly Varden, Sheefish, Northern Pike, Grayling, Herring, Salmon and Cod. The commercial fishery depends predominantly on the migrating salmon.

H. Archaeology

The modern City of Kotzebue is built on and over a series of beach ridges. Each successive ridge has been found to have an earlier inhabitation period than the previous ridge, and nearly all have been found to have some potential for historical or pre-historical materials. However, no systematic survey of the historic and prehistoric resources in the Kotzebue town site has been undertaken. Based on excavations undertaken by Giddings in 1940, 1941, 1947 and in the early 1960's before his death, the time of occupation has been determined to be of the Intermediate Kotzebue (ca AD 1550) period (as well as present day) along the beach ridges between Isaac Lake and the shore.

Evidence of Old Kotzebue (ca AD 1400) inhabitation has been found between the Intermediate Kotzebue area and the outskirts of the present day City, thus tracing the current Eskimo ancestry for about 600 years. Buried cultural materials may be encountered anywhere along the ancient beach ridge crests (or even the slope according to Giddings and Anderson, 1986), not just along the present day waterfront. Mention is made by Giddings of clusters of house pits south of the FAA facility. The burin spall reported by Newell and Stern (1976) from a test pit adjacent to Isaac Lake, in the vicinity of the Intermediate site, suggests the presence of earlier populations than the Kotzebue period (possibly even Denbigh or Choris).

Thus far most Kotzebue archeological work and excavation has traced occupancy only back to the Late Western Thule (ca 1300 AD) period. In Cape Krustenstern, (Giddings and Anderson, 1986), some one hundred and fourteen distinct beach ridges going back from the current beach front indicate semi-permanent dwellings of Early and Late Western Thule, Birnirk, Ipiutak, Choris and Old Whaling cultures. It's possible that same pattern exists in Kotzebue, although the extensive separate beach ridges aren't the same.

I. History and Culture

In addition to the archaeological significance of Kotzebue, there is a historical and cultural context of the community. The NANA Regional Corporation has conducted a number of Elder's Conferences in Kotzebue over the past decade. These conferences provide important information on the region and community's history and culture and changes over time. These also provide the vehicle for social identification and pride in heritage amongst the region's native residents.

Based on NANA nominations under section 14(h)(1) of ANCSA, the BIA investigated many historical places and cemetery sites in the region. These too, along with oral history tapes taken at the time of the investigations, add to the base of knowledge of the culture of the region.

Within the core of Kotzebue, a historic district is mentioned. Official designation of such a district has not occurred. However, there is a sentiment that some of the older buildings and places of memory or significance to elders need to be protected and preserved. This appears to be a building by building and family by family sentiment, within the original town site.

SECTION 2: POPULATION AND ECONOMY

A. Population Analysis

The area of Kotzebue has been inhabited for many thousands of years but the first population record is that of 1909 when 193 people were recorded as living in Kotzebue. Over the years since 1909 Kotzebue has grown to a population of 3201 people as recorded by the 2010 U.S. Census. This census also showed a population almost evenly split between male (51%) and female (49%); with 46.2% below the age of 25, 32.6% between 25 and 50 years of age and 15.5% over 50 years old. This population was 80.8% Native American.

At times the population growth in Kotzebue has been very slow, this can be seen Table 2 – Population for Selected Years.

TABLE 2: Population for Selected Years

KOTZEBUE POPULATION GROWTH					
Year		Population		Change	
1909		193			
1920		230		19.17%	
1929		291		26.52%	
1939		372		27.84%	
1950		623		67.47%	
1960		1290		107.06%	
1970		1696		31.47%	
1980		2054		21.11%	
1990		2751		33.93%	
2000		3082		12.03%	
2010		3201		3.86%	

The population growth rate was initially a strong 20% - 30% until the 1950's. From the 1950's through the 1960's, population grew at a very strong 60% to over 100%. In the 1970's through the 1980's growth returned to the 20% - 30% range. Growth since that time has fallen to the 3% - 4% range. If the growth rate is looked at over the last few years, it is noted that, for the last ten (10) years, the growth rate has only been, on average, 0.38% per year.

Since a Comprehensive Plan serves as a guiding document to determine the direction a community is to go and define actions to take in getting there it becomes necessary to determine what the population of the community will be over the next few years. In the case of Kotzebue, it has been the trend over the last ten years for population growth to be almost flat, only showing a slight upward trend. While it is safe to assume that this trend will continue unless changes in the factors with are placing a limitation on growth take place, it is difficult to make an accurate prediction. A safe estimate would be for a continued growth of around 0.4% per year with possible variation of plus or minus 0.2%. For the five (5) year planning period of this Comprehensive Plan, this would place the population in the year 2015 at 3266 people. If the

high estimated growth is used then the 2015 population would be 3296 and if the low estimated growth is used the population would be 3241. These numbers are in line with the 1% growth projection for the region from 2009 thru 2034 as given in the December 2010 issue of The Alaska Department of Labor in its *Alaska Economic Trends* magazine.

For a further analysis of the population and demographics of Kotzebue information was taken from the *Population and Housing Narrative Profile, 2005 – 2009, American Community Survey* and is presented in Appendix A.

B. Employment Statistics

The Alaska Department of Labor in its *Alaska Economic Trends* magazine of May 2011 reports 15.3% unemployment in the NWAB and in the December 2010 issue presents data from the US Census showing 19.1% unemployment for Kotzebue. While it is hard to get exact figures from the available sources, it is safe to say that unemployment in Kotzebue is between 15% and 20%. For those employed, the most common occupations were: Management, professional, and related occupations, 37%; Sales and office occupations, 27%; Service occupations, 16%; Construction, extraction, maintenance and repair, 12%; and Production, transportation and material moving occupations, 7%. Sixty percent of those employed were Private wage and salary workers; 36% were Federal, state, or local government workers; and 3% were Self-employed. According to the 2009 Snapshot produced by the Alaska Department of Labor and Workforce Development, Research and Analysis Section, this employment generated $57,235,509 in wages.

1. Employment Rate: There is a lack of data for the City, most data found is for the Northwest Arctic Borough but since the population of Kotzebue makes up about half of the Borough population some correlation between data for the Borough and the City can be expected. It is reasonable to expect that Kotzebue, being the hub for the region, will have higher employment rates than the rest of the region and trends seen in the data for the Borough will be reflected in the data for Kotzebue. There is also variation in the data depending on where the data comes from, for instance, Trends magazine gives an unemployment figure of 15.3% for NWAB and then presents a figure of 25.8%. The Snapshot 2009 gives a figure of 69% of the population employed during 2009. Whether one looks at data for Kotzebue or NWAB, the employment/unemployment figures are high. The figures for Kotzebue/NWAB run approximately double those for the State of Alaska.

2. Employers: Most of the 17 employers in the regional that employ more than 25 employees are located or headquartered in Kotzebue. Maniilaq Association Inc. was the largest of these followed by Northwest Arctic Borough School District. AK Commercial Co., City of Kotzebue, and the State of Alaska were the next largest employers.

3. Income Levels: The 2000 Census reported that the per capita income in Kotzebue was $18,289, the median family income was $58,068 and the median household income was $57,163. The Snapshot 2009 reported a median household income was $69,306 or a 24.25% increase. While the Snapshot 2009 did not provide the per capita income or

median family income figures it is reasonable to expect a like percentage increase as seen in the median household income.

A more detailed look at the Employment Statistics for Kotzebue is presented in Appendix B.

C. Economic Analysis

1. Kotzebue Economy The economic trends for the Kotzebue area have been inconsistent. The city and the other eleven villages in the Northwest Arctic Borough (NWAB) are affected by the ups and downs of construction projects and other seasonal activities, subsistence and trapping issues, as well as the down turn in fishing activity of the past years. Many villagers are discouraged and do not actively seek work. They support their household by limited trapping; hunting (moose, caribou, small game, waterfowl and marine mammals); fishing; gathering of berries, roots, eggs and other edibles; and sale or barter of crafts and sewing.

   In spite of those negative and inconsistent economic trends, the so-called "transfer money" going to governments, particularly the School Districts, Municipalities and Tribes has helped to keep some economy alive. The larger service providers, such as Maniilaq have also produced a mini-economy, as has the transportation industry. One segment of the economy is the tourism and outsider hunting and fishing. As this segment grows, it can create significant risk to the non-cash subsistence economy and pressure on the natural resources of the region, which may not be sustainable.

   In summary, the local cash economy is heavily dependent on government, transportation, fishing, construction, and service industry jobs. Most work is seasonal, and a strong subsistence economy supplements the cash and transfer economies. In 1986, Kotzebue residents reported an average of 398.1 pounds of subsistence harvest per capita and the last data collected (1999) reported an average of 664 pounds for the western region of Alaska. The cost of living is very high, and most residents are searching for ways to increase their cash flow in the winter months. The ability to obtain skills and training will increase the potential to obtain the few jobs available, start businesses, obtain increased education, and find other jobs nearer to the region.

   The high cost of living in Kotzebue was documented in *The Alaska Geographic Differential Study 2008* (McDowell Group 2009). This study contains cost information from 18 sample blocks throughout Alaska and covers housing, food, transportation, clothing, and medical care. Kotzebue was found to be the most expensive community, with costs 61% higher than Anchorage, the base community for the study.

SECTION 3: TRANSPORTATION

A. Water Transportation

The ocean waters near Kotzebue are quite shallow due to drainage from the three rivers draining into the Sound – the Noatak, Kobuk, and Selawik, but the currents keep a channel open near the

Kotzebue dock. Because of this shallow water, there is no deep-water port that services Kotzebue and ships must anchor some 12-15 miles south and west of Kotzebue then transfer fuel and materials to smaller lighterage barges. Lighterage barges for fuel and supplies must have a draft of no more than five feet to come into the current dock area.

In spite of this difficult location for deep water vessels, Kotzebue has long been the trading and supply center for the region and the upriver villages, at least partly due to the access by small crafts. Because of this most government services and supplies for the region are found in Kotzebue. It is the active regional center for trade, transportation, and distribution. It has become the regional hub for communication, administration and education servicing the villages of Noatak, Kivalina, Point Hope, Kiana, Noorvik, Selawik, Ambler, Shungnak, Kobuk, Buckland, and Deering.

Because subsistence is such a high priority and major contributor to the economy, boats play a big role in getting to and from fish camps, sealing camps (some are flown to, or reached by snow machine while there is still ice), and elsewhere for subsistence, as well as for pleasure. Boat anchorage for small boats is available in Swan Lake and many people use the shore along Front Street (Shore Avenue) to dock their boats but with the Shore Avenue reconstruction/erosion control project that area has been lost to use for small boats.

There are three freight lightering business operating into Kotzebue from outside destinations. Northland Services, Alaska Logistics LLC and Bowhead Transportation Services offer transportation of goods and supplies to Kotzebue and surrounding communities. Crowley provides lightering services to their fuel distribution terminal on Kotzebue.

B. Air Transportation

Kotzebue originally became a regional transportation hub because of its location and the ability to provide the transition between deep water and rivers during the 3-4 months of ice-free time. In recent time, with the expanded airport and by-pass mail (subsidized as essential mail service) system in place, Kotzebue has become a major air hub.

There is currently one major passenger carrier, Alaska Airlines, and several regional carriers, Era, and Bering Air, providing service to Kotzebue. There are several air cargo carriers, Northern Air Cargo, Everts, Ryan Air, and Lynden that service Kotzebue on a regular schedule and there are additional charter carriers, especially during the summer and fall hunting and fishing season. Numerous charter carriers and fish and game guides have small aircraft in Kotzebue during the summer seasons.

The current airport consists of a 5,900 foot paved runway, and a 4,350-foot gravel surfaced cross runway. While the Airport has been expanded over the years and tens of millions spent on upgrading, as of the summer of 2011 planned upgrades including an apron and new taxiway will take place. A proposal for a new airport south of town a few miles was studied. It was decided to not include a new airport in the DOTPF's Airport Master Plan through the year 2018 in part because it was not supported by the population numbers or enplanement estimates. The State deemed the cost of a new airport with the necessary road to be too high given the associated

activity.

C. Roads and Trails

1. Roads: Kotzebue is isolated from any outside road system and there are no roads between Kotzebue and any other local community. Currently, there are approximately 21 miles of gravel roads and about 7 miles of paved roads. The paved roads consist of the main north south thru streets and several cross connectors. The Ted Stevens Way, which is also paved, crosses the lagoon and goes to the Vortac site, to the road to the Devil's Lake water supply, and connects to the Hillside Road. The current Shore Avenue project will add approximately 2 additional miles of paved road when completed in 2011. The "Base Road" to the old Air Force Base goes across the Airport and past the sewer lagoon to the City's landfill, as well as to KEA's wind generation facilities. The Hillside Road runs from the Base Road on the east side of the lagoon along the "hillside" to the Ted Stevens Way (see Figure 7-5 DOTPF Functional Road Classification) Part of the rationale for the road is to eliminate or reduce the use of the road that crosses the airstrip. The Native Village of Kotzebue accepted the Right-of-way for the road from KIC and is responsible for maintenance. This road expansion will open up areas for development, even if basic infrastructure is not in place.

   Initial funds are available and design work has begun on a new road from Kotzebue to the Cape Blossom area. This road will open additional areas up for development and will provide access to a planned deep water port at Cape Blossom (see Figure 7-6 Cape Blossom Road Preliminary Alignments). Additional road projects and improvements are planned, these include a continuation of the Shore Avenue project and improvements to Ted Stevens Way.

2. Trails: There are trail easements for access (winter) to state and federal lands reserved against all titles issued under ANCSA. These include a 25 foot trail easement that crosses KIC's IC's land and goes across Devil's Lake (the water supply). It also includes a sixty foot easement for the road south of town to the airport and from the airport property to the north boundary of Section 28, T 17 N, R 18 W, KRM. In addition, for winter travel, trails are marked across the Sound, the Inlet and on the rivers with sticks or branches when the ice reaches a safe thickness for travel. There are winter trails connecting most of the villages across Hotham Inlet and along the rivers, as well as to subsistence sites.

   Almost all of the trails are used by residents and by visiting villagers on snow machines in the winter. Some use, by four wheelers or all terrain vehicles, of a few locations is also done in the summer. Few automobiles, trucks, or 4-wheel drive vehicles leave the road system, except to travel on the ice in the winter. There are some problems crossing roads when cleared of snow, traversing through the community by snow machine, and access to and from the Sound. There is also some recreation use by snow machines, skis, and dog sleds all of whom would like designated locations.

D. Trip Generators

Many locations in the community act as trip generators. The hospital, airport, grocery stores, post office; state, tribal, and federal offices; and other service or commercial areas are generally major trip producers. These trips may be walking, 4-wheeler, snow machine, car or pick up, or taxi. Extensive traffic counts were conducted as a part of completing the 1997 Transportation Plan. These counts (some 34 counter sites, most for a period of 7 days) showed a peak use time around 7:00 in the evening and continuing with significant counts until midnight. These counts, with visual confirmation and categorization as to type of vehicle, were used in prioritizing the road improvement projects now starting.

E. Traffic Congestion/Problems

A review of traffic counts revealed some heavy use areas and little improvement in these areas has been seen. The lunch hour and evening hours produced the most congestion at the post office, grocery stores and bank. Summer traffic is significantly greater than in the winter. There is a slight increase during the commuting hours to work and home from work. Many of the roads are too narrow for the traffic, and on street parking.

There are conflicts between ATV's, 4-wheelers, walkers, and cars or trucks. In winter, snow machines come off of the ice, up over the steep beach bank and onto the road at speeds (to make the hill), without being able to see vehicular traffic on the road. When roads are cleared of snow, there are no places for the snow machines to cross. It is particularly congested near the hotel and store with pedestrians, snow machines or ATV's (depending on the season), and vehicles.

There are no oversize limits, and no established road limits in Kotzebue. This causes some deterioration of poorly constructed roads during the thawing time in the spring or during the occasional rainstorm. Freight, from barges at the dock or from the airport, moves through town on trucks where limited street size or visibility is a major problem. There are no commercial loading or unloading zones, nor alleys as defined in larger urban areas. There are some street noises from the different vehicles throughout the town. There is a conflict between vehicular traffic across the airstrip and the airplanes.

In 2012, the State of Alaska removed the City of Kotzebue's exemption from vehicular insurance and registration compliance with the Alaska Division of Motor Vehicles (DMV).

F. Public Transportation

Currently two cab companies operate year round. Both are operated out of the owner's home, and sometimes require long waits. A ride costs $6/person anywhere in town. Since Kotzebue is over a mile long and almost a mile wide, there is a good portion that is a difficult walk (especially in inclement winter weather). If the community expands to the hillside, the need for transportation will increase. A Transit Development Study was completed in 1981, which outlined a possible bus system with deviations between designated points and fares nearly as high as the taxis.

SECTION 4: COMMUNITY FACILITIES AND INFRASTRUCTURE

The City of Kotzebue has responsibility for roads, the water supply and treatment systems, the wastewater collection system and the solid waste disposal and baler facility. A Utilities Master Plan was prepared in 1993 and updated in January 1999. Also, in May of 1999, the U.S. Army Corps of Engineers did a special investigation of Alaska Environmental Infrastructure. These Plans have been the basis for improvements and the operation of the Public Works Department of the City. Most of the recommendations of the 1993 Plan were found to have been completed in the January 1999 Update. Since that time a Sanitation Utilities Development Plan was completed in 2005. This plan serves as a guide for the City's efforts in improving its infrastructure and a Water and Sewer Utilities Improvements Preliminary Engineering Report done in 2009 addresses the water and sewer utilities specifically.

A. Water Supply System

The Alaska Rural Water Association honored Kotzebue with the Water System of the Year award in 2011. This award recognized efforts by City staff to submit compliance monitoring complete on time. Kotzebue's water treatment plant received second place in Alaska Rural Water Association 2010 competition taste tests.

The current system has enough supply for the projected population through 2020. The system has been improved by implementing a new system at water intake area at Devil's Lake. Compressed air is injected below the surface to keep the area around the pump house free of ice. Problems with a lack of recharge to Devil's lake have been addressed through pumping of water from Vortac Lake to Devils Lake.

A new raw water line into town from Devil's lake, completed in 2010 greatly improved delivery efficiency. There still remains land acquisition for the watershed protection to protect the quality, including receiving the 14(c)(3) land conveyances from KIC, designating the area a protected watershed, and rerouting the existing easement across the lake.

B. Water Treatment System

Water is treated in the Water Treatment Plant building for the removal of iron, manganese, color and turbidity. The two old package water treatment plants are functioning at reduced capacity and are due for replacement. New state of the art treatment technology is needed to reduce the Total Organic Carbons. A new storage tank was constructed in 2004 to add 1.5 million gallons of storage which is needed for emergencies and maintenance. The old 1.5 million gallon storage tank has been taken off line for rehabilitation before it will be put back into service.

C. Water Distribution System

Water is distributed to the community in six water loops with a total length of 63,000 feet. The loops were originally built using 4-inch PVC pipe. While approximately one-half of the water loops piping has been upgraded with larger diameter HDPE pipe, the continued replacement of the remaining undersized and deteriorated old 4-inch PVC pipelines is necessary in four of the six water loops. Leakage and breakage of the old PVC pipe is the main cause for major

maintenance on the water loops. Service connections run to each customer in twin pipes which allow for circulation of the water between the house and the water main in order to keep the water service from freezing. Water is circulated using pit orifices installed in the water main and by circulation pumps installed in many of the homes serviced. Most of the old copper service connections are also in need of replacement.

D. Wastewater Collection and Treatment (Sewer) System

The City provides sewer service throughout the community. Sewage is collected in gravity sewers which flow to a system of 13 underground pumping stations located throughout the City. The sewage is pumped to a two-cell lagoon treatment system located just south of the airport, on DOTPF property leased to the City. Many of the improvements in the sewer system that were recommended in the 1993 Master Plan have been completed, including replacement of known broken pipes. Several of the original lift stations have been replaced with more modern facilities. There is still a need to replace the remaining 7 old lift stations with a design that allows easier maintenance and improves reliability. The sewage lagoon treatment system has been upgraded by raising the dike levels to prevent overflows from the existing cells, and a new cell 3 is under construction to expand the treatment system capacity to accommodate future flows.

E. Solid Waste Collection and Disposal

The City runs a garbage collection service, using compactor collection vehicles. The collected waste is delivered to a baler facility in the public works compound in the City. The new baler facility is quite adequate, but operating costs have been higher than anticipated so continued effort to find efficiency measures are taking place. There is no current City sponsored recycling facilities or effort except for ordinances requiring separation of hazardous waste. The landfill is operating adequately, but also has high operating costs and inadequate source of cover materials. The City is hoping to be able to utilize the material to be removed by DOTPF from the hills east of the airport as landfill cover material.

F. Electricity

Power for the community is supplied by a non-profit community cooperative, Kotzebue Electric Association. This cooperative has been innovative in adding wind generation, the use of waste heat, and consideration of fuel cells; but the costs of energy from diesel fuel are still quite high for the community. The problems of shipping fuel into the community, piping or hauling it to the generators, storage, and costs are all continually being studied for the development of safer, more efficient and less costly methods.

SECTION 5: HOUSING, RECREATION AND SERVICES

A. Housing

Housing is a major problem in Kotzebue according to planning participants, employers, new hires, new residents and visitors. The lack of land and infrastructure for new housing developments and the need for reasonably priced gravel for necessary pads are both constraints to development of housing.

The Native Village of Kotzebue now has tribal housing responsibility under the Native American Housing and Self-Sufficiency Development Act (NAHASDA). The Northwest Inupiaq Housing Authority has some retained responsibility and authority for housing and property management of previously constructed projects. Maniilaq has added housing units and is completing a 38 unit complex for short term residents but there is still a demand for the availability of housing units to retain the professionals needed for the hospital and related service delivery functions. KIC manages a number of housing units including both a 29 unit and a 41 unit apartment complex, and is considering building additional rental properties.

B. Health

There is a modern, full-service medical facility/hospital in Kotzebue completed and opened in 1997. It is operated by Maniilaq Association using Indian Health Service compact and other funding sources; but, can and does serve others in the community, particularly in emergencies. Maniilaq also provides outreach services and training for villages and village clinics in the region. Other health related counseling, prevention and education services are also available from either Maniilaq or the Native Village of Kotzebue.

C. Recreation

The City has several parks with limited playground equipment, but very little funding is available to maintain or secure these locations and assure safety. The Family Entertainment Center (the Recreation Center), provides youth recreation through the Boys and Girls Club, offers Bingo, a weight/workout room, sauna, and limited Racquetball court space. There is a softball field and avid competition going late into the night which produces conflict due to the location of the field in a residential area. There is a good deal of walking, bike riding, ATV, snow machine, dog sledding, skiing or other forms of recreation, but the lack of designated trails and crossings creates conflicts.

D. Education

A K-12 school complex is in the center of town, and the school district office operates from that same area to serve the outlying communities. A recently completed middle school addition expanded the facilities available. The school district has received grant funds for a Career Tech program which will add classrooms and a dormitory for technical education opportunities for area students. The Native Village of Kotzebue has also started an optional tribal school to ensure a well-rounded, culturally appropriate education for its members. The Alaska Training Center is a vocational education facility on the north end of town providing a comprehensive curriculum including some specialized courses in conjunction with Cominco--the Red Dog mine owners. The Chukchi Campus of the University of Alaska Fairbanks (UAF) provides, with distance learning and adjunct instruction through UAF, the wide range of college opportunities.

E. Other Services

Maniilaq provides mental health and alcohol counseling, social services, women's shelter, welfare assistance, and employment assistance for outlying villages and in some instances for

Kotzebue. The Native Village of Kotzebue provides some additional services including housing, tribal government services, subsistence protection, education, social services, and real estate service for the restricted townsite deeds and Native Allotments. Some state of Alaska social and health services are also available (state health clinic), either directly or through Maniilaq or Native Village of Kotzebue. The University/Borough Library and school libraries meet the community's need for reading and reference.

There is a limited contingency of retail stores for basic needs in Kotzebue. This limited availability contributes to higher prices due to lack of competition. The current hotel is being replaced with a new hotel and the City has several smaller inns and bed and breakfasts. Kotzebue is fortunate to have a newly constructed Northwest Arctic Heritage Center operated by the National Park Service. There are communications services from KOTZ radio (Kotzebue Broadcasting, Inc. a non-profit corporation), OTZ Telephone Cooperative and AT&T Alascom and GCI for long distance, GCI cable TV and ARCS TV programming, and the weekly Arctic Sounder newspaper. The Kotzebue Police Department, Volunteer Fire Department and Fire Training Center, NANA Search and Rescue and Alaska State Troopers provide public safety for Kotzebue.

SECTION 6: LAND USE, OWNERSHIP, AND PLANNING

Probably no other single factor is as critical to long-term economic development, expansion, or planning for Kotzebue as the land use and ownership. In this Comprehensive Plan and its implementation, the land use, designations, and zoning necessary must work with the current ownership to benefit the community. To accomplish this, it is first necessary to define the current land status, ownership and control within the municipality.

A. Municipal Boundaries and Authorities

A map of the municipal boundaries with major ownership depicted was shown in Figure 1-2-A and larger detailed maps are available at the City offices. The municipality has platting, zoning, and land use powers and responsibilities under its own ordinances and under AS 29.40.20 by Ordinances #86-2 and #89-21 AMI from the Northwest Arctic Borough. Most of the current zoning ordinance in KMC Chapter 17, deals with uses, setbacks and restrictions of the lots in the original and subsequent town-site surveys in the core area of Kotzebue and Chapter 18 of KMC recently added subdivision regulation.

Little use designation or control has been established for other locations outside the original town-site. This is at least partly due to the ownership and control of these lands. The airport is owned and operated by the state of Alaska, and FAA lands are controlled by them. KIC's interim conveyance (IC) lands are under their control. While the 14(c) re-conveyances to the City as required by ANCSA have not yet been completed they are finalized and expected to be completed in the near future.

These uses, ownerships, 14(c)(3) boundaries, and Native Allotment ownership are generally shown on the Figure 1-2-A. Individual Native Allotments are under BLM's control until conveyed, then the BIA and the Native Village of Kotzebue, as a "638" Contractor, assist and

approve of the individual uses. These lands, and the restricted town-site lots in the core town-site area, are only subject to the municipal ordinances if the government finds it in the owner's best interests to be subject to those ordinances. This makes equity and enforcement in land use designations somewhat more difficult.

With the potential development of a Port Facility at Cape Blossom the City of Kotzebue is investigating the possibility of filing a petition with the State Boundary Commission to expand the political jurisdiction to encompass additional areas of the Baldwin Peninsula to include Cape Blossom.

B. KIC and ANCSA 14(c) Re-conveyances

Under ANCSA KIC is to receive a total of 208,000 acres of 12(a) and 12(b) selections from BLM by Tentative Approval (TA's), Interim Conveyance (IC's) and Patent. Under the provisions of ANCSA KIC has the statutory requirement of re-conveyance to existing users at the time of ANCSA under section 14 (c)(1), (2), (3), and (4). These rights include the occupants (as of 1971) of residences (Subsistence Camp Sites), businesses (Reindeer Husbandries), churches and the like (section 14(c)(1) and (2)), not to exceed 1280 acres for municipal expansion uses (section 14(c)(3)), and for existing airports (section 14(c)(4)).

Pursuant to the provisions of Section 14(c) of ANCSA (43 U.S.C. 1613 [c]) the City and KIC reached an agreement on May 17, 1993. In accordance with the agreement and subsequent land negotiations hired McClintock Land Associates to develop a "Map of Boundaries", which has been filed with the Bureau of Land Management. BLM has entered this into the public land records to officially put the public on notice. After one year of this notice, BLM arranges to survey these tracts, and upon completion of the surveys, the village corporation issues the deeds to the appropriate party.

C. Native Allotments

There are currently 24 Restricted Native Allotments within the Kotzebue Municipal Boundaries. All of these Allotments were surveyed and are adjudicated to the applicant(s) or their heirs. The Native Village of Kotzebue under 638 contract with the Bureau of Indian Affairs assist the land owners in managing their land, including as a homesite, leasing for development, gravel sales, land sale, subdivision, or use and protection for subsistence.

D. State and Federal Lands

While there are only a few pieces of federally owned property in the City of Kotzebue (the two old FAA sites and the old Air Force/White Alice site), these comprise a great deal of potentially developable land. While the FAA sites will likely continue to be used for their purposes (as redefined under section 3(e) of ANCSA), the Air Force site is prime real estate and has been "excessed" through GSA and has become part of KIC holdings except for the actual radar installation.

E. Land Uses and Designations

The map shown in Figure 1-2-A, provides an indication of ownership and to some extent use of the lands within the Municipality of Kotzebue. (For example, the state of Alaska DOTPF ownership of the airport is for airport use.) No specific use designations, boundaries or districts are shown on that map since there are none currently defined or depicted for Kotzebue [even though KMC 17.12.010 indicates such a map exists]. The current Municipal Code indicates three categories or districts of use: General Use (KMC 17.16), Commercial Use (KMC 17.20) and Industrial Use (KMC 17.24 and provides a "grandfather" clause to allow continuation of current uses (KMC 17.32). The code also discusses historic use district or site in KMC 17.28.100.

The current mix of commercial, retail business, light industrial, residential, parks, and offices has the potential for safety problems (traffic, fuel leaks, noise, dust, etc.). A review of existing uses and use areas provide the basis for developing land use policies and zoning under this Plan.

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July 30, 2012 Draft

Chapter 3: Goals, Objectives and Strategies

3.1.2 Goal Development

A series of public meetings held by the Planning Commission resulted in an initial set of goals for this update of the Comprehensive Plan. During these meetings, representatives of local organizations, city staff and the general public provide input. The first step in the process involved a meeting to determine the status of the goals from the last Comprehensive Plan (Appendix A). The goals that were still relevant were included the draft plan along with objectives and strategies. During the two public reviews in 2012, these goals, objectives and strategies were further refined to include input from agencies, organizations, city staff, and Kotzebue residents.

3.1.3 Issues, Goals, Objectives, and Strategies

The goals, objectives and strategies provide the backbone of the Comprehensive Plan. They guide how the plan will be implemented and ensure it will be a living document. The tables in this chapter are designed to be stand-alone documents that can be regularly updated to track the progress of implementing the plan until the next plan revision.

This plan has 4 primary subjects and associated goals, objectives and strategies:

- Land use planning,
- Economic development,
- Infrastructure, and
- Quality of life.

Definitions

Goals are broad statements that describe long-term desired outcomes.

Objectives provide more specific information of what can be done to achieve a goal.

Strategies describe specific actions that will be taken to reach an objective.

The City took an inclusive approach to incorporate strategies into the plan that were identified by the public even though the City may not have a role in implementing some of these strategies. A column in each table identifies the likely organizations and agencies that will be involved in implementing each strategy.

3.1.3.1 Land Use Planning

The location of the City of Kotzebue limits the amount of land available for growth. It is bounded by the Kotzebue Sound to the west and north, the lagoon to the east, and airport to the south. This limitation hinders both physical growth and economic development. Two solutions exist to this problem, growth on the other side of the lagoon and more efficient use of the land the City now occupies. Both of these solutions require land use planning to maximize the City's potential.

Goal 1: *Encourage growth through land use planning*			
Objectives	**Strategies**	**Timeframe**	**Partners**
#1 – Land Re-Conveyance: Finalize ANSCA 14(c)(3) re-conveyance status	a. Continue to work with KIC to resolve hindrances to finalization of the ANCSA re-conveyance	2 years	City, KIC
#2 – Planning: Provide for more orderly community growth through planning	a. Review and revise Title 17 (Zoning) of the City Code	1 year	Planning Commission
	b. Create a plan for management of existing City lands and tidelands and for acquisition of new lands (e.g., long-range radar site and state surplus lands)		City
	c. Consider completion of zoning requirements as directed in the Municipal Code, including designating areas for residential housing and industrial and commercial uses.		Planning Commission, City Council
	d. Develop effective platting standards for lots, public roads, utilities and sidewalks to support residential and commercial lot development		Planning Commission, City Council
	e. Work with landowners to reduce conflicts for incompatible uses that have been "grandfathered"		
	f. Work with the State of Alaska to update the community profile map		City, DCCED
	g. Seek funding to develop an updated Flood Insurance Rate Map	1 year, 2013	City, Legislature
	h. Develop a watershed protection plan that addresses measures needed to ensure a clean water supply (e.g., rerouting of the snow machine trail, educating youth, spill prevention, and elimination of lead shot)	3 years	BLM-Kotzebue, City, NWAB
	i. Participate with federal, state, and local agencies in planning efforts such as coastal and ocean management, natural hazard mitigation, responses to global warming, and additional planning efforts that have the potential to impact the City	3-5 years	City, NWAB,
	j. Pursue annexation of lands to expand the City boundaries to encourage future growth. Review	2 years	City, NWAB

Goal 1: *Encourage growth through land use planning*			
Objectives	**Strategies**	**Timeframe**	**Partners**
	ordinances to ensure they will be appropriate for annexed land.		
	k. Consider resources that will be needed to support community expansion if a port is constructed or if the U.S. Coast Guard opens a station in the City	5 years	State of Alaska, City, Kotzebue IRA, NWAB
	l. Consider measures to address vacant lands and derelict buildings in the City coreand encourageredevelopment	2 years	Planning Commission
	m. Develop a plan to encourage citizens to keep yards/lands clean and orderly to a basic extent	1 year	Planning Commission, City Council
	n. Consider alternatives that would make developments not connected to water and sewer utilities more self-sustaining	1-3 years	City Public Works Dept.
#3 – Strategies: Address issues which could have major impacts on the City strategies	a. Review and revise City codes related to public safety	1 year	City (Council, Administration, Public Works) NWAB, Tetra Tech
	b. Update the Hazardous Waste Plan and develop a coordinated plan for business and residential recycling of aluminum, cardboard, plastic, and e-waste	1-2 years	City Public Works

3.1.3.2 Economic Development

There are several basic conditions that must exist for a city to prosper, one of which is the opportunity for its citizens to earn a living and another is to be able to obtain the necessities to support oneself and one's family. A 2009 study found that Kotzebue is the most expensive city to live in Alaska of the cities surveyed (McDowell Group 2009). The 2006-2010 average unemployment for Kotzebue is estimated to have been 20.7%. Development which can provide jobs and an economical supply of goods and services is essential to ensure a sustainable community.

Goal 2: *Promote economic development to increase job opportunities and to provide goods and services at economical costs*			
Objectives	**Strategies**	**Timeframe**	**Partners**
#1 – Jobs: Increase job opportunities through expansion of existing businesses,	a. Develop an economic development plan that includes, but is not limited to, development of small businesses in Kotzebue	1-3 years	City, Kotzebue IRA, KIC, others

Goal 2: *Promote economic development to increase job opportunities and to provide goods and services at economical costs*			
Objectives	**Strategies**	**Timeframe**	**Partners**
including small businesses, and attracting new businesses.	b. Investigate strategies to promote local hire used by other areas such as the North Slope Borough		
	c. Establish a City Economic Development Committee and encourage local businesses to form a chamber of commerce or business association	2 years	City, Kotzebue IRA
	d. Support efforts to attract "green" businesses to the city and businesses that use local materials for manufacturing	1 year	City (Administration and Council)
	e. Encourage the State of Alaska to expand the Kotzebue job center		
	f. Support tourism development initiatives, including locally-operated "boutique tourism"	1 year	City (Administration and Council)
	g. Support local provision of aviation skills		
	h. Recognize that Kotzebue is a hub for the region and explore ways to improve facilities and infrastructure that support Kotzebue as a hub	1 year	City (Administration and Council)
	i. Improvethe Swan Lake Small Boat Harbor to support subsistence and commercial fishing activities	1-3 years	City (Capital Projects Dept.)
	j. Consider efforts to market Kotzebue including a review of the City's slogan	1-2 years	City (Administration and Council)
	k. Support coverage of local events through local and regional newspapers and establishment of calendar of local events	2 years	City, Kotzebue IRA
	l. Promote measures that encourage residents to continue to live in Kotzebue	2 years	City Council
	m. Support youth employment programs	2 years	City Council
	n. Encourage industries and businesses to locate in Kotzebue	2 years	City Council
	o. Expand opportunities to develop support services for oil and gas and mining exploration and development in region	3 years	KIC, City

Goal 2: *Promote economic development to increase job opportunities and to provide goods and services at economical costs*			
Objectives	**Strategies**	**Timeframe**	**Partners**
	p. Encourage more residents to obtain fishing permits	years	
	q. Encourage establishment of value-added businesses that promote export of goods (e.g., fish and meat processing facility and tannery)	3-5 years	City, KIC, NANA, Kotzebue IRA
	r. Explore options for reducing fuel costs through bulk fuel purchases	3-5 years	
#2 – Goods and Services: Expand availability of local goods and services and reduce the costs of existing goods and services through increased competition and the reduction of transportation costs	a. Actively work with stakeholders to obtain funding for the Cape Blossom Regional Port and associated road and consider options for City ownership of lands, tidelands and submerged lands for port development	1-10 years	Legislature, DOTPF, Federal Highway Administration, Denali Commission
	b. Encourage more professional and trade services to locate in Kotzebue (e.g., accountants, computer services, dentists, lawyers, plumbers, electricians, bakers, and mechanics)	1-10 years	Alaska Technical Center, Chukchi Campus UAF, NWAB
	c. Encourage development of a shopping center or mall for retail sales and professional services	3-5 years	KIC, NANA
	d. Encourage new retail businesses to locate in Kotzebue (e.g., big box store, second hand store, bakery)		
	e. Encourage development of a private Laundromat	1-3 years	City
	f. Support efforts to develop alternative and renewable energy sources including natural gas, biomass, and geothermal resources	2-7 years	City, NANA, KIC
	g. Develop an Alternative Energy/Energy Conservation Plan for the City	3 years	City, NWAB
	h. Support efforts to improve high speed/higher bandwidth communications within the region and to "outside" areas	2-5 years	City Council
	i. Support KOTZ radio station, including equipment upgrades	1-3 years	KOTZ, City, NWALT

Goal 2: ***Promote economic development to increase job opportunities and to provide goods and services at economical costs***			
Objectives	**Strategies**	**Timeframe**	**Partners**
#3 – Workforce Training: Encourage workforce training to improve job skills and attract employers	a. Recognize education as an industry and support Borough and School District plans for a magnet school	1-3 years	City, Chukchi Campus UAF, Alaska Technical Center, NWALT
	b. Encourage local training to increase the number of local people qualified to work in construction (e.g., welders, electricians, works with commercial driver licenses)	1 year	City, Chukchi Campus UAF, Alaska Technical Center, NWALT
	c. Support offeringof more evening classes for workers who cannot attend classes during the day	1 year	Chukchi Campus UAF, Alaska Technical Center
#4 – Land and Housing: Increase land available for housing and growth to make Kotzebue a more desirable place to work and live	a. Encourage owners of undeveloped parcels or lots with abandoned buildings to make properties available for community expansion	2-3 years	Planning Commission
	b. Explore options to encourage more affordable and wheel chair-accessible housing	2-3 years	Kotzebue IRA Tupic Services, NIHA, City Building Maintenance
	c. Explore applicability of techniques used by the Cold Climate Housing Research Center and other programs such as the Living Building Challenge and the LEED program	3 years	City Building Maintenance
	d. Pursue "Brownfield" funding opportunities to develop future projects/housing sites	4 years	Kotzebue IRA Tupic Services, NIHA, KIC
	e. Support efforts to identify and develop gravel resources in the area	1 year	City (Council and Planning Commission)
	f. Develop a subdivision plan that addresses road and utility needs for areas along Ted Stevens Way and along the proposed Cape Blossom road	2-4 years	City (Planning Commission and Public Works Depart.)
	g. Supportprograms that support energy-efficient improvements (e.g., RuralCap, AHFC, NANA, and volunteer programs)	1 year	City (Council and Administration)

3.1.3.3 Infrastructure

Background: A major function of a city is to help its citizens meet basic needs such as clean water, sanitation, and solid waste disposal. Providing the infrastructure, its maintenance, and planning for expansion also is necessary for the continued growth of a city and its economy.

Goal 3: ***Provide the environmental infrastructure to meet the needs of its citizens and plan for expansion to support the City's growth***			
Objectives	**Strategies**	**Timeframe**	**Partners**
#1 – Expand Water and Sewer: Expand water and sewer services within the City to areas not now being served	a. Implement recommendations in the Water and Sewer Master Plan	1-5 years	City Capital Projects
	b. Develop a plan for Hillside water and sewer service and establish minimum lot sizes to allow room for water and sewer infrastructure	1-5 years	City Capital Projects, KIC
#2 – Upgrade Water and Sewer: Upgrade present water and sewer infrastructure to allow for future growth	a. Upgrade the water and sewer infra-structure according to the Master Plan as funds become available including the water treatment plant, water mains, sewer lines, fire hydrants, and sewer lift stations	1-5 years	City Capital Projects, USDA, DEC
#3 – Solid Waste Provide for future solid waste needs such as landfill capacity, recycling, and hazardous waste disposal	a. Develop and implement a Solid Waste Management Plan that coordinates with the other governmental entities on issues related to solid waste disposal, recycling, hazardous waste disposal, energy recovery, and landfill capacity	1-5 years	City (Public Works and Refuse depts.)
	b. Improve the refuse collection process to eliminate litter and collect big items	1 year	City (Public Works and Refuse depts.)
#4 – Transportation: Improve transportation within the City	a. Develop or update the Transit Plan to include improvement in parking, ATV/sno-go/bike trails, and pedestrian access/mobility	2-3 years	City (Capital Projects, City Planner, Planning Commission)
	b. Complete current improvements to the airport, extension of the runway and long-term planning	1-2 years	DOTPF
	c. Continue to pursue efforts to relocate the airport	1-10 years	City (Council and Administration)
	d. Address house encroachments in the right of way on Third Avenue	Long term	City (City Planner and Administration)

Goal 3: *Provide the environmental infrastructure to meet the needs of its citizens and plan for expansion to support the City's growth*			
Objectives	**Strategies**	**Timeframe**	**Partners**
	e. Develop a plan for road improvements including fixing drainage problems, extension of road improvements to North Shore Avenue, realignment of Bison Street and construction of a sidewalk on Third Avenue	1-10 years	City (Capital Projects and Administration)
	f. Continue to support winter trail staking and ice road construction to improve winter connections between Kotzebue and other communities	1-10 years	City Council
	g. Investigate feasibility of a road connecting Kotzebue to Kiana and Selawik	1-10 years	City, Tri-Board, NWAB, NWALT
	h. Improve access to the new recreation site at Swan Lake	3 years	City Capital Projects
	i. Construct a bike path on Ted Stevens Way over the water pipeline	3 years	City Capital Projects
	j. Continue the dust abatement program by paving gravel roads	2-3 years	City Capital Projects
	k. Investigate options for mass transit and transportation of students	2-3 years	City Capital Projects
	l. Update the transit plan to include wheel chair accessible, on demand transportation	2-3 years	City Capital Projects
	m. Ensure that plans for the runway extension will not interfere with longstanding subsistence use	1-3 years	City Administration, DOTPF, Kotzebue IRA
	n. Remove snow berms to improve street visibility		
#5 – City Facilities: Upgrade city-owned buildings and facilities	a. Prioritize which City facilities need to be upgraded or replaced (e.g., a regional jail, new ambulance, public safety complex, & ADA-accessible City Hall) and consider feasibility of a complex that would house multiple facilities	1-5 years	City (Administration and Capital Projects)
	b. Relocate baler facility out of city core, possibly near the landfill	1-5 years	City (Administration and Capital

Goal 3: *Provide the environmental infrastructure to meet the needs of its citizens and plan for expansion to support the City's growth*			
Objectives	**Strategies**	**Timeframe**	**Partners**
			Projects)
	c. Investigate feasibility of a multipurpose facility that could serve as a meeting area, cultural center, convention center, and visitor center	3-6 years	Tri-Board, City Administration, NWALT
	d. Ensure adequate lighting is available for public safety while conserving energy and preserving the night sky (e.g., use of LEDs and directional lighting)	2-6 years	KEA, City, NWAB

3.1.3.4 Quality of Life

Background: Once the basic needs for life are met, jobs are secured, and education is provided, there still exist needs which should be met also. These needs are those that make carrying out daily tasks safer and easier, provide outlets for mental and physical energies, and, in general, add to the enjoyment of life.

Goal 4: *Improve the quality of life in Kotzebue*			
Objectives	**Strategies**	**Timeframe**	**Partners**
#1 – Recreation: Improve recreational opportunities in Kotzebue	a. Prepare a Recreation Plan that inventories existing facilities and evaluates needs, considers accessibility for people with disabilities of all ages, identifies funding, and plans for sustainable upkeep of facilities, including but not limited to an indoor swimming pool, a skate park, sledding area, shooting range, improved playgrounds, new softball fields, and other recreational activities	1-3 years	City (Planning Commission, Capital Projects)
	b. Encourage development of a movie theater and bowling alley	1-2 years	City (Council and Administration)
	c. Reestablish a teen center and other recreational opportunities for older youth	1-2 years	City (Council and Administration)
	d. Seek funding for to complete recreational projects such as Swan Lake Boat Harbor, and Regional Outdoor Recreational Facility and Commemorative Park. Explore State of Alaska "TRAAK" funding	1-3 years	City (Council and Administration)

Goal 4: *Improve the quality of life in Kotzebue*			
Objectives	**Strategies**	**Timeframe**	**Partners**
	opportunities		
	e. Explore options for bike trails (e.g., trail from airport to Front Street to back of town)	2-4 years	DOTPF, City Capital Projects
	f. Complete upgrades to the Kotzebue Recreation Center including general repairs and making the facility accessible for people with disabilities. Investigate options for expanding or replacing the facility or relocating bingo activities to a different place. Seek funding to expand hours of operation.	1-3 years	City (Building Maintenance, Public Works, Administration, Capital Projects),
	g. Investigate options for an indoor pool that could use excess waste heat from power generation and serve multiple purposes (e.g., local use, a regional facility to teach children how to swim, and fire control)	1-5 years	NWABSD, NWALT, KEA, Kotzebue IRA, City
	h. Designate an outdoor place for kids to swim in the summer	1-3 years	City (Administration, Family Entertainment Center)
	i. Improve fairgrounds by resurfacing the area and adding a covered stage with a public address system	1-3 years	City (Administration, Family Entertainment Center)
	j. Consider establishment of a City recreation advisory committee	1 year	City Administration, Kotzebue IRA, Tri-Board
#3 – Healthy Environment Maintain a healthful environment	a. Support initiatives to improve public health including but not limited to early childhood learning projects, youth development projects, mental health programs, health awareness campaigns, substance abuse programs, suicide prevention program, and dust control measures	1-5 years	Maniilaq
	b. Promote and support projects to improve City's road system	1-5 years	City (Council, Administration

Goal 4: *Improve the quality of life in Kotzebue*			
Objectives	**Strategies**	**Timeframe**	**Partners**
	including sidewalks, paving for dust control, widening, lighting, and crosswalks		and Capital Projects)
	c. Encourage beautification efforts through enforcement of existing litter laws and annual cleanup campaigns		
	d. Promote sustainability efforts through support of agrarian activities, markets, community gardens, community greenhouse, composting, and planting of trees and shrubs	1-3 years	A community group
	e. Support opportunities for affordable daycare and establishment of a local Head Start program	1-2years	City (Council and Administration)
	f. Encourage establishment of a local food bank		
	g. Explore options for establishment of a homeless shelter		
	h. Encourage establishment of a drug and alcohol recovery center in Kotzebue		
	i. Support local facilities for day surgery, eye care and orthodontics	1-5 years	Maniilaq, NWALT, Tri-Board
#4 – **Public Safety** Increase public safety	a. Develop a Communication Plan to coordinate and improve emergency needs, and dissemination of information within the City	1-3 years	NWAB Emergency Services, Maniilaq, KOTZ Radio, City (EEOC, Police and Fire departments and Administration).
	b. Review and update City Codes to strengthen public safety and public health	1-2 years	City (Departments, Planning Commission, and Council)
	c. Support public safety efforts such as Safe School Corridors and police in schools programs domestic violence prevention programs		City (Administration and Police), State of Alaska Child Services,

Goal 4: *Improve the quality of life in Kotzebue*			
Objectives	**Strategies**	**Timeframe**	**Partners**
			NWABSD, DHSS, and Maniilaq
	d. Reinstitute former practice of signaling the curfew with a siren	1 year	City Police Department
	e. Encourage residents to form neighborhood watch groups		
	f. Support domestic violence prevention programs	1-2 years	Maniilaq, City Police Department, State Troopers, Alaska Court System
	g. Support and seek funding for an improved public safety complex that would meet accrediting standards for access and security (e.g., adequate office space, evidence storage area, equipment storage, garage, interview rooms, locker rooms, secure areas, decontamination area for biohazards, workout room, kitchen, records and administration area, and an impound and evidence enclosure)	2-6 years	City (Administration and Council)
	h. Improve emergency response measures, including communications with residents and use of a siren or other signal during an emergency	1 year	City Police Department, State Troopers, and DOTPF
	i. Continue to support efforts to secure a permanent base for search and rescue efforts	3-7 years	Kotzebue Sound Search and Rescue
	j. Encourage funding for a program to train local residents in oil spill response training that would prepare the community for a large oil spill from increased vessel traffic	3-7 years	NWAB, State of Alaska, Shell, ConocoPhillips, StatOil
#5 – Education: Expand educational opportunities	a. Work with and support the educational community in efforts to prepare youth and adults to meet current challenges while keeping a focus on cultural values	1-5 years	NWABSD, Chukchi Campus UAF, Alaska Technical Center, NWALT, NANA, KIC, Kotzebue IRA, and

Goal 4: *Improve the quality of life in Kotzebue*			
Objectives	**Strategies**	**Timeframe**	**Partners**
			AqqalukTrust
	b. Encourage schools to focus on training to provide needs of the community (e.g., accountants, plumbers, journalists, public safety, public administration, rural development, utilities management and other city employment needs)	1-10 years	Alaska Technical Center, NWALT, NWABSC, Chukchi Campus, UAF
	c. Support efforts to expand community library and add more books, periodicals, and computer equipment	1-3 years	City Council, NWAB, NWABSC, Chukchi Campus, UAF
	d. Continue to support student extracurricular activities	1-3 years	City Council, NWAB, NWABSD, Chukchi Campus, UAF
#6 – Iñupiat Culture: Promote Iñupiat language and culture	a. Support programs that promote Iñupiat culture such as Eskimo dancing, language training, story telling, arts and crafts, Iñupiaq street signs, and Qatnut trade fair	2-4 years	NANA, KIC, Kotzebue IRA, Aqqaluk Trust, NWABSD, and Chukchi Campus UAF
	b. Document and protect archaeological/historic resources	Ongoing	NANA, KIC, Kotzebue IRA, Aqqaluk Trust, City
	c. Document and protect subsistence use areas including north and south tent cities	1-3 years	City Capital Projects
	d. Support reinstitution of the blanket toss	1 year	NANA, KIC, Kotzebue IRA, Aqqaluk Trust, City
#7 – Sister Cities: Promote exchanges with Kotzebue's sister cities	a. Reinvigorate relationship with Lavrentiya, Russia and consider a new sister city relationship with a community in Nunavut Canada	1-2 years	NANA, KIC, Kotzebue IRA, Aqqaluk Trust, City, NWALT

Goal 4: *Improve the quality of life in Kotzebue*			
Objectives	**Strategies**	**Timeframe**	**Partners**
#8 -- Elder Programs: Provide support services for elders	a. Maintain existing services for elders and provide assistance to ease the cost of living (e.g., Meals on Wheels, weatherization and home maintenance programs, and list of people available to escort elders to Anchorage for medical treatment)	1-2 years	All local organizations
	b. Support efforts to ensure elders have mobility by working with other organizations that provide transportation services	Ongoing	All local organizations
#9 – Youth Programs: Expand programs for youth	a. Support expansion of summer Sivu youth camp and use south and north Tent Cities to show youth how to prepare subsistence foods		

PART IV: IMPLEMENTATION

Implementation is a major component of this Comprehensive Plan and includes recommendations necessary to complete the Goals set forth. The key to success of the Comprehensive Plan is the actions taken by the City and others in a public/private partnership to implement the goals developed by the residents. The needed studies for community expansion are prioritized in this Part, as funding is always a concern.

SECTION 1: IMPLEMENTATION TIMELINES AND ACTIONS

A. Schedule

Portions of this plan are already being implemented in terms of the planned and approved projects incorporated herein. The Plan has a five-year set of goals, starting with its adoption. To accomplish those goals, it is necessary to develop an implementation schedule to ensure timely completion of each goal. Some studies and projects may extend beyond the five years. It is recommended that the City Manager establish a timeline for the completion of each goal.

B. Administrative Actions

In addition to public hearings and actual adoption by the City Council, there needs to be an annual implementation or work plan developed by the City Manager and Planning Department. This Comprehensive Plan is only the beginning of an ongoing, continuing process of focusing resources of the City to accomplish the most results to meet the needs of the community and its residents. It is important that this Implementation Part address some of the administrative actions necessary to fully implement the plan.

In conjunction with the budget process, the City Manager should develop a staffing and funding plan to implement this Comprehensive Plan, along with the first year's annual work plan for implementation. Also, each goal under this Plan should have an individual action plan developed for it. That action plan should include assistance needed, time frames, action steps, objectives or results needed, funding strategies, and a budget. As these action plans are developed, it may be necessary to include interested public in developing the plans. Also, it may be necessary to modify the time frames for each goal.

The first administrative action will be to make this Plan (when adopted) available to the public (even though public hearings and presentations of the drafts were extensive).

While each goal may have one person responsible for completion, there is a need for a true "team" effort on the part of the entire City to truly implement the plan. This is discussed more fully in the under Monitoring below, and may require some functional alignments to assure accomplishment.

SECTION 2: CONFORMANCE AND COORDINATION

All previous plans and planning have been reviewed, and current key components of other specific planning efforts incorporated. This Comprehensive Plan conforms to all statutory and regulatory requirements under AS 29.40.20 and AS 29.40.30, and under authority allowed by NWAB Ordinance 89-21 AMI. All existing specific plans for improvements in the City are incorporated herein by reference and made a part of this Plan. This Plan shall be deemed controlling in broad general policies and implementation issues, but those specific plans shall remain controlling as to each project detailed therein.

There will be some need for implementing policies, ordinances, and actions by the City Council, the City Manager, and the Planning Commission to accomplish the entirety of this plan. While conceptually those policies and changes are included in this plan, as with all good public policy, hearings on specific implementation steps will be required. This plan requires coordination with the NWAB in region-wide planning and with other public, private, and non-profit entities in and serving the community of Kotzebue.

As action plans are developed for major goals under this Plan an effort will be made to obtain public participation in that planning. Individuals that participated in the planning effort for this Plan and other interested individuals will be solicited to ensure the subsequent implementation planning meets the community needs. Key private and public entities will also be asked to participate in developing specific action plans, and will be a part of studies anticipated in this Plan.

SECTION 3: MONITORING

Current City of Kotzebue staff is stretched to the limit with ongoing and planned projects monitoring as well as funding solicitation. Due to the overlap with existing functions and projects, a joint working team of Planning, Capital Projects, and Public Works Departments, along with the City attorney, coordinated by the City Manager will be involved in monitoring this Plan's accomplishment. Together they should work out functional responsibilities and create a monitoring plan to assure the completion of the goals in this Plan. Generally, this monitoring plan will consist of measuring the quantity and quality of expected results against the time lines to determine if the goal has been met. Where contracts are involved, monitoring will also be against specifications and costs.

The Planning Department, with the Planning Commission, contract studies, and public participation will accomplish the studies and plans in this Comprehensive Plan. This will require additional funding, so grant writing and administrative management functions will also need to be included. A number of these projects and goals will require extensive public hearings, mapping, and planning efforts including drafting of ordinances for the Kotzebue Municipal code.

The Capital Projects Department will be responsible for surveys, designs, engineering, contract development, and contract management to implement this Plan.

The Public Works Department will have responsibility for developing maintenance,

rehabilitation, and upgrade plans for existing facilities and systems. It is vital that the Public Works Department is involved in the planning for each goal so that when facilities, systems, studies, or designs are completed, they can be meshed with the existing system, structure and staffing.

SECTION 4: EVALUATION

In addition to the functional alignments and responsibilities discussed under monitoring above, an ongoing evaluation process will be in place. This process will consist of evaluation against the individual project/goal action plans and the annual work plan. In addition, the results or accomplishments under the Plan will be somewhat self-evaluating for the public to see if expectations are met. The City Manager will be responsible for evaluations under this Plan and reporting on same to the City Council.

SECTION 5: MODIFICATION AND UPDATING

It is recognized that no plan is cast in concrete, and this Comprehensive Plan is but the beginning and framework for a continuous planning process for the City of Kotzebue. Therefore, the City Council may make necessary modifications to this Comprehensive Plan upon recommendation of City Manager, after completion of appropriate study, analysis, and/or staff review and recommendations. All major modifications will require appropriate public hearings and opportunity to address the changes. There may be a need for minor changes in a rapid time frame to take advantage of granting or funding opportunities or emergency situations. The City Manager can make those minor or emergency modifications subject to review by the City Council.

An annual formal public review of accomplishments and status of this Comprehensive Plan should be conducted, at which time potential modifications may also be considered. At the end of five years, a formal process of review and update, or extension of this plan for an additional five-year period, will take place. This formal process will include public participation meetings and formal hearings. The process of development of this Comprehensive Plan may be repeated for the completion of this new/updated Comprehensive Plan.

Since this Comprehensive Plan belongs to the community, citizens can request a status report on any or all parts of this Plan. Likewise, if residents feel there are modifications necessary the City Manager and ultimately the City Council and the Planning Commission will be available to consider those modifications.

PART V: REFERENCES

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APPENDIX A: "Population and Housing Narrative Profile 2005-2009"

American Community Survey, U.S. Census Bureau, 2009

APPENDIX B: "Kotzebue Snapshot 2009",

Alaska Department of Labor and Workforce Development, Research and Analysis Section, April 2011

APPENDIX C: Plan Reference List Table

Kotzebue, AK Urban Cluster

Population and Housing Narrative Profile: 2005-2009
Data Set: **2005-2009 American Community Survey 5-Year Estimates**
Survey: **American Community Survey**

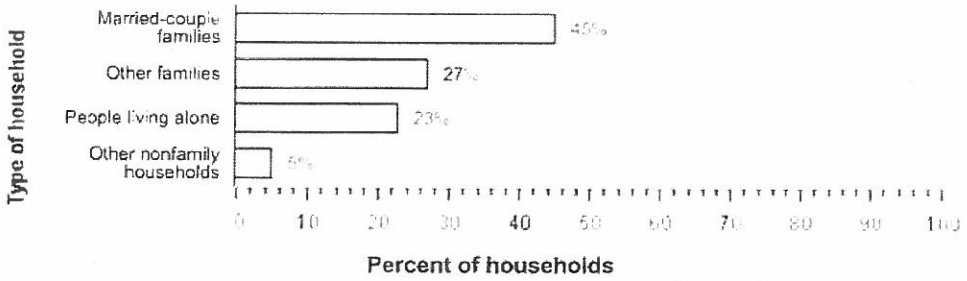
NOTE. Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

For more information on confidentiality protection, sampling error, nonsampling error, and definitions, see Survey Methodology.

HOUSEHOLDS AND FAMILIES: In 2005-2009 there were 860 households in Kotzebue, AK Urban Cluster The average household size was 3.5 people.

Families made up 72 percent of the households in Kotzebue, AK Urban Cluster. This figure includes both married-couple families (45 percent) and other families (27 percent). Nonfamily households made up 28 percent of all households in Kotzebue, AK Urban Cluster. Most of the nonfamily households were people living alone, but some were composed of people living in households in which no one was related to the householder.

The Types of Households in Kotzebue, AK Urban Cluster in 2005-2009



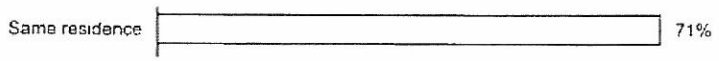
Source. American Community Survey, 2005-2009

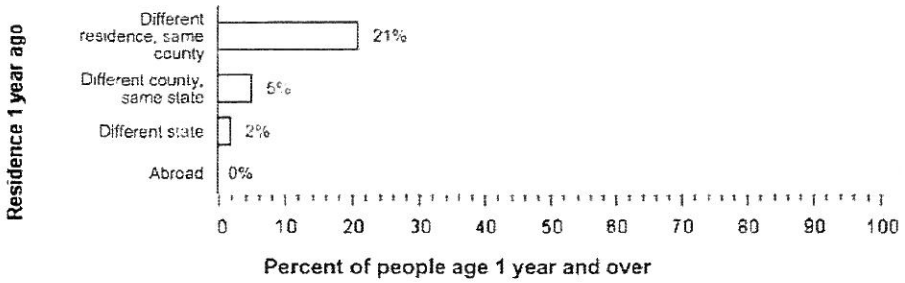
NATIVITY AND LANGUAGE: Three percent of the people living in Kotzebue, AK Urban Cluster in 2005-2009 were foreign born. Ninety-seven percent was native, including 79 percent who were born in their state of residence.

Among people at least five years old living in Kotzebue, AK Urban Cluster in 2005-2009, 27 percent spoke a language other than English at home. Of those speaking a language other than English at home, 1 percent spoke Spanish and 99 percent spoke some other language; 24 percent reported that they did not speak English "very well."

GEOGRAPHIC MOBILITY: In 2005-2009, 71 percent of the people at least one year old living in Kotzebue, AK Urban Cluster were living in the same residence one year earlier; 21 percent had moved during the past year from another residence in the same county, 5 percent from another county in the same state, 2 percent from another state, and less than 0.5 percent from abroad.

Geographic Mobility of Residents of Kotzebue, AK Urban Cluster in 2005-2009



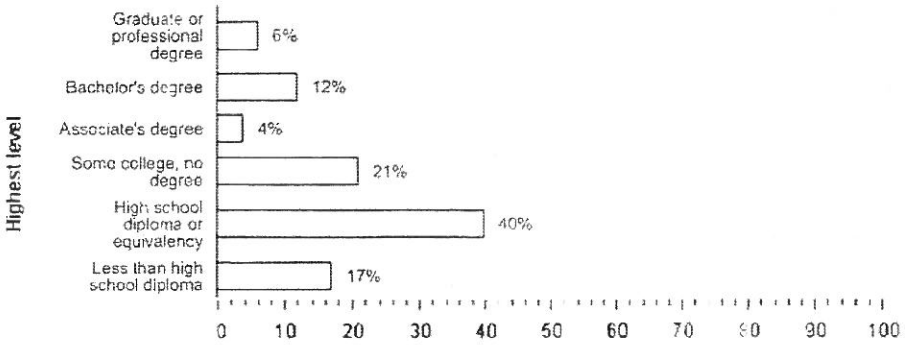


Source: American Community Survey, 2005-2009

EDUCATION: In 2005-2009, 83 percent of people 25 years and over had at least graduated from high school and 18 percent had a bachelor's degree or higher. Seventeen percent were dropouts; they were not enrolled in school and had not graduated from high school.

The total school enrollment in Kotzebue, AK Urban Cluster was 1,000 in 2005-2009. Nursery school and kindergarten enrollment was 120 and elementary or high school enrollment was 700 children. College or graduate school enrollment was 220.

The Educational Attainment of People in Kotzebue, AK Urban Cluster in 2005-2009

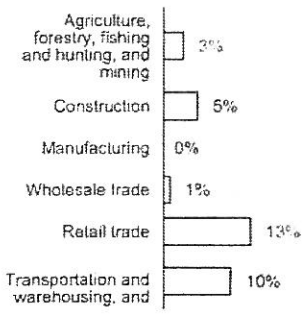


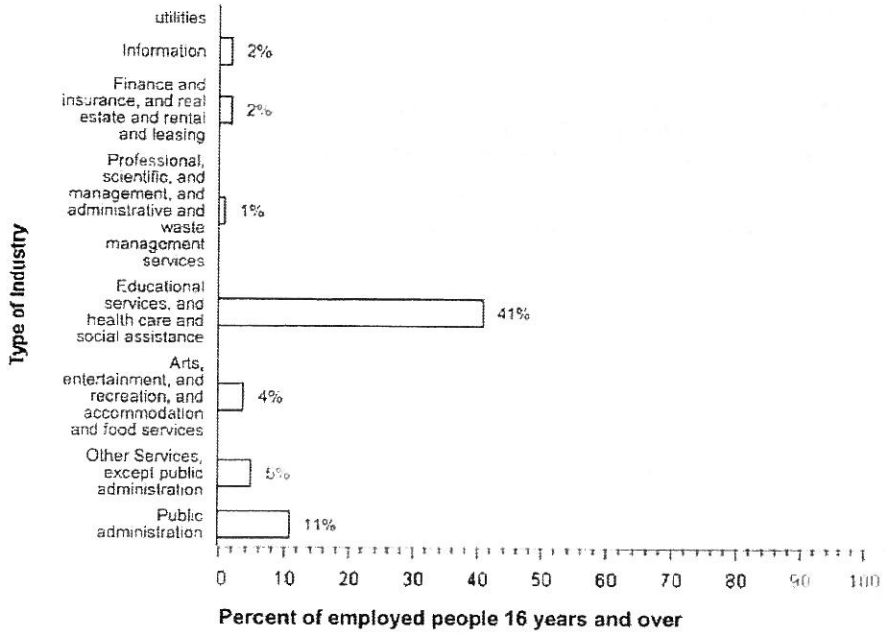
Source: American Community Survey, 2005-2009

DISABILITY: In Kotzebue, AK Urban Cluster, among people at least five years old in 2005-2009, percent reported a disability. The likelihood of having a disability varied by age - from percent of people 5 to 15 years old, to percent of people 16 to 64 years old, and to percent of those 65 and older.

INDUSTRIES: In 2005-2009, for the employed population 16 years and older, the leading industries in Kotzebue, AK Urban Cluster were Educational services, and health care, and social assistance, 41 percent, and Retail trade, 13 percent.

Employment by Industry in Kotzebue, AK Urban Cluster in 2005-2009





Source: American Community Survey, 2005-2009

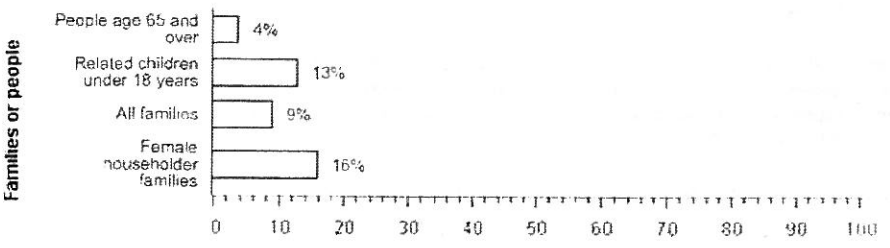
OCCUPATIONS AND TYPE OF EMPLOYER: Among the most common occupations were: Management, professional, and related occupations, 37 percent; Sales and office occupations, 27 percent; Service occupations, 16 percent; Construction, extraction, maintenance, and repair occupations, 12 percent; and Production, transportation, and material moving occupations, 7 percent. Sixty percent of the people employed were Private wage and salary workers; 36 percent was Federal, state, or local government workers; and 3 percent was Self-employed in own not incorporated business workers.

TRAVEL TO WORK: Sixteen percent of Kotzebue, AK Urban Cluster workers drove to work alone in 2005-2009, 14 percent carpooled, less than 0.5 percent took public transportation, and 66 percent used other means. The remaining 3 percent worked at home. Among those who commuted to work, it took them on average 8.1 minutes to get to work.

INCOME: The median income of households in Kotzebue, AK Urban Cluster was $69,306. Ninety-four percent of the households received earnings and 17 percent received retirement income other than Social Security. Eighteen percent of the households received Social Security. The average income from Social Security was $10,319. These income sources are not mutually exclusive; that is, some households received income from more than one source.

POVERTY AND PARTICIPATION IN GOVERNMENT PROGRAMS: In 2005-2009, 16 percent of people were in poverty. Thirteen percent of related children under 18 were below the poverty level, compared with 4 percent of people 65 years old and over. Nine percent of all families and 16 percent of families with a female householder and no husband present had incomes below the poverty level.

Poverty Rates in Kotzebue, AK Urban Cluster in 2005-2009

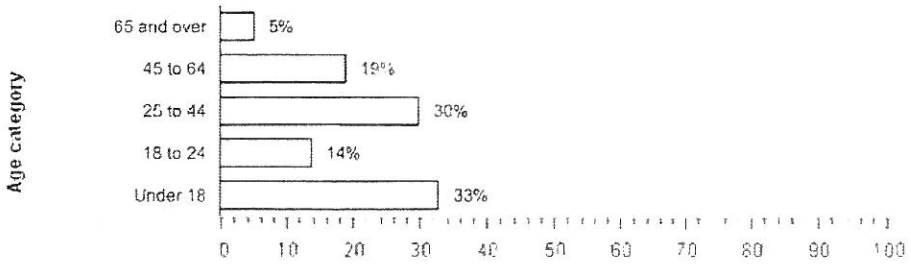


Percent below poverty level

Source: American Community Survey, 2005-2009

POPULATION OF Kotzebue, AK Urban Cluster: In 2005-2009, Kotzebue, AK Urban Cluster had a total population of 3,200 - 1,600 (50 percent) females and 1,600 (50 percent) males. The median age was 27.5 years. Thirty-three percent of the population was under 18 years and 5 percent was 65 years and older.

The Age Distribution of People in Kotzebue, AK Urban Cluster in 2005-2009

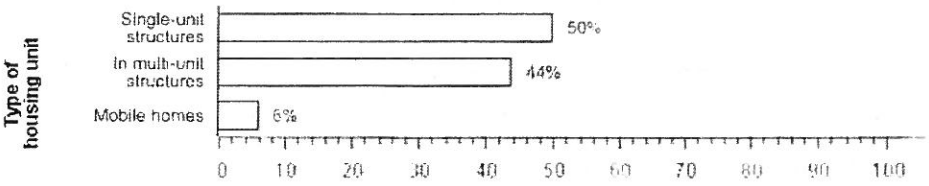


Source: American Community Survey, 2005-2009

For people reporting one race alone, 17 percent was White; less than 0.5 percent was Black or African American; 71 percent was American Indian and Alaska Native; 2 percent was Asian; less than 0.5 percent was Native Hawaiian and Other Pacific Islander, and less than 0.5 percent was Some other race. Nine percent reported Two or more races. One percent of the people in Kotzebue, AK Urban Cluster was Hispanic. Seventeen percent of the people in Kotzebue, AK Urban Cluster was White non-Hispanic. People of Hispanic origin may be of any race.

HOUSING CHARACTERISTICS: In 2005-2009, Kotzebue, AK Urban Cluster had a total of 980 housing units, 13 percent of which were vacant. Of the total housing units, 50 percent was in single-unit structures, 44 percent was in multi-unit structures, and 6 percent was mobile homes. Twenty-four percent of the housing units were built since 1990.

The Types of Housing Units in Kotzebue, AK Urban Cluster in 2005-2009

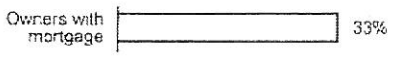


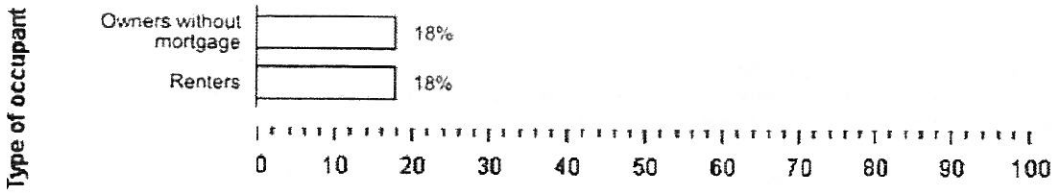
Source: American Community Survey, 2005-2009

OCCUPIED HOUSING UNIT CHARACTERISTICS: In 2005-2009, Kotzebue, AK Urban Cluster had 860 occupied housing units - 360 (42 percent) owner occupied and 500 (58 percent) renter occupied. Three percent of the households did not have telephone service and 57 percent of the households did not have access to a car, truck, or van for private use. Nine percent had two vehicles and another 1 percent had three or more.

HOUSING COSTS: The median monthly housing costs for mortgaged owners was $1,598, nonmortgaged owners $621, and renters $1,166. Thirty-three percent of owners with mortgages, 18 percent of owners without mortgages, and 18 percent of renters in Kotzebue, AK Urban Cluster spent 30 percent or more of household income on housing.

Occupants with a Housing Cost Burden in Kotzebue, AK Urban Cluster in 2005-2009





Percent paying 30 percent or more of income for housing

Source: American Community Survey, 2005-2009

Source: U.S. Census Bureau, 2005-2009 American Community Survey

The U.S. Census Bureau's Population Estimates Program produces the official population estimates for the nation, states, counties and places, and the official estimates of housing units for states and counties. The population and housing characteristics included above are derived from the American Community Survey.

Notes:
- Detail may not add to totals due to rounding.
- Percentages are based on unrounded numbers.

Appendix B

Kotzebue is a second class city located on the Baldwin Peninsula in Kotzebue Sound, near the discharges of the Kobuk, Noatak and Ssezawick Rivers. It is the service and transportation center for villages in the northwest region. Kotzebue is part of the Northwest Arctic Borough.

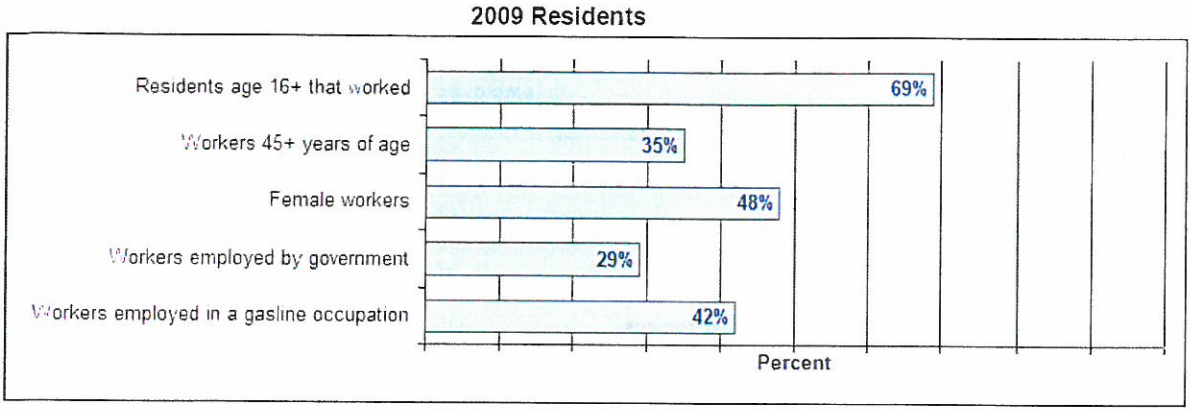
- The estimated population for 2009 was 3,154, a gain of about 72 since the 2000 Census.
- About 69 percent of the resident population 16+ years old worked in 2009.
- Educational and Health Services was the main industry in 2009, employing 27 percent of the area's workers.
- More workers were employed as Office and Administrative Support Workers, All Other than any other occupation.

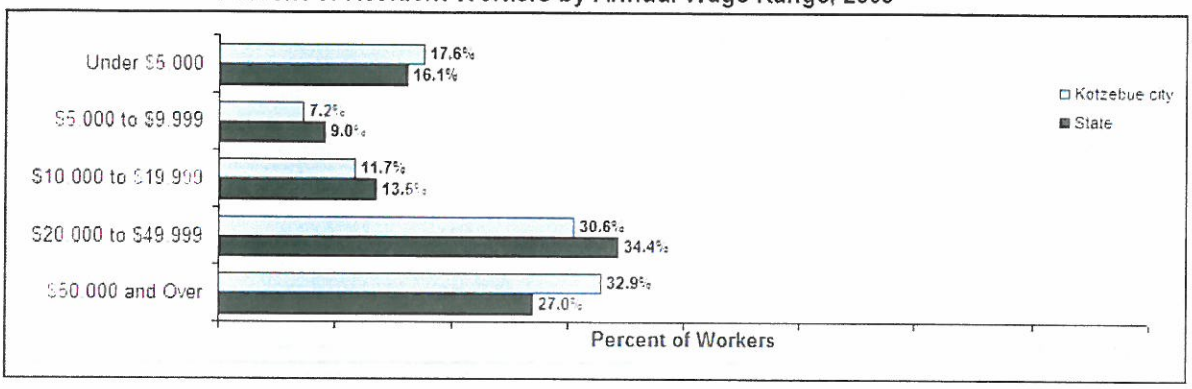
Please note: There is an important distinction between the local/regional employment data and our "standard" employment series. Most of these data reflect totals for area residents only. Total worker counts may be lower than expected in areas with a large number of nonresident workers. The Alaska Permanent Fund dividend file is used to determine the worker's geographic residence. Only Alaska residents (as defined by PFD application) are included in these totals. Also note that federal employees, the military, and the self-employed are not included in these data.

Kotzebue Resident Snapshot (2009)

Working Age Residents		**Wages**	
Residents age 16+	2,119	Total wages	$57,235,509
Resident Worker Characteristics		**Resident Workers by Sector**	
Total	1,467	Private	1,045
Male	760	State government	64
Female	707	Local government	358
Age 45+	514	**Quarterly Number of Resident Workers**	
Age 50+	344	Peak (3rd) quarter workers	1,241
		Percent working all 4 quarters	63.7%
Unemployment		**Construction/AGIA Occupation Experience (2005-2009)**	
UI Claimants	216	Some construction	286
		At least 1 year construction	110
New Hires		At least 2 years construction	54
New hires	566	Worked in an AGIA occupation	1,151

The number of residents age 16+ is derived directly from PFD applicant information. Population estimates are calculated using a model that relies on PFD information as one input, but also the relationship between the PFD applicants at the time of the US census with the census count and other variables. For some places, the number of PFD applicants may exceed the estimated number of residents. An asterisk (*) means data are suppressed. Numbers may not sum due to rounding. AGIA (Alaska Gasline Inducement Act) means the occupation has been identified as a core occupation involved in the gasline project.


2009 Residents
Residents age 16+ that worked
69%
Workers 45+ years of age
35%
Female workers
48%
Workers employed by government
29%
Workers employed in a gasline occupation
42%
Percent

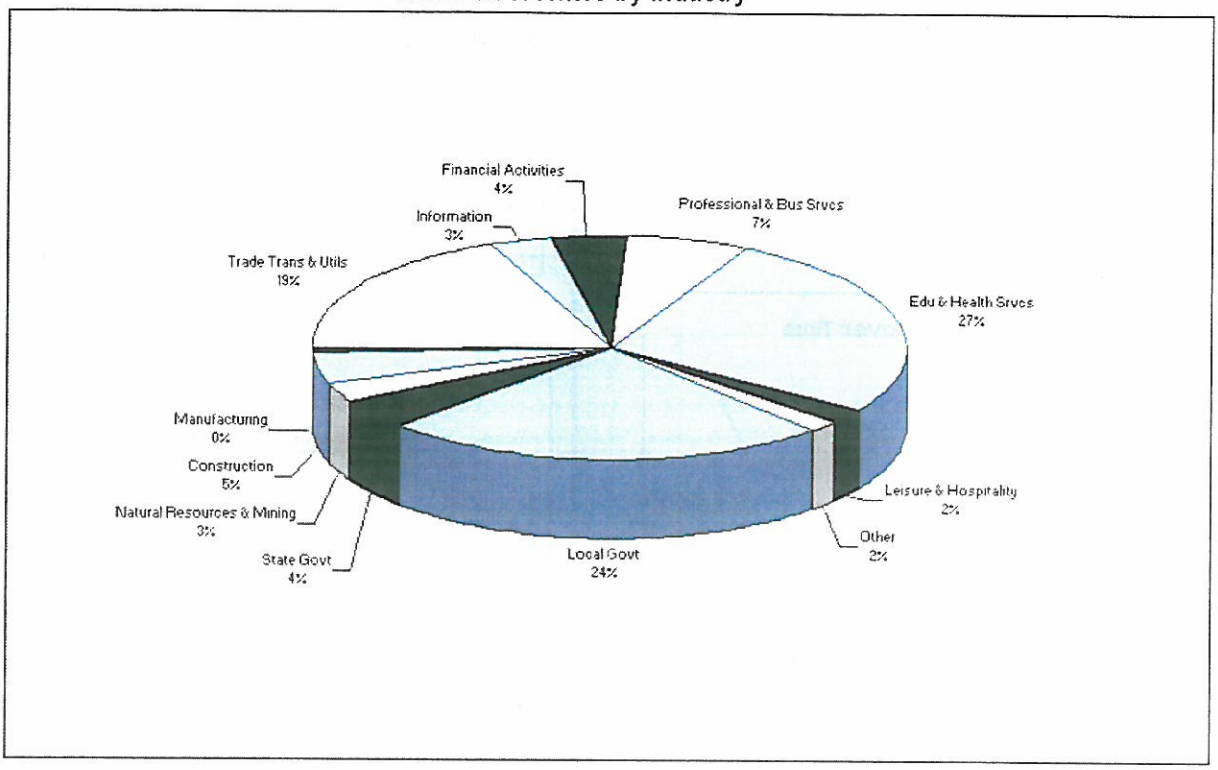

Percent of Resident Workers by Annual Wage Range, 2009
Under $5 000
17.6%
16.1%
$5 000 to $9 999
7.2%
9.0%
$10 000 to $19 999
11.7%
13.5%
$20 000 to $49 999
30.6%
34.4%
$50 000 and Over
32.9%
27.0%
Kotzebue city
State
Percent of Workers

Top Occupations

	Number employed	Percent female	Age 45+	Age 50+
Office and Administrative Support Workers, All Other AGIA	95	75.8%	23	14
Retail Salespersons	56	46.4%	6	3
Teacher Assistants	47	80.9%	22	18
Construction Laborers AGIA TOP JOB	41	9.8%	6	2
Maids and Housekeeping Cleaners AGIA	40	42.5%	16	14
Janitors and Cleaners, Except Maids and Housekeeping Cleaners AGIA	37	18.9%	18	13
Maintenance and Repair Workers, General AGIA TOP JOB	35	8.6%	20	14
Nursing Aides, Orderlies, and Attendants	33	97.0%	7	7
Stock Clerks and Order Fillers AGIA	31	9.7%	2	1
Carpenters AGIA TOP JOB	29	6.9%	15	11
Cargo and Freight Agents	26	26.9%	3	1
Bookkeeping, Accounting, and Auditing Clerks AGIA	25	88.0%	8	4
Cashiers	25	76.0%	1	1
Secondary School Teachers, Except Special and Vocational Education TOP JOB	22	27.3%	13	9
Secretaries, Except Legal, Medical, and Executive	21	100.0%	12	4
Laborers and Freight, Stock, and Material Movers, Hand AGIA	21	4.8%	8	6
File Clerks AGIA	21	61.9%	1	0
General and Operations Managers TOP JOB	21	28.6%	13	12
Operating Engineers and Other Construction Equipment Operators AGIA TOP JOB	20	0.0%	10	3
Chief Executives TOP JOB	20	50.0%	14	12

AGIA (Alaska Gasline Inducement Act) means the occupation has been identified as a core occupation involved in the gasline project. TOP JOB means the occupation is projected to have a high growth rate and numerous openings, and has an above average wage.

Resident Workers by Industry



Workers by Industry

	Number employed	Percent female	Age 45+	Age 50+
Natural Resources and Mining	40	17.5%	3	1
Construction	68	5.9%	23	9
Manufacturing	7	14.3%	0	0
Trade, Transportation and Utilities	275	33.5%	55	33
Information	48	47.9%	15	8
Financial Activities	62	29.0%	24	21
Professional and Business Services	96	50.0%	42	33
Educational and Health Services	392	68.1%	143	97
Leisure and Hospitality	30	56.7%	15	12
State Government	64	62.5%	30	19
Local Government	358	49.2%	159	108
Other	26	50.0%	5	3
Unknown	*	*	*	*

An asterisk (*) means data are suppressed

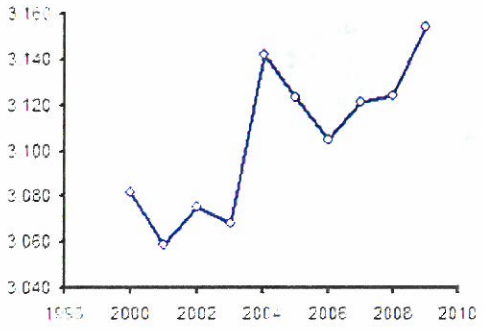
Recent Unemployment Statistics				
	11/2010	12/2010	01/2011	02/2011
UI Claimants**	105	109	135	146

**UI claimants are individuals in this area who had an active claim at any time during the month

Top Employers (ranked by number of workers)

Maniilaq Association Inc
Northwest Arctic Borough School
AK Commercial Co
Kotzebue City of
State of AK (excludes U of A)
Kotzebue IRA Council
Teck Alaska Incorporated
NW Inupiat Housing Authority
NANA Management Services LLC
Bering Air Incorporated

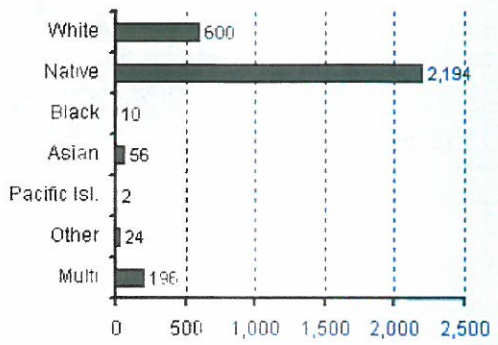
Population over Time



2000 Census

Median Age	25.9
Average Family Size	3.9
Average Household Size	3.4
Per Capita Income	$18,289
Median Family Income	$58,068
Median Household Income	$57,163

Population by Race



(Note: Racial classification is based on self identification. The "Multi" category consists of those who claim to be members of more than one race. The "Native" category includes Alaska Natives and American Indians.)

2009 Taxes

Tax Type	Revenue	Tax Type	Revenue	Tax Type	Revenue
Sales Tax	$2,930,225	Bed Tax	$48,715	Liquor Tax	$36,166
Gaming Tax	$313,763				

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section
Last updated: 05-Apr-11

APPENDIX C

Table 3
Plan Reference List

Plan Name	Date	Comments
Sanitation Utilities Development Plan	July 2011	
Local Hazards Mitigation Plan	2009	
PER/ER for Water and Sewer System	2009	
Transportation Plan	No current Plan but several transportation project plan are under development	Deep Water Port/Cape Blossom Cape Blossom Road Road Paving Swan Lake Small Boat Harbor
Hazardous Materials Plan	Update underway	To be coordinated with recycling plan
NW Borough Costal Management Plan		State of Alaska has ended the State participation in costal planning

FIGURES

Noatak

Close up of Noatak village and part of airport.

Noatak River and airport

Noatak Community Comprehensive Development Plan 2006-2016[17]

The Noatak area has been inhabited since time immemorial by Inupiaq people and families for at least the past 5,000 years. The current community site is located on the west bank of the Noatak River, and is 55 miles north of Kotzebue and 70 miles north of the Arctic Circle. It lies at approximately 67.571110° North Latitude and -162.96528° West Longitude (Sec. 16, T025N, R019W, Kateel River Meridian). This is the only community on the 396 mile-long Noatak River, just west of the 66-million acre Noatak National Preserve.

The current community site was initially established as an Inupiaq fishing and hunting camp in the 19th century. The rich resources of this area enabled the settlement to develop into a permanent community. The community is a combination of three major Inupiaq groups: the *Nautaugmuit*, which means "inland river people," the *Napaaqtugmuit,* which means the "tree people," and *Nunamuit*, which means "the treeless land people." These groups were encouraged to form a single community upon the advice of missionaries (Robbie and Carry Sam) from the Friends Church.

The Inupiaq successfully lived in harmony with this unique arctic environment that is characterized as a transitional climate zone with long, cold winters and cool summers. Noatak temperatures average -21 to 15 degrees Fahrenheit during winter; and 40 to 60 during summer. Temperature extremes have been recorded from -59 to 75. Snowfall averages 48 inches, with 10 to 13 inches of total precipitation per year. The Noatak River is navigable by shallow-draft boats from early June to early October, and by snow machine and dog teams during the winter months (November to May).

The Inupiaq people take great pride in the traditional, respectful and sustainable harvest of resources from the land and river. The indigenous people of Noatak developed relationships, strategies and tools for transportation, fishing, hunting and gathering that made them one of the

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[17] Except where noted, this Noatak section reflects the Noatak Community Comprehensive Plan 2006-2016, put together with the residents of Noatak for the Native Village of Noatak, Noatak Residents, Organizations and Community, by the NWAB Planning Dept, and Maniilaq Association, Kotzebue, AK; Tom Okleasik, Principal; Northwest Planning & Grants Dev, Nome, AK. May and September 2006

conserving societies ever known. For example, Inupiaq used arrows, spears, knives, ulus and other unique hunting and gathering tools, as well as dogs for packing materials/goods and pulling sleds. Noatak area Inupiaq culture, arts and humanities were expressed through games, legends, sled and boat building, and language. The Inupiaq successfully cultivated a community with an economy based on moose, caribou, salmon, ptarmigan, rabbit and waterfowl, and all that the land and water have and continue to provide.

The coastal and inland Inupiaq of Northwest Alaska had established tribal governance and trade systems hundreds of years prior to "European discovery of Alaska" by Russian explorers in 1732. For historical reference, by 1778 the English explorer Captain Cook had sailed the coast and charted some of the coastal areas in Northwest Alaska, although he did not travel into the Noatak area. In the 1800s, exploration of the region by outsiders began in earnest; however, Noatak was often an unknown area to western explorers although long inhabited by Inupiaq.

In 1818, the Kotzebue Sound was "discovered by Europeans" by a German Admiral, Otto Von Kotzebue, while sailing for the Russian Navy. In 1867, Alaska was purchased by the US from Russia without knowledge or authorization from the Noatak tribal communities. In 1885, Dr. Sheldon Jackson became the first federal superintendent of public instruction for Alaska, with the task of organizing a free school system in collaboration with church groups for Native American, Eskimo, and white children with the purpose of teaching western lifestyles and mainstream American skills. In 1892, Dr. Jackson with government aid brought the first reindeer into Alaska from Siberia. Noatak had up to 50,000 reindeer at one time and it was owned collectively by the community with government oversight and families were assigned herding duties. Noatak was also a host to a regular inter-community reindeer fair between Kivalina, Noatak and Kotzebue. In the 1950's the Noatak reindeer migrated with the caribou.

As early as 1886, the Friends Church worked with the Noatak area tribes to establish a single permanent community with a church – note the present day site of Noatak was not used permanently during that time. The *Nautaugmuit*, *Napaaqtugmuit,* and *Nunamuit* lived all along the Noatak River in various settlements in sod homes. The Friends Church encouraged families in the Noatak River area to establish a common community at the current site for a single school and church in the 1890's. The Elders selected the site of Noatak as a common place due to its good location for transportation to various camp sites, wood access for heating, year round game access for hunting and trapping (summer, spring, fall and winter), and fishing productivity. By 1908 in cooperation with the Friends Church and federal government, the Noatak people built homes and community buildings from local logs.

In 1906, the US Congress passed the Native Allotment Act which provided for conveyance of 160 acres (maximum) of public land to Alaska Native adults; however, few tracts were issued because the Bureau of Land Management refused to recognize subsistence use of land as proof of "use and occupancy."

The Friends Church built a school combined with a health clinic during the 1920's. Citizenship to Alaska Natives was granted with the passage of the 1924 Citizenship Act. The first airplanes, with open two-seat cabins and double wings, arrived in Noatak during the late 1920's to the early 1930's. During the 1930-40's, tribal members in Noatak experienced language shift to English from Inupiaq with schools and western institutions utilizing duress with families and children to use English as their first language. For example, Noatak Elders remember having to sit in corners all day as punishment by teachers for speaking Inupiaq at the school.

On December 28, 1939, the Inupiaq people in Noatak voted to duly ratify by vote (87 for and 0 against), to reorganize its traditional form of tribal government to an Indian Reorganization Act (IRA) Council (Constitution and Bylaws of the Native Village of Noatak, Alaska). The original council members were primarily the Elders and were very strict in community rules. For example, a curfew use to be 9 pm, and tribal members were often assigned roles to help Elders including fishing and cutting wood.

A post office was established in Noatak during 1940. The first store was managed by George Onalik with assistance from the BIA in Juneau. The Alaska Territorial Guard was active in Noatak and some present day Elders joined in 1949. On January 3, 1959, Alaska was proclaimed a state of the union by President Dwight D. Eisenhower.

During the 1950-60's, many Noatak students were enrolled in Bureau of Indian Affairs (BIA) boarding schools. The BIA worked with families to complete applications then assigned Noatak youth to BIA high schools in Alaska or in the Lower 48 including Oregon, Mount Edgecumbe in Sitka, Wrangell Institute, and Oklahoma. Electricity was started in Noatak in 1968 in cooperation with the Alaska Village Electric Cooperative. The community airport was built in the 1960's by the Mother's Club in order for regular air service by Wiens and the first heavy equipment owned by the State of Alaska was also shipped in the 1960's.

In 1971, the tribal members of Noatak settled land and resource rights, through the Alaska Native Claims Settlement Act, and formed a state chartered corporation based upon inter-village agreement: the regional Alaska Native Corporation – NANA. Also, during the 1970's, federal and state government poverty and community assistance programs provided new income and benefits to some Noatak families, particularly with the passage of public law (PL) 93-638 in 1974. In 1972, some new federally subsidized homes were built and some Noatak families moved out of log houses.

A state funded local school (K-12) was also built in Noatak during the late 1970's and no longer required students to leave their home community for a high school public education by the end of 1982. Water and sewer was under initial development beginning in 1974. Television was first broadcast in Noatak during 1979 through the Alaska Rural Communication System (ARCS). Cable television started in Noatak during the late 1990's; however, some homes have satellite dishes for television.

Today, Noatak is rooted in Inupiaq values and relies on the historical and cultural relationship to the land and river for subsistence. In addition to the archaeological, river life and wildlife resources of the community, there are many other natural resources including metallic and nonmetallic mineral deposits. As western institutions have began and matured in Noatak, there have developed shared governmental and community development duties among the tribal government, NANA Corporation, Northwest Arctic Borough and School District, and groups such as the Maniilaq Association and churches. The population of the village is majority Inupiaq.

Note: the 1880 census listed the site as *Noatagamut* (which translates into English as "inland river people") which was not the site of present day Noatak. Rather, this Inupiaq settlement was one of the three major settlements that eventually moved to the current site of Noatak by 1908 (explains the zero population count for 1890 and 1900).

Currently there are 428 people living in Noatak. With the increasing population, housing has become a major problem for residents. Many Noatak residents have resided in the same houses for many years without renovations or work to keep up the structures. The Northwest Arctic Borough School District and many other organizations are constantly looking for new housing for teachers, contractors, and other temporary employees to accommodate the need for housing.

The Northwest Inupiaq Housing Authority (NWIHA) other Housing organizations have been the major organizations working to improve the housing in each village in the region. Noatak has a total of 100 households in the community and 30% percent of that total is estimated to hold approximately eight people per home (indicator of overcrowding). A major problem for the community has been overcrowding of existing households, and with the population increase, more houses need to be built.

Community Comprehensive Plan Vision,& Goals

Noatak Community Vision

Noatak is a unique community
that promotes excellence
in our Inupiaq culture and way of life.

Noatak Development Goals, Objectives and Priorities

Goal 1: To foster education and career choices that integrate modern and cultural strengths for maintaining and increasing Noatak's self-sustaining economic opportunities

Goal 2: To maintain and develop public infrastructure and services for accommodating community growth with maximum efficiencies, cost-effectiveness and environmental protection

Goal 3: To strengthen our knowledge, culture, identity, language and health for securing our Inupiaq heritage, lands and subsistence lifestyle in perpetuity

Goal 4: To enhance local governance in housing development, community safety and public policy for improving, protecting and supporting family and community living standards and stability

Top 10 Overall Community Development Projects for 2006-11

1. Road to portside for barge service access for freight and fuel – cut down costs
2. Improve and acquire new heavy equipment to support the construction of transportation projects and ongoing road maintenance/safety

3. Construct a new school to accommodate student growth with safety
4. Local Elder care services so they do not have to leave home
5. Construct a multi-purpose facility by converting the old school building
6. New home construction and ownership
7. Build a new centrally located bulk fuel tank farm for improving safety, avoiding drainage into the river and providing savings in operational costs
8. Build a new airport runway – relocate the airport due to erosion and add capacity for larger freight planes
9. IRA develop a local police and public safety positions with VPSO and VPO cooperation and funding
10. More Native teachers in the Noatak school to provide quality education

Noatak's TOP THREE Village Priorities 2010-11 – Capital Improvements[18]

Priority 1 = most important	**Noatak Capital Proj**	**Notes. Why a priority.**	**Local/Other Contact**	Resolution **No.?**	**Cost**
1	Engineering plans (Design & environmental review phase) for road from Noatak to Red Dog portsite.	Need engineering plans to include design and environmental review phase for the proposed road between Noatak & Red Dog portsite. This road is necessary to cut cost of freight by air and alleviate the inaccessibility of barge service to Noatak.	Carol Wesley, MaryLou Sours, Admin. IRA 485-2173. Michael Sherman, President	Resolution #11-02	$150,000.00
2	New Airport Construction	Existing airport in erosion prone area and need to be relocated.	DOT, MaryLou Sours, Admin.;Michael Sherman, President – IRA 485-2173	Resolution #11-02	Not determined
3	Heavy equip. repair or replacement 966 Loader/Grader	Need equipment to support the construction of transportation projects, ongoing road maintenance/safety, landfill maintenance and snow removal	Same as above	Resolution #11-02	$625,000.00 a)$350,000.00 Loader w/delivery b)$250,000.00 - Grader w/delivery c) 25,000.00 – Repair of existing
4	More residential housing	Due to immense housing shortage and an increasing population, with multi-families living in a single home, there is a high demand for new residential housing to be built.	Same as above	Resolution #11-02	Amount not yet determined.
5	Freight consolidation services and/or Agreements with Red Dog Mine.	Due to the high cost of living, i.e: electricity, gas, heating fuel and groceries, it is pertinent that an agreement for bulk rates and lowered costs to Noatak be utilized with the Red Dog mine site. Teck currently has access to barge services and Noatak no longer has the luxury of barge service due to low water in the Noatak River.	Same as above	Same as above.	Amount not determined.
6	Local Elder care services.	We value our Elders, as they are the root of our existence, and find it important to provide services for care of our elders (i.e., grocery shopping, assistance with cleaning, hygiene, access to medical care and providing transportation) so that our Elders will have the option to remain in the village and not leave home for care services.	Same as above	Same as above.	Amount not determined.
7	Local ground transportation for Elders & Children.	We have a need for transportation for Elders & children. Noatak recently had a new school built, which is up to a mile or more away from some homes. Elders have no means of transportation for everyday living.	Same as above.	Same as above.	Amount not determined.

[18] Compiled with the residents and submitted to the state for the residents of Noatak by the Public Services Department of the Northwest Arctic Borough, in July 2010.

Top 10 Capital Project Priorities 2006-11

1. Road to portside for barge service access for freight and fuel – cut down costs
2. Build a new airport runway – relocate the airport due to erosion and add capacity for larger freight planes
3. Erosion control of the river banks – including options for consideration such as a protective river bank using pilings with back fill
4. Construct a multi-purpose facility by converting the old school building for providing community meeting space, social programs and sports activities for youth to adults as well as expanded IRA office spaces to improve services – e.g. Boys and Girls Club, recreation center, game room, movies, making hunting tools, equipment repairs, etc.
5. New home construction and ownership
6. Work to make sure each home in Noatak has water and sewer service including new homes
7. Construct a new school to accommodate student growth with safety
8. Improve and acquire new heavy equipment to support the construction of transportation projects and ongoing road maintenance/safety
9. Heritage and museum center – provide a place for Elders to meet, local arts and crafts making and sales, safe keeping of artifacts, teaching sewing, etc.
10. Build a new centrally located bulk fuel tank farm for improving safety, avoiding drainage into the river and providing savings in operational costs

Top 10 Community Projects/Activities Priorities 2006-11

1. IRA develop a local police and public safety positions with VPSO and VPO cooperation and funding
2. More Native teachers in the Noatak school to provide quality education
3. New store development for groceries, hardware, craft supplies and engine parts – help lower costs of goods with competition
4. Immersion school – all Inupiaq school that connects Elders with children
5. Train local people in plumbing and electrical contracting and licensing to qualify for bids on projects
6. Culture camp that effectively connects and links Elders and youth through traditional subsistence life skills
7. Develop freight consolidation services and/or agreements with Red Dog Mine for bulk rates and lower costs to Noatak
8. Noatak tours development that focus on the Noatak National Park with lodging
9. Local Elder care services so they do not have to leave home
10. Provide a local ground transportation system for the public (shuttle van, ATV, snow machine) to the airport, school, clinic and other community buildings as well as Elders

Community Profile

Overview of the Noatak Economy

Based upon the success of the community's ancestors had for centuries, the people Noatak of today continue to depend solidly on subsistence hunting and fishing. While the development of a westernized economy has opened many opportunities, subsistence remains to have a strong cultural and social significance. The household economy for most families is a mixture of hunting, fishing, and part time or seasonal jobs.

Noatak's economy can be characterized as a mix of cash and subsistence (natural resource) activities. The tribe, school district, Maniilaq and retail stores are the primary employers. Seven residents hold commercial fishing permits. An estimated twenty five residents work at Red Dog Mine. During the summer, many families travel to seasonal fish camps at *Sheshalik*, and others find seasonal work in Kotzebue or fire-fighting (although rarely in recent years).

The sale or importation of alcohol is banned in the village.

Today, less than 25% of the adults in the community are employed. About 25% percent of the people are considered "full time" in the workforce, 20% percent are "temporary/seasonal", and 5% percent are "part time". The main employment in the community is from the IRA.

Noatak Based Business Licenses

There are 13 state issued **business licenses** currently in Noatak.

Business Name	SIC Codes (Primary - Secondary)
Bernie's Bed & Breakfast	721110
E & R Store	453998 452990
Elmer Howarth, Sr.	488190
Elsie's Day Care Center	624410
Isa's Snack Store	452990
Kelly River Outfitters	812990 812990
Mills Transfer Shop	452990 451110 5900
Nuv And Beebee's	454390
Paula's Rentals	531110
Paulas Gifts	452990 451110 5900
Saiah Store	532230
Tanya's Snack Shop *	722211 721310
Winter's Snack Shack *	445110 453998

* Noatak businesses that may be closed or in the process of closing.

Community Infrastructure Summary

The village of Noatak is located on the Noatak River. The village is not connected to any other village or town by a road or highway system, therefore making marine and air travel the main sources of transportation for both business and pleasure.

Residents utilize the river as a main source of transportation. With subsistence such a high cultural and economic priority for the village, the people use the river to go to and from fishing camps and subsistence sites. The river is also used for pleasure travel as well as traveling to other villages and towns. In the winter months, the residents use the river as a means of travel by snow machines.

Incoming and outgoing cargo and freight is transported by air which is very expensive. Noatak is accessible year-round by plane through a State-owned, lighted gravel runway which is 4,000' long by 60' wide. Regional air services provide cargo, mail and passenger services. There are currently no barge services to Noatak.

All mail and fresh produce are delivered via commercial flights on a daily basis through small freight planes. Also gasoline and heating fuel are flown into the village – either direct from Fairbanks or Kotzebue. Heating fuel is $8.00 per gallon as of May 2006, and gas is $5.10 per gallon.

There are very few roads that cover this area. The community roads are gravel and unpaved, and are used for day-to-day activity. Small boats, ATVs and snow machines are used extensively for local transportation. Many current and historic trails are along the Noatak River and are important today for inter-village/inter-region travel and subsistence uses.

Water is derived from wells and is treated for drinking. The water and sewer system is supplied by Noatak Utilities, a subsidiary of Native Village of Noatak (tribe). A water tank is located north of the airport on Main Street and can supply the community with water through the winter months. According to the Noatak Master Plan, the system is recommended to last throughout the year; however, as the population grows and housing develops throughout the community, a new system must be constructed to meet future demands.

A piped, re-circulating water and sewer distribution system serves at least 84 homes, the school and businesses in Noatak. The system was constructed in 1971 and 1972, and upgraded in 2002. Most homes are connected to water and sewer, and only a few residents haul water and honey buckets which are basically a container that must be emptied by the household persons and brought to a specific area for disposal.

There is no washeteria. The village has requested funding for a Master Plan to expand the piped system, add plumbing facilities where necessary, and to construct a washeteria.

Water Distribution, Source & Treatment Systems:	
Water System Operator:	**Tribe**
Washeteria Operator:	Not available
Piped Water System:	Yes
Central Watering Point (Haul):	Yes
Multiple Watering Points:	No
Water Truck (Delivery):	No
Individual Wells:	No
Community Well Source:	Yes
Surface Water Source:	No
DEC Water Permit Number:	340159
Water Is Filtered:	Yes
Water Is Chlorinated:	Yes
Water and Sewer Rate – Residential Rate **Commercial Rate** **Clinic Rate** **School Rate**	$108 per month $108 per month $250 per month $3,000 per month

Sewage Collection Systems:	
Sewer System Operator:	**Tribe**
Piped Sewer System:	Yes
Honey bucket Haul:	Yes
Honey bucket Pits:	Yes
Individual Septic Tanks:	No
Community Septic Tank:	No
Sewage Pumper:	No
Sewage Lagoon:	Yes
Sewage Lift Station:	Yes
Outhouses:	No
Sewer Rate – Residential Rate **Commercial Rate** **Clinic Rate** **School Rate**	Combined with monthly water service rates

When the sewer lift station pump systems break down or burn out, there is no back up system to continue operation (it happened in Noatak during 2004 and lasted for months). This is a system problem that needs to be addressed in the future.

The landfill has recently been relocated west of the airport, and is located about 1/2 mile outside of town. It has been the central solid waste disposal site for the past 10 years. Currently, it is seen as an unsanitary site for a landfill. The residents of the community bring their own waste items to the site and dispose of them where ever possible. The amount of waste has covered the

site and over filled the existing fence that surround the area. This becomes a safety and health hazard for the people of the community and also the animals that roam the area. There is a burn box at the dump; however, environmental staff need to be trained in the safe and regular operation of the burns.

Refuse/Landfill System:	
Refuse Collector:	**Individuals**
Landfill Operator:	Tribe
DEC Landfill Permit:	No
Type of Landfill:	Class 3
Refuse/Garbage Rate – Residential Rate **Commercial Rate**	No charge Community service

The electrical power utility and plant facilities are currently owned and operated by the Alaska Village Electric Cooperative (AVEC), based in Anchorage with an operator in Noatak. Maniilaq Association is currently conducting initial wind studies for future alternative energy development.

Electric Utility:	
Electric Utility Name:	**AVEC**
Utility Operator:	REA Co-op
Power Source:	Diesel
Kilo Watt Capacity:	982
Power Cost Equalization (PCE) Subsidy:	Yes
Residential Rates 1-500 Kilo Watts 501-700 Kilo Watts Over 700 Kilo Watts Fuel surcharge	 0.2597 0.5235 0.4235
Small Commercial Rates 1-700 Kilo Watts Over 700 Kilo Watts Fuel surcharge	 0.5235 0.4235

OTZ Telephone Cooperative is the major administrator for local, long-distance, and Internet phone service for the region. 79 residents are connected with the services offered through OTZ. The community uses a CB/VHF radio systems for public and emergency communication, e.g. the community uses radios to communicate with houses within the community, campsites surrounding the village, and sometimes with other villages close enough to catch the radio signal (as far as Deering). Recent charges for the phone service range from $25.00 (basic service) to $95.00 a month depending on the services requested; however, basic residential service may be subsidized to $1 per month. KOTZ Radio Station is another main source of public communication.

Internet service is very new to the community. The school was one of the first facilities to be connected and more and more offices and homes are now working on getting the service. Currently the service is expensive and slow in comparison to many other towns in Alaska. The rates range from $25.00 (64k) or $45.00 (256k) per month.

Communications:	
In-State Phone:	OTZ Telephone Co-op, Inc.
Long-Distance Phone:	AT&T Alascom; GCI; OTZ Telephone
Internet Service Provider:	GCI (www.gci.net) with OTZ and Maniilaq
TV Stations:	ARCS
Radio Stations:	KOTZ-AM
Cable Provider:	Noatak IRA Council Monthly Rate: $50 per month (basic service)
Teleconferencing:	Alaska Teleconferencing Network; Kotzebue Legislative Information Office

Tank Owners (Number of tanks / Total capacity):

1. AVEC (99,800 gallons)
2. Northwest Arctic Schools (89,500 gallons)
3. IRA Native Store (65,300 gallons)
4. Tribe (26,500 gallons)
5. Army National Guard (7,400 gallons – no longer utilized although the tanks and capacity are still in the community)
6. Alaska DOT (3,100 gallons)

Note: gasoline and heating fuel are flown into the village as marine barge service is not available – flown either direct from Fairbanks or Kotzebue. Heating fuel is $8.00 per gallon as of May 2006, and gas is $5.10 per gallon.

Noatak has a health clinic that serves the whole community. The clinic is operated and maintained by Maniilaq Association. The clinic provides limited health care for the community. It has 3 exam rooms, bathroom, pharmacy, trauma room, morgue, mechanical room, 2 storage rooms, eye exam room, dental exam room, information systems (IS) technician room, file room, office room, kitchen, janitor/laundry room, reception office, seating area, and qanitchaq (arctic entry area).

Routine medical examinations and minor health issues are taken care of on a daily basis by health aides which are village level staff that are certified in ETT, EMT, CPR, First Aid, and Community Health. The common communication is by telephone to the doctors in Kotzebue also by telemedicine. Emergency services beyond basic health services require medi-vac by charter planes; however, can be seriously delayed due to weather. There are nine health employees: six certified CHP, two CHP Trainees, and one administrator.

Services such as dental, optical, and other specialized health services are only offered through the main Maniilaq health care facility located in Kotzebue. Some social services are accessible through the clinics, but major social and behavioral problems are usually referred to Kotzebue.

Health Care:	
Clinic/Hospital in Community:	**Noatak Health Clinic (485-2162)**
Clinic/Hospital Phone Number:	485-2162
Operator:	Maniilaq Association (907-402-3311)
Owner:	Maniilaq Association
Facility Status:	New clinic was completed in 2003
Alternate Health Care:	N/A
Health Comments:	Noatak is classified as an isolated village, it is found in EMS Region 4A in the Maniilaq Association Region. Emergency Services have river and air access. Emergency service is provided by volunteers and health aides

The residents of Noatak are in dire need of social programs. Recent and on-going drug and alcohol abuse has become an increased problem for the problem for village. Substance abuse programs are limited in the community and often people are sent to Kotzebue and Anchorage to receive assistance for addiction and substance abuse problems.

The Indian Child Welfare Program was established in 1993 for the community. It is administered through the IRA and currently assists varies families. The program offers tribal adoptions, and game nights for the community.

The village does not have a state funded Village Public Safety Officers (VPSO) program to work within the community to take care of minor and routine police matters. Currently, Noatak does not have any local police staff or services. The local search and rescue unit usually handles community emergency issues. They provide emergency services to the community through fundraising efforts (bingo and pull tabs are the primary sources).

Social programs would have a huge impact on the welfare of the community as a whole. Safety officers, search and rescue, substance abuse programs, family and child social services are greatly needed to improve the lives of the people of Noatak.

Local Services & Facilities:	
Police:	Troopers C Detachment in Kotzebue
Fire/Rescue:	Volunteer Fire Department; Fire equipment is stored in the water and sewer building [19]
Court/Magistrate:	
Youth Center:	
Community Hall:	Bingo Hall; IRA Building
Elder/Senior Services:	PCA through Maniilaq Association
Gym:	School Gym

[19] New fire hoses will be needed with the new housing expansion and greater distances from connections.

Bingo:	IRA Council Bingo Hall
Museum:	
Library:	School Library (small)

The community of Noatak has an elementary (pre-K-5th grade); middle school (6th-8th grade); and a high school (9th-12th grade), with total of 156 students. The elementary and high school complexes were built in 1981 with a wood shop and gym. The school has also added new portable class room buildings during the late 2002-2006. Also available is the computer room with 25 computers for use by all students. The old elementary school was converted to a teacher living quarters in 2002.

There are 156 students in Noatak: 96 students in the elementary level and 60 enrolled to the middle/high school level. There are six elementary school teachers and four classified staff, and four middle/high school teachers. There is one principal that administers K-12. General courses offered are math, science and English. Many educators teach more than two subjects to compensate for the curriculum classes that are needed, and the understaffed school.

The high school students have the option of furthering their education else where through state boarding schools or taking distance education classes offered through the Chukchi College. Kotzebue also offers alternative learning education through the Alaska Technical Center.

Schools Located in Noatak:

School Name	Grades Taught	Number of Students	Number of Teachers
Napaaqtugmiut School	K thru 12	156	11

Note: a new school facility is planned for development within the next two years.

ANCSA Land Status

Noatak is located in the Kotzebue Recording District. The community area encompasses 11.6 square miles of land and 0.7 square miles of water.

Note: community lands in Noatak are generally leased by NANA and/or the Native Village of Noatak. For example, individual home lots are generally conveyed lands from NANA to the Native Village of Noatak, that then negotiates long-term lot leases with individual home owners. Also, land for community buildings and facilities are often directly leased from NANA.

Community Organizations

Tribe – the federally recognized tribe is the Native Village of Noatak (IRA), PO Box 89 / Noatak, AK 99761. Phone: 907-485-2173, Fax: 907-485-2137.

The Noatak Native Store is operated by the tribe and part of the ANICA cooperative

The tribe authorizes Maniilaq Association to compact with the (a) Bureau of Indian Affairs to operate tribal programs, and (b) with the Indian Health Service for tribal health services.

The tribal council was re-organized in 1939 under the federal Indian Reorganization Act. The tribe is made up of the Inupiaq people of Noatak, Alaska. Today, the tribal council consists of seven (7) members, and their duties include serving the community. As the fight for tribal sovereignty and status continues throughout the State of Alaska, the IRA council works to sustain operating their daily functions and managing their federal and state assistance programs. The tribe hosts an annual community picnic.

Alaska Native Village Corporation – NANA Corporation, P.O. Box 49, Kotzebue, Alaska 99752. Phone (907) 442-3301.

Churches – Noatak Friends Church
Episcopal Church (no church facility; however services held in individual homes)

Public Safety –
Alaska State Troopers in Kotzebue.

The Noatak Search and Rescue is active in helping the community as well as the outlying villages when searching is in progress. The club also maintains the trail staking in and out of the village in the winter months. A Sno-machine shop is available for residents and a fee of $25.00 is charged daily when necessary to fix their personal equipment. They also provide donations for medical/family emergencies, etc.

School/Education/Library –
Northwest Arctic Borough School District
Distance delivery post-secondary education by University of Alaska Fairbanks

Housing Authority – The Native Village of Noatak authorizes a compact with HUD under NASDHA through the Northwest Arctic Inupiaq Housing Authority, PO Box 331, Kotzebue, AK 99752, Phone 907-442-3450 / Fax 907-442-3486.

Regional Native Non-Profit – Maniilaq Association, PO Box 256, Kotzebue, AK 99752, Phone (907) 442-3311.

Health – Maniilaq Association, PO Box 256, Kotzebue, AK 99752, Phone (907) 442-3311

Economic Development – Northwest Arctic Borough Planning Department (ARDOR funded for the Northwest Arctic Region including Noatak) PO Box 1110, Kotzebue, AK 99752, Phone 907-442-2500 / Fax 907- 442-2930

Civic Organizations –

The Noatak Lions Club is very active which provides local services such as donations for medical emergencies, food, eyeglasses, scholarships for students, spring clean-ups, and focuses on student interests, etc.

Noatak Elders Council

Alvin Ashby Sr. started volunteer youth activities (as of May 2006)

NYBL (Noatak Youth Basketball League) – youth basketball activities

Maniilaq Youth Softball

2001 Borough Priority List for Noatak

1. **Well Problem (runs dry every spring)**

   * 2002 ANTHC completed with the Native Village of Noatak

2. **River Bank Erosion**

   * Native Village of Noatak received EPA I-GAP funding to study and document
   * Erosion points identified – south side of the cemetery trail
   * US Army Corp of engineers completed a study and constructed erosion control gabions along a portion of the river bank

3. **Repair the Bridge on the Snow Machine Trail**

   * 2003 bridge temporarily repaired by community volunteers with school youth
   * Bridge needs to be addressed with the planning for the new airport with DOT that will accommodate gravel hauling by dump trucks

4. **Road to New Port Site – 16 miles down river**

   * Study completed during 2006 by DOT

Environmental Scan

Trends in Community Development

Positive

- ▲ Increase in local health services – new facility with expanded staff
- ▲ School age students have increased opportunities for travel and supplemental education – e.g. camps, distance education and internships
- ▲ Increase availability of distance education for adults
- ▲ Increasing number of Noatak businesses licenses for self-employment

- ▲ Increase in the local population
- ▲ Increase in the number and dollar amount of scholarships awarded locally

Negative

- ▼ Fuel prices going up
- ▼ Cost of local goods and services increasing
- ▼ Increasing prices for airfare and transportation
- ▼ More overcrowding in homes and aging of the current housing stock
- ▼ Discontinuation of barge services to Noatak due to lower water in the river
- ▼ Local people are working more for the same level of pay
- ▼ More time conflicts with employment and meetings in order to actively gather traditional foods in the subsistence seasons

Strengths

Community strengths

- ✓ Work together as a community
- ✓ Potlucks – socialization that brings people together
- ✓ Local skilled people maintain our heavy equipment
- ✓ Active church
- ✓ Subsistence lifestyle that respects animals and land
- ✓ Active Lions Club – community games, fishing derby and annual picnic
- ✓ People support each other in crisis – e.g. when deaths families pull together, search and rescue volunteers
- ✓ Local people are nice to each other and guests

Cultural strengths

- ✓ High level of sharing – foods, knowledge, helping in times of distress (such as equipment, supplies and time)
- ✓ Hunting and working together
- ✓ Elders teaching and providing disciple when needed in the school
- ✓ Compassion to help – such as taking people in and helping during search and rescue
- ✓ Subsistence orientated community
- ✓ Willingness to help each other – e.g. building new homes or camps
- ✓ Teaching traditional skills to youth – e.g. fish cutting
- ✓ High regard for life and liberty

Environmental strengths

- ✓ Community spring clean-up annually
- ✓ Residents take our trash back from camps and after being out in the country – respect the environment and do not tolerate litter

- ✓ Subsistence values and lifestyles that maintain a strong tie to the land and river
- ✓ Community supports addressing environment issues – e.g. Red Dog Mine water issues
- ✓ Local people respect wildlife and utilize all the meat possible from hunting
- ✓ Awareness of the local environment and voice concerns when it is threatened negatively
- ✓ IRA dust control monitoring to help maintain clean air
- ✓ Personal role of individuals as stewards and caretakers of the land, water and hills
- ✓ Fish in the rivers
- ✓ Migratory birds
- ✓ Wildlife – e.g. caribou, musk ox, dall sheep, bears, wolverine, beavers, etc.
- ✓ Plant life – e.g. berries, greens, trees, etc.
- ✓ Local wood source with forest
- ✓ Clean water
- ✓ River system for transportation

Environmental knowledge of hunting and wildlife – e.g. spots for catchingUnique things about Noatak to build upon for local development

- ✓ Location – close access to Red Dog Mine to export products and/or tie port access (if a road to the sea)
- ✓ Local mineral deposits that could be developed into a small to large scale operation for local jobs – explore not exploit
- ✓ Noatak National Park – ability to develop tourism such as raft trips, wildlife viewing, local craft sales to tourists, lodging for accommodations, etc.
- ✓ Noatak petroleum reserve development
- ✓ Artistic skills of local people for arts and crafts sales
- ✓ Local business development for unmet community needs – e.g. restaurant, food services, etc.
- ✓ Number of skilled, trained and qualified local people in construction trades

Community Assets

- ✶ Large potential workforce with skills
- ✶ Community trust and knowing each other with opportunity to try again and correct relationships
- ✶ Cultural awareness – identity, subsistence, knowledge of the land, preparing foods, etc.
- ✶ Local school facilities
- ✶ Water and sewer system
- ✶ New health clinic and local staff
- ✶ IRA organizational capacity with facilities, council and staff – e.g. current offices, own the old clinic, and revenue for the tribe separate from government funding (e.g. own and lease the US Post Office building, and lease several homes)
- ✶ Bulk fuel storage facilities with flexible business operations – e.g. ability to extend credit to local people with proper accounting
- ✶ Underground pipeline to transport fuel from the airport to fuel storage tanks
- ✶ Local church – building, morale building, counseling with pastor and church members

- Environment and location of Noatak – clean water, wood for heat and building, fish and game access
- Existing community homes

Internal Weaknesses to the community (considerations to address)

- Parental skills – poor school attendance, inadequate rest and sleep, appropriate discipline
- Underage youth driving of ATVs and snow machines – need safety
- Reckless ATV and snow machine driving – risk individual and public safety
- Under utilization of the local workforce – high number of people ages 19-55 that are not employed
- Lack of curfew enforcement – more noise and potential for youth to get into trouble
- Use of alcohol and drugs by young people and adults – need to break the cycle of abuse for health as well as employment (negative drug tests prevent employability)
- Bootleggers and dealers including homebrew
- Limited transportation in and out of Noatak – inconvenient and high costs
- Loss of Inupiaq language, knowledge and history – e.g. historical places with Inupiaq place names, need to protect and revitalize our language for the present and future, and the community does not want to lose our heritage
- Preserve Inupiaq values in modern times – take care of our belongings and self rather than abuse
- Breaking down of our community's values
- Gambling that turns into addiction
- Trading or selling things for addictions (alcohol, drugs, gambling)
- Loss of traditional knowledge – need to preserve

External Challenges and Threats to Local Development

- Church – limits business hours on Sundays
- State public assistance regulations that restricts recipients motivation to work and get employment (might lose benefits)
- High cost of freight, fuel, goods and services
- Prevailing wages set high rates and costs for community projects
- Building and construction requirements that do not promote force account labor in contracting and project implementation
- State and federal funding restrictions and administrative burden – e.g. projects slated for Noatak but not funded or funded at lower levels, change in federal regulations that affect IRA compact and contract amounts (such as BIA HIP)
- State regulations that limit local hire rather than promote it

Areas of Concern with Community Development

- Pollution
- Cost of living in the community
- As road and transportation access increase, how to maintain balance with outsiders coming into the community
- Maintaining unity and our ability to work together in the future
- Sufficient housing with population growth
- Ability to continue our subsistence lifestyle
- Our people staying healthy with modern conveniences – e.g. unhealthy microwave foods and eating less subsistence foods
- Diseases associated with foods, cancer and bird flu
- Clean wildlife and fish
- Other people building on our land

Opportunities for Community Development in Noatak

- ☆ Tourism development – bed and breakfast lodging, art and craft sales, long-term apartment rentals, laundry services, taxi services (including river taxi)
- ☆ Professional trainings in the community – train local people in needed skills
- ☆ Roads development for improving access to the port side – reduce freight and fuel transportation costs, potential bulk transportation rates with Red Dog Mine
- ☆ Ski resort development in the hills
- ☆ Local food services and restaurant
- ☆ Intellectual services – sell ideas on e-Bay, services over the Internet
- ☆ Federal contracting of services – e.g. tribal set asides, 8a preferences, etc.
- ☆ Cultural knowledge preservation and passing onto youth and others

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Noorvik

Noorvik close up pit

Noorvik's new airport and gravel road to gravel

Noorvik Community Comprehensive Development Plan 2006-2016[20]

Noorvik is a *Kowagmuit* Inupiaq community and the word translates into English as "*a place that is moved to*." The village originated from the people of *Oksik* (translates into English as "*touches one*") which is a few miles upriver from Noorvik, about halfway to the village of Kiana.

The Inupiaq people of Noorvik take great pride in the sustained ability to harvest the resources of the land and river in a traditional and respectful manner. The indigenous people of *Oksik* and *Noorvik* developed relationships, strategies and tools for fishing, hunting and gathering that made them one of the conserving societies ever known. Inupiaq culture, arts and humanities were expressed through songs, dances, legends, ceremonies, skin boat building, and language. The Inupiaq successfully cultivated a native community with an economy based on moose, caribou, ptarmigan, rabbit, waterfowl, and various species of fish that include salmon, trout, shee fish, smelt, burbot (mud shark), northern pike, white fish, and all that the land and water have and continue to provide.

The Inupiaq have and continue to live in harmony with the area's arctic environment that is characterized as a transitional climate zone with long, cold winters and cool summers. Historical temperatures average from -10 to 15 degrees Fahrenheit during winter; and 40 to 65 during the summer; however, the current winters have been milder and summer temperatures have increased over time. Temperature extremes have been recorded from -54 to 100 degrees. Snowfall averages 60 inches, with 16 inches of total precipitation per year. The Kobuk River is navigable by boat from early June to mid-October, and navigable by dog team and snow machines during the winter months.

The Inupiaq of Northwest Alaska had established tribal governance and trade systems hundreds of years prior to "European discovery of Alaska" by Russian explorers in 1732. By 1778, the English

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[20] Except for where noted, this entire Noorvik section is reproduced from the Noorvik Community Comprehensive Development Plan 2006-2016, put together with the residents of Noorvik for the Native Village of Noorvik, Noorvik Residents, Organizations and Community, by the NWAB Planning Department, Kotzebue, AK; Tom Okleasik, Principal; Northwest Planning & Grants Dev, Nome, AK. 2006

explorer Captain Cook had sailed the coast and charted some of the coastal areas in Northwest Alaska. In the 1800s, exploration by outsiders began in earnest.

In 1818, the Kotzebue Sound was "discovered by Europeans" by a German Admiral, Otto Von Kotzebue, while sailing for the Russian Navy. In 1867, Alaska was purchased by the US from Russia (without permission or knowledge from the Alaska Native tribes and peoples including the Inupiaq of *Oksik*). 1884, the Organic Act was adopted by the US Congress that formed a rudimentary form of government in Alaska.

In 1885, Dr. Sheldon Jackson of the Presbyterian Church became the first federal superintendent of public instruction for Alaska, with the task of organizing a free school system for Native American, Eskimo, and white children with the purpose of teaching western lifestyles and mainstream American skills.

In 1892, Dr. Jackson with government aid brought the first reindeer into Alaska from Siberia. Reindeer were also brought to *Oksik* during the late 1890's to early 1900's; however, the reindeer migrated with the caribou and no reindeer herds are presently owned or managed by people in Noorvik. One of the last *Oksik* area herders was Doug Sheldon.

In 1897, the Alaskan gold rush began. In 1898, the Kobuk River gold rush began when Captain Cogan of the whaling ship *Alaska* greatly exaggerated a prospector's Kobuk gold discovery to encourage people to book passage on the ship's return to Alaska.

In March of 1898, the San Francisco Chronicle published a letter from prospector John Ross, saying that he had obtained $50,000 worth of gold on the Kobuk River. These accounts, as well as a number of others that flooded the US news, turned out to be lies.
Nonetheless, a fleet of ships left the west coast of the US during the spring of 1898, bound for Kotzebue with almost 2,000 would-be prospectors on board.

Most of the gold seekers arrived in Kotzebue by early July and prepared to build boats which would take them up the Kobuk River. They immediately got word from the Society of Friends (Quaker) missionaries in Kotzebue and from region Inupiaq that no gold had been found on the Kobuk. After a cursory look at the country, more than half of the prospectors returned to their ships to travel home before winter. This, combined with an infrequent western supply network and the subsequent discovery of the gold fields at Nome, resulted in a mass westerner exodus from the Kobuk after only a single year.

Although short, the Kobuk River gold rush brought major changes to the lifestyle of the Kobuk Inupiaq peoples who inhabited the area and made their living through a sustainable economy based upon subsistence hunting and fishing. Euro-American changes included the introduction of new tools, materials, foods, and a new way of life based on cash wage and in-kind labor. Inupiaq trapped, hunted and fished for miners; provided transportation for men, messages and supplies; and saved many lives by helping ill-prepared prospectors. Following closely on the miners' heels were missionaries whose school and church teachings reinforced the Euro-American changes introduced by the miners.

Several years later, gold was discovered by an Inupiaq man that lived at *Uvuk*. Andrew "Andy" Garbin, a prospector that was residing in Kiana (the Schuerch family are the grandchildren), established claims based upon this find at Klery Creek, and minor mining districts developed in

the Cosmos Hills and Squirrel River areas. After most miners had left for the south, a few stayed in the Cosmos Hills area working small placer mines. By 1910, numerous claims had been staked along Klery Creek and several other tributaries of the Squirrel though very little work was in progress. It should be noted that

Alaska Natives were not eligible to file mining claims during this time period and were unfairly excluded from the gold mining and generally not credited with its discovery.

In the early 1900's, families from *Inmachuk,* or Deering, came by skin boat to *Oksik*with the missionary Delbert Replogle (the *Inmachukmuit* stayed at least a week in *Oksik* to discuss) to request relocating some families from both villages to a new site across from *Putu* – which became Noorvik. The *Inmachukmuit* (Deering people) were trying to escape the overrunning of their traditional village by thousands of gold prospectors and their alcohol abuse introduced into the community. As an outcome of these inter-village discussions, in 1914 the Quakers in cooperation with the people from *Oksik* and *Inmachuk* expanded from the Kivalina mission to a new site 70 miles east of Kotzebue – and they named the new mission Noorvik. The community grew with the moving of other Inupiaq families to Noorvik in order to enroll their children at the established school and word that the government was assisting the community.

By 1918 the Noorvik School had an enrollment of 182, one of the largest in the territory. In 1906, the US Congress passed the Native Allotment Act which provided for conveyance of 160 acres of public land to Alaska Native adults; however, few tracts were issued because the Bureau of Land Management refused to recognize subsistence use of land as proof of "use and occupancy."

The Bureau of Education became involved in marketing furs in Northwest andArctic Alaska. The agency believed that if Eskimos could obtain food and supplies at lower prices than the traders charged, the Native standard of living and health would improve. The Bureau opened a Native cooperative store at Noorvik, as well as stores at Wales, Gambell, and Wainwright. The Bureau also opened an office in Seattle where Natives could sell furs and handicrafts directly and by-pass local traders. Natives profited from this sales outlet; however, fur prices fluctuated preventing a stable western economic base for the northern Eskimos.

Citizenship to Alaska Natives was granted with the passage of the 1924 Citizenship Act. In 1930, Noorvik was the only village in the NANA region with electricity, a hospital, airstrip, radio communication system, and sawmill, in addition to a larger permanent non-Native resident population as school teachers and missionaries.

Also during the 1930's, a reservation was established for the tribe at Noorvik that was 15 square miles. Also during the 1930's, the school burned down but the hospital was converted into the school – this facility was used as the school through the 1960's. A post office was established in Noorvik during 1937. On December 27, 1939, the Inupiaq people in Noorvik voted to duly ratify by vote (70 for and 0 against), to reorganize its traditional form of tribal government to an Indian Reorganization Act (IRA) Council (Corporate Charter of the Noorvik Native Community).

During the 1940-50's, tribal members in Noorvik experienced language shift to English from Inupiaq with schools and western institutions utilizing duress with families and children to use English as their first language. Tribal members of Noorvik were often encouraged by parents to continue western education during this period by attending boarding schools in White

Mountain,Wrangell and Sitka. On January 3, 1959, Alaska was proclaimed a state of the union by President Dwight D. Eisenhower.

The City government was incorporated in 1964. The City of Noorvik is located on the right bank of the Nazuruk Channel of the Kobuk River, 33 miles northwest of Selawik and 45 miles east of Kotzebue. The village is downriver from the 1.7-million acre Kobuk Valley National Park. It lies at approximately 66.838330° North Latitude and -161.03278° West Longitude. (Sec. 27, T017N, R011W, Kateel River Meridian.)

In 1971, the tribal members of Noorvik settled land and resource rights, through the Alaska Native Claims Settlement Act, and formed a state chartered corporation: the regional Alaska Native Corporation – NANA. Also, during the 1970's, federal and state government poverty and community assistance programs provided new income and benefits to some Noorvik families, particularly with the passage of PL 93-638 in 1974. A local school (K-12) was also built in Noorvik during the 1970's to early 80's and no longer required students to leave their home community for public education.
Today, Noorvik is rooted in Inupiaq values and relies on the historical and cultural relationship to the land and river for subsistence. In addition to the archaeological, water life and wildlife resources of the community, there are many other natural resources including metallic and nonmetallic mineral deposits. As western institutions have began and matured in Noorvik, there have developed shared governmental and community development duties among the tribal government, City of Noorvik, NANA Corporation, Northwest Arctic Borough and School District, and groups
such as the Maniilaq Association and churches. The population of the village is majority Inupiaq.

Noorvik Community Vision

We, the Inupiaq Community of Noorvik
Guided with Spirituality and
Utilizing Our Respect for Elders and Each Other,
Strive to Ensure a Safe and Healthy Community
While Preserving Our Heritage and Culture With Unity

Noorvik Development Goals

Goal 1: To Enhance the Accountability of Local Governments and Improve the Community Welfare and Safety for Healthy Lifestyles and Higher Standards of Living in Noorvik
Goal 2: To construct and improve community housing and infrastructure for supporting affordability, cost effectiveness and future growth
Goal 3: To implement economic and transportation development plans for improving employment, local ownership and accessibility
Goal 4: To advance the Noorvik Inupiaq people and environment for sustaining community education, culture, language and identity

Top 10 Overall Community Development Projects for 2006-11

1. Work on building new homes for our tribal members, and home weatherization, renovations and/or additions
2. Phase I Water and Sewer Improvements
3. Upgrade existing and/or procure new heavy equipment for our village and build additional equipment storage – e.g. grader, dump truck, loader, land fill truck, etc.
4. Build and construct newroads within the community and to the following sites – (a) cemetery and grave sites, (b) new clinic and (c) new housing lots in Noorvik
5. Develop banking services in Noorvik including check cashing (reduce fees), ability to access cash locally, loans, ATM service, and mortgage/commercial banking
6. Airport terminal to centralize airline ticket purchases, provide a passenger waiting area, and freight storage
7. Establish a Noorvik Boys and Girls Club with a community recreational center that will also provide more supervised outside recreation activities
8. Adult vocational training and rehabilitation that includes teaching newtechnology and computer skills
9. Alternative energy development and implementation to help produce electricity – e.g. wind generator and solar
10. Protect and preserve our lands by promoting sustainability, facilitating waterways and eco-systems reclamation, and regulating mining actions with strict regulations

Top 10 Capital Project Priorities 2006-11

1. Work on building new homes for our tribal members and teachers, and home weatherization, renovations and/or additions
2. Upgrade existing and/or procure new heavy equipment for our village and build additional equipment storage – e.g. grader, dump truck, loader, land fill truck, etc.
3. Phase I Water and Sewer Improvements
4. Alternative energy development and implementation to help produce electricity – e.g. wind generator and solar
5. Build a boat ramp for the river access and freight
6. Build and construct new roads with drainage in the community and to the following sites – (a) cemetery and grave sites, (b) new clinic and (c) new housing lots in Noorvik
7. Improve the equipment and storage building for our search and rescue department – heated storage for the equipment , fuel, oil and supplies (e.g. potentially improve and utilize the current fire house); and purchase new equipment including boats and snow-machines
8. Airport terminal to centralize airline ticket purchases, provide a passenger waiting area, and freight storage
9. Community recreation and exercise building with an outside basketball court and bigger playground that is staffed with employees for supervision
10. Erosion control for the community along the river banks, bluffs and lakes

Top 10 Community Projects/Activities Priorities 2006-11

1. Establish a Noorvik Boys and Girls Club with a community recreational center that will also provide more supervised outside recreation activities
2. Develop banking services in Noorvik including check cashing (reduce fees), ability to access cash locally, loans, ATM service, and mortgage/commercial banking

3. Suicide prevention – provide community contacts, support, and activities
4. Develop a local trial and tribal courts
5. Setup cancer screening centers for people in Noorvik
6. Start local dealerships for snow-machines, outboard motors and ATV's
7. Negotiate and advocate with shippers and airlines for direct flights to Noorvik from Anchorage and Fairbanks in order to bypass Kotzebue and take advantage of/utilize the new airport
8. Develop a community computer lab with public access and classes to train adults and our workforce
9. Adult vocational training and rehabilitation that includes teaching new technology and computer skills
10. Protect and preserve our lands by promoting sustainability, facilitating waterways and eco-systems reclamation, and regulating mining actions with strict regulations
March 2006 / Revised May 15, 2006

2010-2011 Legislative Capital Priority Projects requested by Noorvik[21]

Priority 1 = most important	Noorvik Capital Proj	Notes. Why a priority.	Local/Other Contact	Resolution No.?	Cost
1	Heavy equipment & Heavy Duty End & Garbage Trucks.	a) Current dozer is obsolete, so finding parts is difficult & not very cost effective. b) Current grader is also obsolete, rundown and always in need of major repair. c) The city owns 2 end dumps made for paved surfaces. We have gravel roads in the village & trucks have a lot of wear and tear. This results in high cost for maintenance & repair. d) Transporting the equipment is time consuming & go through a lot of wear and tear when walking them long distance. These equipment and trucks are necessary to work on priority projects in the village such as water & sewer projects, road construction or maintenance and repairs	City Admin, 636-2100	City Res. No. 09-04	$720,000.00 a)$300,000.00 for a slightly used to new dozer. b)$300,000.00 for a new or slightly use grader c)$300,000.00 for a new end dump trucks. d)$90,000.00 for a new or slightly used lowboy.
2	Roads to cemeteries	For 2 of our cemeteries there are no roads.. This results in heavy trail or permanent vehicle marks on the tundra. These become too damaged for repair. These routes also become dangerous during the transport of coffins for burial. We have the necessary gravel but lack the $$'s for the cemetery roads.	City, IRA, ANTHC, VSW, EPA, Denali	City Res. No. 09-04	$450,000.00
3	City's outer buildings in need of renovations or repairs.	The current City office, shop & safety bldgs were built in the late 70's & early 80's and are in dilapidated condition, expensive to operate & maintain due to outdated and rundown windows, doors, flooring & generally older construction materials. Shop is not insulated & has huge door that's drafty.	City, IRA, State, BIA roads (IRR)	City Res. No. 90-04	$850,000.00 a)$450,000.00 city office renovation. b)$300,000.00 – Shop c)$100,000.00 – Safety Bldg.

Water, Sewer & Sanitation System

The status of community water, sewer, and sanitation systems in our smaller communities is important to the health and wellness of our communities. This Noorvik status snapshots is

[21] Compiled with the residents and submitted to state legislators in July 2010 for the residents of Noorvik by the Public Services Department, Bob Schaeffer, Director.

provided by the state Rural Utilities Business Advisor (RUBA)[22], Margaret Hansen, Report – January 2011

Water is pumped from the Kobuk River to the water treatment/utility building, and stored in a tank. From there, a pressurized circulating system distributes water in utilidors. Groundwater wells have proven unsuccessful. Noorvik has a vacuum sewer system in which waste is carried by air instead of water. Vacuum pressure pumps the sewage to the 60,000-gal. collection and treatment plant. The system requires special toilets and water valves which collect wastewater from the sinks, toilets and showers. Over 100 homes, the schools and businesses are served. Funds have been requested to connect and plumb the remaining 16 unserved homes on the south side of town and along River Road. A new landfill and access road is under development. Funds have also been requested to construct a multi-purpose facility, including a new washeteria, recreation center, Head Start, day care center, a restaurant, Native Crafts production and a food processing plant. The community is interested in using wind energy.

General Description of Local Facilities[23]

Water is pumped from the Kobuk River to the water treatment/utility building and stored in a tank. From there, a pressurized circulating system distributes water in utilidors. Groundwater wells have proven unsuccessful. Noorvik has a vacuum sewer system in which waste is carried by air instead of water. Vacuum pressure pumps the sewage to the 60,000-gallon collection and treatment plant. The system requires special toilets and water valves that collect wastewater from the sinks, toilets, and showers. Over 100 homes, the schools, and businesses are served.

Water Distribution, Source & Treatment Systems:

Water System Operator:	**City; School**
Washeteria Operator:	Not available
Piped Water System:	Yes
Central Watering Point (Haul):	No
Multiple Watering Points:	Yes
Water Truck (Delivery):	No
Individual Wells:	No
Community Well Source:	No
Surface Water Source:	Yes
DEC Water Permit Number:	340109
Water Is Filtered:	Yes
Water Is Chlorinated:	Yes

Sewage Collection Systems:

Sewer System Operator:	**City**

[22] http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm

[23] http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.cfm?Comm_Boro_Name=Noorvik&Data_Type=facilitiesUtitlies&submit2=Get+Data

Piped Sewer System:	Yes
Honeybucket Haul:	No
Honeybucket Pits:	Yes
Individual Septic Tanks:	No
Community Septic Tank:	No
Sewage Pumper:	No
Sewage Lagoon:	Yes
Sewage Lift Station:	Yes
Outhouses:	No

Refuse/Landfill System:

Refuse Collector:	**Individuals**
Landfill Operator:	KIC/Noorvik
DEC Landfill Permit:	Yes
Type of Landfill:	Class 3, 9940-BA003-13, Exp.

Electric Utility:

Electric Utility Name:	**AVEC**
Utility Operator:	REA Co-op; City
Power Source:	Diesel
FY 2009 Rate:	71.4 (Only data for PCE Communities is available on this system)
Power Cost Equalization (PCE) Subsidy:	Yes
FY 2009 Total kWh Generated:	2,067,727 kWh
FY 2009 Power Cost Equalization (PCE) Rate:	55.59 cents/kWh (For consumption up to 500 kWh monthly)
FY 2009 Average Effective Residential Rate:	15.76 cents/kWh
	Link to the most current PCE Report: www.akenergyauthority.org

Bulk Fuel:

Tank Owners

(Number of tanks / Total capacity): AVEC (145,700 gals.); Northwest Arctic Schools (94,900); City (30,900); Native Store (130,500); Morris Trading Post (59,000)

Health Care:

Clinic/Hospital in Community:	**Noorvik Health Clinic**
Clinic/Hospital Phone Number:	907-636-2103
Operator:	Maniilaq Association (907-402-3311) www.maniilaq.org
Owner:	City

Facility Status:	Community Health Aid Program CHAP site
Alternate Health Care:	
Health Comments:	Emergency Services have river and air access. Emergency service is provided by volunteers and a health aide.

Visitor Accomodations/Information:

Airline Services:	Bering Air, Cape Smythe Air Service, Grant Aviation, Hageland Aviation, Servant Air, Tanana Air Service
Taxis:	
Car Rentals:	
Accomodations:	The Morris Hotel
Visitor Attractions:	Not available
Cultural Events:	
Website	

Local Services & Facilities:

Police:	VPSO (636-3222); City Police Dept.; City Public Safety Bldg.; Troopers in Kotzebue (442-3222)
Fire/Rescue:	State VPSO & Volunteer Fire
Court/Magistrate:	Public Safety Bldg. holding cells
Youth Center:	Noorvik Youth Group
Community Hall:	City Office; Community Bldg.
Senior Services:	Not available
Gym or Pool:	
Bingo:	City
Movie Theater:	
Museum:	Not available
Library:	School Library

Communications:

In-State Phone:	OTZ Telephone Co-op, Inc.
Long-Distance Phone:	AT&T Alascom; GCI; OTZ Telephone
Internet Service Provider:	GCI (www.gci.net)
TV Stations:	ARCS
Radio Stations:	KOTZ-AM
Cable Provider:	City of Noorvik
Teleconferencing:	Alaska Teleconferencing Network; Kotzebue Legislative Information Office

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Selawik

Selawik Airport and landfill road

Selawik Close up

Selawik Community Comprehensive Development Plan 2007-2017[24]

Akulibaq (translates into English as where the river meets together) or Siixvik (translates into English as where the sheefish spawn) or the Selawik area has been inhabited since time immemorial by Inupiaq people and families for at least the past 10,000-15,000 years. The ancestors of the area are a proud group known as the Siilvikmiut – with a traditional area including the Selawik River, surrounding creek areas (particularly for fishing), and Selawik Lake area. The Siilvikmiut also traditional hunted caribou and moose up the Noatak, as their migration routes in the early days were not near Akulibaq.

Figure 17: Family returning to Siixvik from spring camping in an umiagluk with muskrats (meat for food and furs for trading) and wood (for building cabins and/or firewood). The umiagluk was traditionally used in the spring after families traveled over ice to camps, then rafted back with the high water and currents after break up. Estimated 1913-1939 from the Alaska Polar Regions Collections Rasmuson Library UAF.

The ancestors of Siixvik lived a lifestyle with seasonal home sites (winter, spring, fall, and summer) along the rivers, creeks and lakes that best took advantage of the environment and area locations for both hunting and gathering. The year round abundance of fish, muskrats, and seasonal berries and vegetation encouraged the initial setting of Siixvik. The current village site was a place for winter camp and

[24] Except for where noted, this entire Selawik section is reproduced from the Selawik Community Comprehensive Development Plan 2007-2017, put together with the residents of Selawik for the Native Village of Selawik, Selawik Residents, Organizations and Community, by the NWAB Planning Department, with support from Maniilaq Association Kotzebue, AK; Tom Okleasik, Principal; Northwest Planning & Grants Dev, Nome, AK.

was a strategic site for Inupiaq to gather fresh water fish year-round (including trout, pike and sheefish), ptarmigan, rabbit, beaver and waterfowl. The community continues to be a productive wildlife and plant area (over the years has grown to include moose and caribou which have changed their migrations through the area), and regional villagers and outsiders annually visit the area for its productive hunting and gathering. The Siilvikmiut continue to have a strong inter-relationship and connection to the environment, lakes and rivers.

The current site of Selawik is located on the mouth of the Selawik River where it empties into Selawik Lake, about 90 miles east of Kotzebue, or 670 miles northwest of Anchorage. The city is near the Selawik National Wildlife Refuge, a key breeding and resting spot for migratory waterfowl. It lies at approximately 66.603890° North Latitude and -160.006940° West Longitude (Sec. 20, T014N, R006W, Kateel River Meridian).

The Inupiaq successfully lived in harmony with this unique arctic environment that is characterized as a transitional climate zone with long, cold winters and temperate summers. Temperatures average –10 to 15 degrees Fahrenheit during the winter and 40 to 65 degrees during the summer. Temperature extremes have been recorded from –50 to 83. Annual snowfall averages 35 to 40 inches, with 10 inches of total precipitation. Winds average 20 knots throughout the year. Snow packs the sidewalks and ice covers the rivers for most of the year giving the village a little over 5 months of unfrozen water.

The Inupiaq people take great pride in the sustained ability to harvest the resources of the land, lake and river in a traditional and respectful manner. The ancestors of Selawik have developed relationships, strategies and tools for fishing, hunting and gathering that made them one of the conserving societies ever known. Siilvikmiut Inupiaq culture, arts and humanities were expressed through songs, dances, legends, ceremonies, and language. The Siilvikmiut, based upon the success of their ancestors, continue to cultivate a community with an economy based on subsistence resources including various kinds of fish, caribou, moose and all that the land and water have and continue to provide.

Figure 18: Lydia Foster, Jim Sheldon, Martha Hunnicut photographed in Selawik – estimated 1896-1913. – Alaska Polar Regions Collections Rasmuson Library UAF

The coastal and inland Inupiaq of Northwest Alaska had established tribal governance and trade systems hundreds of years prior to "European discovery of Alaska" by Russian explorers in 1732. Lieu ant L.A. Zagoskin of the Imperial Russian Navy first reported the village in the 1840s as "Chilivik." Ivan Petroff counted 100 "Selawigamute" people in his 1880 census.

In 1867, Alaska was purchased by the US from Russia. In 1884, the Organic Act was adopted by the US Congress that formed a rudimentary form of westernized government in Alaska. In 1885, Dr. Sheldon Jackson became the first federal superintendent of public instruction for Alaska, with the task of organizing a free school system for Native American, Eskimo, and white children with the purpose of teaching western lifestyles and mainstream American skills. In 1892, Dr. Jackson with government aid brought the first reindeer into Alaska from Siberia.

About 1897, missionaries established a church and school at the current site of Selawik. This facilitated winter camping for the majority of Siilvikmiut so children could attend the school and families the church. This built upon the traditional use of the area for fish – which was the main food staple at the time and abundant at the site. Most Siilvikmiut continued to relocate seasonally in the spring and summer for hunting, trapping and gathering.

In 1898, the Kobuk River gold rush began when Captain Cogan of the whaling ship *Alaska* greatly exaggerated a prospector's Kobuk gold discovery to encourage people to book passage on the ship's return to Alaska. Siilvikmiut Elders have told stories of miners searching for gold in the Selawik area, and remember when one crew wintered at a creek down from Huslia and in the Siilvikmiut traditional lands. Siilvikmiut shamans stopped the miners from taking the land and the miners did not find gold near Selawik. During the late 1890's, miners that passed through the Siilvikmiut area remember rabbit drives by families that filled up sleds for meat and furs.

Around 1908, the community had a small wooden schoolhouse and church. The village has continued to grow and has expanded across the Selawik River onto three banks, linked by bridges. In 1909, the US Republic School opened in Selawik and used English as the means of instruction while discouraging the use of Inupiaq – e.g. teachers only allowed children that spoke English to be invited and attend school parties.

During the 1920's, reindeer herding was introduced to Selawik via Nome through government support and/or support from Lomen Brothers commercial reindeer herding operations. Selawik families that participated in reindeer herding by receiving payment in reindeer from Lomen Brothers included Charlie Smith, Andrew Skinn, Harry Foster and Chester Savik. In addition, Lawrence Gray had a herd through a federal government introduction program – in fact this was the last owned herd in Selawik. The reindeer herding continued for about 30 years until the reindeer mixed with caribou when their migration routes changed in the late 1940's to 1950's.

US citizenship to Alaska Natives was granted with the passage of the 1924 Citizenship Act. Selawik was first established under the 1926 Alaska Native Town Site Act. In 1930 a post office was established. In the 1940's, moose became common the Selawik area. In the late 1940's, caribou became common the Selawik area with a change in their southern migration route.

On March 15, 1940, the Inupiaq people in Selawik voted to duly ratify by vote (48 for and 0 against), to reorganize its traditional form of tribal government to an Indian Reorganization Act (IRA) Council (Constitution and Bylaws of the Native Village of Selawik, Alaska). On January 3, 1959, Alaska was proclaimed a state of the union by President Dwight D. Eisenhower. Prior to 1955 and the introduction of welfare in Selawik, all members of the family (youngest to oldest) had to work together in active subsistence lifestyles to survive. For example, from the 1950's through today, many Selawik families often traveled seasonally towards Kotzebue for subsistence and stayed temporarily at Tent City while gathering and processing foods.

During the 1950-60's, tribal members in Selawik experienced significant language shift to English from Inupiaq with schools and western institutions utilizing duress with families and children to use English as their first language. Public education was available through the Selawik Day School during the 1960's as an Alaska territorial school up to 8th grade. Most family

members utilized both English and Inupiaq by mixing the languages together and generally only certain family members were mono-lingual. Today, the majority of residents are bilingual in English with some as "fluent under standers" – meaning can understand the language but have difficulty speaking and using Inupiaq. A major movement for bilingualism needs to occur for using the unique Selawik Inupiaq dialect in the community with current and future generations; although Selawik has the highest number of fluent Inupiaq speakers compared to other communities in the Northwest Arctic Borough and region.

In 1971, the tribal members of Selawik settled land and resource rights, through the Alaska Native Claims Settlement Act (ANCSA), and formed state chartered Native corporations. In 1976, the Akulibaq Corporation (Selawik's ANCSA village corporation) merged with NANA, the regional Alaska Native Corporation. Also, during the 1970's, federal and state government poverty and community assistance programs provided new income and benefits to some Selawik families, particularly with the passage of PL 93-638 in 1974.

In 1976, Regional Education Attendance Areas (REAA) were formed replacing the village's state operated school. The Selawik school expanded to serve grades 9-12 during 1972-74 and no longer required local students to leave their home community for secondary (high school) public education. During the 1970's to 80's, the community pushed for bilingual education at the school and at home, and the school had teachers for bilingual education/instruction in Inupiaq. Prior students either ended public education at 8th grade or attended boarding schools in Sitka or Oregon; however, some children as young as five years old were sent to boarding school in Wrangell during the 1960's and 70's. In 1972, the first students participated in Selawik high school classes and graduated in 1976. A new school building was constructed in Selawik to serve grades K-12 in 1974 with an opening in 1975.

Selawik was incorporated as a first class city in 1974, but in 1977, changed to a second class city government. Beginning in 1986, the Northwest Arctic Borough administered the region's school district (including the school in Selawik) as well as a comprehensive plan, land management regulations, and subdivision ordinance that apply to development within the community. Selawik is classified as a village zone under the Borough's comprehensive plan and land management regulations.

Today, Selawik is an Inupiaq community which is rooted in Inupiaq values and relies on the historical and cultural relationship to the land, lakes and rivers for subsistence. Selawik is active in traditional subsistence fishing and hunting.

In addition to the archaeological (prehistoric and historic sites as documented in environmental reviews), marine life and wildlife resources of the community, there are many other natural resources including metallic and nonmetallic mineral deposits such as in the nearby Buckland Hills. As western institutions have began and matured in Selawik, there have developed shared governmental and community development duties among the tribal government, city government, NANA Corporation, Northwest Arctic Borough and School District, and groups such as the Maniilaq Association and churches. The population of the village is majority Inupiaq.

Selawik Community Vision

Selawik works in unity to live sober and healthy lifestyles
while sustaining our environment and Inupiaq values
in changing times.

Selawik Comprehensive Development Goals, Objectives and Priorities

Goal 1: To jointly and in unity develop community plans, funding and projects for cost-effective infrastructure and services that advance the well-being of residents
Goal 2: To renew and restructure our existing health and public safety services for ensuring residents live healthy and safe lifestyles for generations to come
Goal 3: To effectively preserve, teach and communicate with our community and each other for mastering both our Inupiaq culture and western ways which lead to successful lives
Goal 4: To enhance and strengthen our Selawik economy for maximizing our natural resources and opportunities which will lead to local, permanent jobs and businesses

Top 10 Overall Community Development Projects for 2007-09

1. Rehabilitate existing board roads for safety and widening for safe ATV passing and walking
2. New health clinic in Selawik
3. Build a gravel road from the Spud Farm to Selawik for gravel source access, Maniilaq treatment camp access and community land development options
4. Obtain shared use of the National Guard Army Buildings for a one-shop-stop public safety building and services center that is staffed with a dispatcher 24/7
5. Renovate the old multi-purpose building with an O&M plan for (a) safe, clean community hall and training facility, (b) teen center for after school support, (c) Boys and Girls Club, and (d) community gym/workout space
6. New water intake system per the 2005 feasibility study to improve the water quality and cleanliness
7. Airport expansion with DOT
8. Disaster preparedness plan for community readiness physically and mentally – e.g. floods, fires, earthquakes, etc.
9. Build and maintain a building for senior housing and home care
10. Construct new affordable homes in Selawik

Top 10 Capital Project Priorities 2007-09

1. Rehabilitate existing board roads for safety including repairing damaged areas (no more big holes that are unsafe for children and Elders) and widening for safe ATV passing and walking (room for sidewalks)
2. New health clinic in Selawik
3. Build a gravel road from the Spud Farm to Selawik for gravel source access (economic development), Maniilaq treatment camp access (social development), and community land

development options. Design the road to have many construction cost options – e.g. starting with a single lane road with turn arounds, 2-lane, build the road from Spud to Selawik using the gravel at Spud, etc.

4. New landfill/dump with improvements to protect the land and eliminate river run-off contamination
5. Airport expansion with DOT
6. New water intake system per the 2005 feasibility study to improve the water quality and cleanliness
7. Construct new affordable homes in Selawik
8. Renovate the old multi-purpose building with an operations and maintenance plan for (a) safe, clean community hall and training facility, (b) teen center for after school support (tap into diabetes and tobacco prevention funding), (c) Boys and Girls Club (relocation), and (d) community gym/workout space – schedule times for different groups to use during the day (training mornings, BGC early afternoon, teenagers during the early evening, adults late evening, and family nights, etc).
9. Obtain shared use of the National Guard Army Buildings in Selawik for a one-shop-stop public safety building and services center that is staffed with a dispatcher 24/7 (shared shifts with ATAP clients filling in for community service hours)– e.g. National Guard-Fire Department-Search and Rescue-First Responders-VPSO-VPO
10. Build and maintain a building for senior housing and home care

2010-2011 Legislative Capital Priority Projects requested by Selawik[25]

Priority 1 = most important	Selawik Capital Proj	Notes. Why a priority.	Local/Other Contact	Resolution No.?	Cost
1	Construction of new municipal landfill & closure of existing open dump.	Current open dump has serious environmental & health risks for village residents, including potentially contaminating the drinking water source and destroying wildlife habitat for subsistence. Construct environmentally safe, code-compliant municipal landfill for the second largest community in NANA region. (Proposal, cost estimates, support letters included with packet.)	Roger Clark, City Admin. 484-2132 Raven Sheldon 484-2006 ext.14 raven.sheldon@akuligaq.org	Res. 10-10 & IRA Res. #10.39	$1,500,000.00 (Phase I-800,000.00) (Phase II-700,000.00)
2	Glycol Rehabilitation Project	Rehabilitate the sewer glycol system, which will save residents in Selawik $200,000.00 per year and decrease the cost of living in Selawik. Also to keep the village safe and sanitary.	Roger Clark, City Admin. 484-2132	Res. 11-01	$670,000
3	Erosion Study	For study and plan to address. Erosion at breakup encroaches more and more on public and private property. Undermines board roads and bridges.	Roger Clark, City Admin. 484-2132	Res. 08-01	$60,000
4	Bridge Reconstruction & bridge access areas.	Repair 2 access areas to bridges and the dilapidated bridge systems	Roger Clark, City of Selawik, 484-2132	Res. 08-01	$400,000.00

Top 10 Community Projects/Activities Priorities 2007-09

1. Complete 14c3 land conveyances to the City from NANA

[25] Compiled with the residents and submitted to state legislators in July 2010 for the residents of Selawik by the Northwest Arctic Borough's Public Services Department, Bob Schaeffer, Director.

2. Community lot surveys completed for promoting new housing development on existing land
3. Re-plat the Right-of-Way (ROW) for all board roads to be in compliance with property lines/surveys
4. Permanent and qualified village police officer (VPO)
5. Set-up a cultural camp
6. Teach our younger generation (a) what it means to be Inupiaq, (b) what responsibilities come with leadership, (c) what it is to be self-sufficient in Selawik, and (d) team building skills
7. Design a web page to take orders for local arts and crafts, then get people to work together to fill the orders
8. Start a Selawik health club – develop local health plans, community activities, work with the City for a portion of the bingo/pull-tabs funding, work with Maniilaq for support and funding
9. Vegetable growing at Spud Farm for local produce
10. Disaster preparedness plan for community readiness physically and mentally – e.g. floods, fires, earthquakes, etc.

Water, Sewer & Sanitation System

The status of community water, sewer, and sanitation systems in our smaller communities is important to the health and wellness of our communities. This Noorvik status snapshots is provided by the state Rural Utilities Business Advisor (RUBA)[26], Margaret Hansen, Report – January 2011

The community has piped water and sewer throughout the entire community; 96% of the homes are fully plumbed. Water plant upgrades and the river pump system are being evaluated now for possible future projects. DEC has been in Selawik to do a comprehensive evaluation of the water quality, which will be helpful in determining what changes need to be implemented. The city signed an agreement with the Alaska Rural Utilities Collaborative (ARUC). ARUC took over operation of the utility and fixed 95% of the glycol leaks. The waste heat system is also operating again. Kotzebue RUBA have been coordinating with ARUC on Selawik via email and talked with the City Administrator who said they are having problems with freezing of water/sewer lines because of glycol leaks on the same south side as before.

General Description of Local Facilities[27]

A circulating water and vacuum sewer system provides services to about 100 homes. A central treatment facility pumps water from the Selawik River, providing up to 8,000 gallons a day. Groundwater wells have been unsuccessful.

Water Distribution, Source & Treatment Systems:

Water System Operator:	**City**
Washeteria Operator:	City

[26] http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm

[27] http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.cfm?Comm_Boro_Name=Selawik&Data_Type=facilitiesUtitlies&submit2=Get+Data

Piped Water System:	Yes
Central Watering Point (Haul):	No
Multiple Watering Points:	No
Water Truck (Delivery):	No
Individual Wells:	No
Community Well Source:	No
Surface Water Source:	Yes
DEC Water Permit Number:	340379
Water Is Filtered:	Yes
Water Is Chlorinated:	Yes

Sewage Collection Systems:

Sewer System Operator:	**City**
Piped Sewer System:	Yes
Honeybucket Haul:	No
Honeybucket Pits:	Yes
Individual Septic Tanks:	No
Community Septic Tank:	No
Sewage Pumper:	Yes
Sewage Lagoon:	Yes
Sewage Lift Station:	No
Outhouses:	No

Refuse/Landfill System:

Refuse Collector:	**Not available; Individuals**
Landfill Operator:	City
DEC Landfill Permit:	Yes
Type of Landfill:	Class 3, 0132BA004 In Progress

Electric Utility:

Electric Utility Name:	**AVEC**
Utility Operator:	REA Co-op; City
Power Source:	Diesel
FY 2009 Rate:	65.5 (Only data for PCE Communities is available on this system)
Power Cost Equalization (PCE) Subsidy:	Yes
FY 2009 Total kWh	3,165,807 kWh

Generated:	
FY 2009 Power Cost Equalization (PCE) Rate:	49.99 cents/kWh (For consumption up to 500 kWh monthly)
FY 2009 Average Effective Residential Rate:	15.46 cents/kWh
	Link to the most current PCE Report: www.akenergyauthority.org

Bulk Fuel:

Tank Owners
(Number of tanks / Total capacity): Northwest Arctic Schools (92,900 gals.); AVEC (138,900); IRA Store (258,100); Rotman Stores (9,800); HUD Housing (26,000); Army National Guard (8,500); AK DOT (2,500)

Health Care:

Clinic/Hospital in Community:	**Selawik Health Clinic**
Clinic/Hospital Phone Number:	907-484-2199
Operator:	Maniilaq Association (907-402-3311) www.maniilaq.org
Owner:	Village Council
Facility Status:	Community Health Aid Program CHAP site
Alternate Health Care:	Selawik Area Vol. Emergency Rescue (907-484-2202)
Health Comments:	Emergency Services have lake and air access. Emergency service is provided by volunteers and a health aide.

Visitor Accomodations/Information:

Airline Services:	HBering Air, Grant Aviation, Hageland Aviation, Servant Air, Tanana Air Serviceageland; Baker Aviation; Cape Smythe Air; Bering Air; Yute Air; Alaska Island Air
Taxis:	None
Car Rentals:	None
Accomodations:	Clinic; McCoy's Camp
Visitor Attractions:	
Cultural Events:	Memorial Singsparation; Spring Inupiaq Cultural Week; Fourth of July; Fall Inupiaq Cultural Week; Thanksgiving Feast; Thanksgiving City League Basketball Tournament; Christmas Program & Feast
Website	

Local Services & Facilities:

Police:	VPSO (484-3222); City VPO (484-2211); Troopers in Kotzebue (542-3052)
Fire/Rescue:	Selawik Area Vol. Emergency Rescue (484-2202); City Public Safety Office

Court/Magistrate:	State Magistrate; City Public Safety Office holding cells
Youth Center:	Boys and Girls Club
Community Hall:	Community Bldg.; City Office/Multi-Purpose Facility
Senior Services:	None
Gym or Pool:	School Gym
Bingo:	City
Movie Theater:	None
Museum:	None
Library:	School/City Library

Communications:

In-State Phone:	OTZ Telephone Co-op, Inc.
Long-Distance Phone:	AT&T Alascom; GCI; OTZ Telephone
Internet Service Provider:	GCI (www.gci.net)
TV Stations:	ARCS
Radio Stations:	KOTZ-AM 720
Cable Provider:	City of Selawik
Teleconferencing:	Alaska Teleconferencing Network; Kotzebue Legislative Information Office

Shungnak

Shungnak Airport and landfill

Shungnak close up of community

Shungnak Community Comprehensive Development Plan 2006-2016[28]

Long Beach founded in 1899 as a supply point for mining activities in the Cosmos Hills, this Inupiat Eskimo village was forced to move to nuusrviiraq in the 1920s because of river erosion and flooding. The old site, 10 miles upstream, was renamed Kobuk by those who remained there. The new village was named "Kochuk," but later reverted to Shungnak. This name is derived from the Eskimo word "Issingnak," which means jade, a stone found extensively throughout the surrounding hills.

Shungnak is an Inupiaq community (Inupiaq means" real people",) active in their traditional way of life. They are proud of their culture and rely on their subsistence resources, including various kinds of fish, caribou, moose, bear, berries and other vegetation. Many are skilled in the traditional art of weaving of birch bark baskets, picture frames, carving of antlers, ivory and skin sewing.

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[28] Except for where noted, this entire Shungnak section was reproduced from the Shungnak Community Comprehensive Development Plan 2006-2016, which was put together with the residents of Shungnak for the Native Village of Shungnak, Shungnak Residents, Organizations and Community, by the NWAB Planning Department, Kotzebue, AK; Tom Okleasik, Principal; Northwest Planning & Grants Dev, Nome, AK. 2006

Shungnak subsists mainly on fishing, seasonal employment, hunting and trapping. Subsistence food sources include sheefish, whitefish, caribou, moose, ducks and berries. Most full-time employment is with the school district, City, Native Village of Shungnak, NANA, Maniilaq Association and one store. BLM provides seasonal employment in fire fighting, hiring over 30 residents each year. Shungnak also has a strong arts and crafts industry; residents make and sell finely-crafted baskets, masks, mukluks, parkas, hats and mittens. The community wants to develop a visitor center, mini-mall, post office, Fuel Distribution, Jade Shop and clinic complex at Dahl Creek.

Shungnak is located on the west bank of the Kobuk River about 150 air miles east of Kotzebue. The original settlement was 10 miles further upstream at Kobuk. It lies at approximately 66.888060° North Latitude and -157.13639° West Longitude. (Sec. 09, T017N, R008E, Kateel River Meridian.) Shungnak is located in the Kotzebue Recording District. The area encompasses 8.4 sq. miles of land and 1.3 sq. miles of water. The community is located in the transitional climate zone. Temperatures average -10 to 15 during winter; 40 to 65 during summer. Temperature extremes have been recorded from -60 to 90. Snowfall averages 80 inches, with 16 inches of total precipitation per year. The Kobuk River is navigable from the end of May to mid-October.

In 1906, the US Congress passed the Native Allotment Act which provided for conveyance of 160 acres of public land to Alaska Native adults; however, few tracts were issued because the Bureau of Land Management refused to recognize subsistence use of land as proof of "use and occupancy."

On July 24, 1946, the Inupiaq people in Shungnak voted to duly ratify by vote (62 for and 2 against) to reorganize its traditional form of tribal government to tan Indian Reorganization Act (IRA) Council (Constitution and Bylaws of the Native Village of Shungnak, Alaska). City of Shungnak was incorporated as a second-class city in 1967 and has a mayor-council form of government. The city employs a city administrator, clerk, water/sewer operator, cable maintenance operator, avec operator. The city has a 2 percent sales tax.

Shungnak Community Vision

We, the Inupiaq Community of Shungnak guided with spirituality and utilizing our respect for Elders and Each other strive to ensure a safe, healthy community. While preserving our Heritage and Culture with unity and respect. Also develop responsible economic projects with Respect for our land and environment.

Shungnak Development Goals, Objectives and Priorities

Goal 1: To create infrastructure, facilities and housing for community expansion, jobs and training opportunities, modernization and community well-being.

Goal 2: To encourage community participation and consolidate organizations for the safety and protection of our community

Goal 3: To create and improve economic stability, self-sufficiency, self-determination and social and economic well-being consistence with our traditional culture.

Goal 4: For our community to work together for our children and community to have healthy lifestyles to strengthen our culture and preserve our land.

Goal 5: To use our natural resources responsibly and sustain ably to create employment opportunities, stabilize our economy and lower our cost of living.

Shungnak TOP THREE Village Priorities 2010-11 – Capital Improvements[29]

*Priority 1 = most important	Shungnak Capital Proj	Notes. Why a priority.	Local/Other Contact	Resolution No.?	Cost
1	New dumpsite	Money received from FY08 will be used to plan for new site and study. Would like to enlarge existing dumpsite and install fencing for fugitive trash.	Helen Mitchell, City, 437-2161; Judy Lee, IRA, 437-2163	Resolution to Follow.	$500,000.00
2	Access road to new dumpsite	And road is necessary for access to new dumpsite.	Helen Mitchell – City 437-2161	Resolution to Follow.	$800,000.00
3	Multi-purpose building	Support more jobs in community; centralize utilities and other program offices to maximize operations efficiency. Will replace dilapidated city bldg.	Helen Mitchell – City 437-2161	Resolution to Follow.	$850,000.00

[29] Compiled with the residents and submitted to state legislators in July 2010 for the residents of Shungnak by the Public Services Department, Bob Schaeffer, Director

Top 10 Overall Community Development Projects For 2006-2011 (5 years)

1. New Dumpsite needs to relocate and move further away from the village and it is to close to the gravesite
2. Multi-purpose office building with the City and Tribe for additional office space to support more jobs in the community, centralize the utilities local government office
3. Housing/Lodge- Over crowding for substandard for arctic conditions and lack of rental housings and lodging for visitors
4. Cement and Basketball Court- for physical activity for youth and young adults also gives a social interaction for the community
5. Road to Bornite Road – Poor trail access, Shungnak supplies power to Kobuk
6. Culture Camp- to continue Inupiaq values for youth a place to learn survival skills from Elders and preserve our cultural traditions
7. Water Sources- lack of water source and poor water quality during high water
8. Youth Employment- We need more employment and income for our youth to become more independent
9. Village Law enforcement to reduce crime and enforce laws including curfew – VPSO and VPO
10. New Gravel Site- the gravel site is overcrowded and to close to the dumpsite and private property

Top 10 Capital Project Priorities 2006-11

1. Water Sources – Lack of water source and poor water quality during high water
2. New Dumpsite needs to relocate and move further away from the village and it is to close to the gravesite
3. Multi-purpose Building with the City and Tribe for additional office space to support more jobs in the community, centralize the utilities local government office
4. Road to Bornite Road – Poor trail access, Shungnak supplies power to Kobuk
5. Washeteria -
6. New Grave Site – the grave site is overcrowded and to close to the dumpsite and private property
7. Alternative and Renewable energy development and implementation to help produce electricity – e.g. wind generator and solar
8. New Dock Site

9. Cement Basketball Court for physical activity for youth and young adults also gives a social interaction for the community
10. Work on building new homes for our tribal members, and home weatherization, renovations and/or additions

Top 10 Community Projects/Activities Priorities 2006-11

1. Wellness Program
2. Culture Camp to continue Inupiaq values for youth a place learn survival skills from Elders and preserve our culture
3. Recycling Program
4. Grant Writing
5. Consolidate Services (City and IRA)
6. Youth Employment- We need more employment and income for our youth to become more independent
7. Inupiaq Days
8. Day Care
9. Village Law enforcement to reduce crime and enforce laws including curfew- VPSO and VPO
10. Local control of Fish and Game (Co-Management)

Water, Sewer & Sanitation System

The status of community water, sewer, and sanitation systems in our smaller communities is important to the health and wellness of our communities. This Ambler status snapshots is provided by the state Rural Utilities Business Advisor (RUBA)[30], Margaret Hansen, Report – January 2011

The City of Shungnak operates the piped water and sewer system. The City Council is the policy making board for the utility. The water infiltration gallery was destroyed by ice several years ago, and needs replacement. A reservoir is intermitently filled from the Kobuk River. A portable pump fills a 200,000-gallon steel storage tank through 1,110' of buried arctic pipe. Currently, the City has a new 200,000 gallon tank connected to the new water treatment plant. Groundwater wells have proven unsuccessful; however, they are still drilling to find a new groundwater source. Piped water and sewer services are provided to 53 homes (those at the top of the bluff), clinic, school, and community building. Shungnak has a six-inch buried gravity sewage main, which drains into a small, diked lake one-half mile northwest of the city. The sewer main, lift station, and manholes have been replaced last summer. The effluent is chlorinated before discharge. The City worked with the local IRA to complete the fencing around the landfill. The city purchased the fence and the IRA paid workers to install it. ANTHC found funds to complete the new sewage lagoon last summer. The new water tank and treatment plant projects are completed. The City Administrator would like to have a new master plan completed.

[30] http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm

General Description of Local Facilities[31]

A reservoir is intermittently filled from the Kobuk River -- a portable pump fills a 200,000-gallon steel storage tank through 1,110' of buried arctic pipe. Groundwater wells have proven unsuccessful. Piped water and sewer are provided to 53 homes (those at the top of the bluff) and the clinic, school, and community building. Shungnak has a 6-inch buried gravity sewage main, which drains into a small diked lake one-half mile northwest of the city. The effluent is chlorinated before discharge. An unpermitted landfill is available.

Water Distribution, Source & Treatment Systems:

Water System Operator:	**City**
Washeteria Operator:	Not available
Piped Water System:	Yes
Central Watering Point (Haul):	Yes
Multiple Watering Points:	No
Water Truck (Delivery):	No
Individual Wells:	No
Community Well Source:	No
Surface Water Source:	Yes
DEC Water Permit Number:	340361
Water Is Filtered:	Yes
Water Is Chlorinated:	Yes

Sewage Collection Systems:

Sewer System Operator:	**City**
Piped Sewer System:	Yes
Honeybucket Haul:	No
Honeybucket Pits:	No
Individual Septic Tanks:	No
Community Septic Tank:	No
Sewage Pumper:	No
Sewage Lagoon:	Yes
Sewage Lift Station:	Yes
Outhouses:	Yes

[31] http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.cfm?Comm_Boro_Name=Shungnak&Data_Type=facilitiesUtitlies&submit2=Get+Data

Refuse/Landfill System:

Refuse Collector:	**City**
Landfill Operator:	City
DEC Landfill Permit:	No
Type of Landfill:	Class 3

Electric Utility:

Electric Utility Name:	**AVEC**
Utility Operator:	REA Co-op; City
Power Source:	Diesel
FY 2009 Rate:	73.2 (Only data for PCE Communities is available on this system)
Power Cost Equalization (PCE) Subsidy:	Yes
FY 2009 Total kWh Generated:	1,477,747 kWh
FY 2009 Power Cost Equalization (PCE) Rate:	57.32 cents/kWh (For consumption up to 500 kWh monthly)
FY 2009 Average Effective Residential Rate:	15.85 cents/kWh
	Link to the most current PCE Report: www.akenergyauthority.org

Bulk Fuel:

Tank Owners

(Number of tanks / Total capacity): AVEC (122,400 gals.); IRA Store (74,300); Northwest Arctic Schools (41,700); Army National Guard (6,900); AK DOT (2,800); Commack Lodge (8,100); City (16,400)

Health Care:

Clinic/Hospital in Community:	**Shungnak Clinic**
Clinic/Hospital Phone Number:	907-437-2138
Operator:	Maniilaq Association (907-402-3311) www.maniilaq.org
Owner:	City
Facility Status:	Community Health Aid Program CHAP site
Alternate Health Care:	
	Emergency Services have river and air access. Emergency service is provided by volunteers and a health aide.
Health Comments:	

Visitor Accomodations/Information:

Airline Services:	Bering Air, Hageland Aviation, Servant Air, Tanana Air Service, Warbelow's Air Venture
Taxis:	
Car Rentals:	
Accomodations:	Kobuk River Cabins 333-8900
Visitor Attractions:	
Cultural Events:	
Website	

Local Services & Facilities:

Police:	VPSO (437-3222) Troopers in Kotzebue (442-3222)
Fire/Rescue:	Volunteer Fire Dept.
Court/Magistrate:	City Public Safety Bldg.
Youth Center:	Recreation Center
Community Hall:	IRA Office; Recreation Center
Senior Services:	
Gym or Pool:	School Gym
Bingo:	
Movie Theater:	
Museum:	
Library:	School/Community Library

Communications:

In-State Phone:	OTZ Telephone Co-op, Inc.
Long-Distance Phone:	AT&T Alascom; GCI; OTZ Telephone
Internet Service Provider:	GCI (www.gci.net)
TV Stations:	ARCS
Radio Stations:	KOTZ-AM
Cable Provider:	City of Shungnak
Teleconferencing:	Alaska Teleconferencing Network

Energy Plan Preparation

NANA Regional Corporation
Marie Greene, President/CEO

Report Contributors

NANA Regional Corporation
Northwest Arctic Borough
Northwest Arctic Steering Committee
Northwest Inupiat Housing Authority
Alaska Village Electrical Cooperative
Maniilaq Association
NWAB School District
IRA/Traditional Councils
City Councils
WHPacific, Inc.
Alaska Energy Authority (AEA)
Alaska Natural Gas Development Authority (ANGDA)
Crowley

TABLE OF CONTENTS

APPENDICES

Additional appendices to be added containing annual community energy statistical updates.

STRATEGIC OBJECTIVES

The goal of the Strategic Energy Plan is improved regional energy security through strategic planning and an understanding of available energy options. This plan will address interim efforts to bridge the increasing burden of rising energy costs, and will detail future planning requirements to achieve regional long-term energy security and self-sufficiency. Strategic Objectives (SO) are:

- *SO 1* - Increased collaboration between Northwest Arctic stakeholders on energy policy, program, infrastructure, and increased capacity of tribal entities for the region.
- *SO2* - Improved understanding of energy options available to Northwest Arctic energy stakeholders for effective energy decision making.
- *SO3* - Increased awareness and understanding, on the part of external stakeholders, of the energy needs of the Northwest Arctic.

The purpose of this briefing is to address SO 3, the importance of educating policy makers and the donor community on the energy needs of the Northwest Arctic region. Energy security in Northwest Alaska will be achieved by a combination of infrastructure improvement and development of appropriate energy technologies in both traditional and renewable energy sectors. Finally, the approach is collaborative in nature and is supported by a variety of regional participants. This report represents and update for 2011.

ENERGY VISION

The vision of this plan is to be 75 percent reliant on regionally available energy resources for heating and generation purposes by the year 2030. It is our vision to decrease the need for transportation fuel imported into the region by 50% by the year 2020. As part of this plan, imported fossil fuels would remain available as emergency/back-up fuel only. Regionally available resources include renewables such as solar, wind, geothermal and biomass, as well as regionally available coal and natural gas resources. The focus of our energy vision is on regional resources. This regional reliance on local energy will be achieved incrementally:

- 25% decrease of imported fossil fuels by 2020
- 50% decrease of imported transportation fossil fuels by 2020
- 75% decrease of imported fossil fuels by 2030

PROCESS AND METHODOLOGY

The underlying premise of this energy plan is rooted in local Energy Options Analyses prepared by individual communities within the region. Through these analyses, all reasonable energy options available to a specific community were identified and assessed based on their technical and economic merits. The results of each community's energy options analyses are found in the appendices of this document.

The focus of this plan is on home heating and electric power generation options. While it is recognized that transportation fuels remain an substantial component of a household budget, the development of appropriate solutions for air travel and inter-community travel are beyond the scope of this analysis[1]. This plan is based upon the priorities identified with the energy options analyses. This information was supplemented through key informant interviews with steering committee members and others knowledgeable on the region's energy crisis.[2]

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[1] However, in places such as Kotzebue and perhaps taxi travel between the airport and community could be accomplished through electric vehicles.

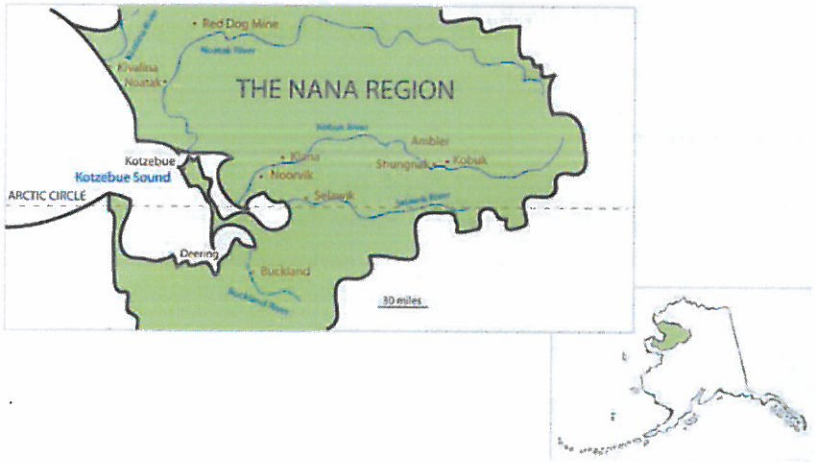
[2] See appendices for additional information and documentation.

Each of the following community initiatives includes a budget estimate. It is expected that these financial investments will be secured from a variety of public and private entities, including transportation infrastructure development, energy, policy, and social services funding programs. Furthermore, the timeframe is generalized to identify short, medium and long term initiatives. Finally, through regional coordination, including the NW Arctic Leadership Team, roles and responsibilities will be identified and assigned.

REGIONAL ENERGY "PROBLEM STATEMENT"

Straddling the Arctic Circle on the Chukchi Sea, the Northwest Alaska Native Association (NANA) region constitutes the boundaries of the Northwest Arctic Borough (NWAB). The region's total population is estimated to be roughly 7,600 people, of which 75% are of Inupiat Eskimo decent. Eleven (11) individual communities are located within the region and each is represented by an Indian Reorganization Act (IRA) federally recognized tribal council. Subsistence activities such as hunting caribou, moose and seals, as well as fishing, remain an integral part of the regional lifestyle.

Figure 1 - Northwest Arctic Member Communities Geographic Map



The regional Strategic Energy Plan (SEP) and its goals and desired outcomes will promote Inupiat Values, "knowledge sharing" methodology, responsibility to the tribe, energy efficiency, promotion of renewable energy, and self-determination through participatory planning. The high cost of energy in Northwest Alaska is one of the leading threats to the long term sustainability and well-being of the region.

The SEP will also assist individual member communities in achieving the long-term goals of utility solvency, energy efficiency and reduced energy related costs. Arguably one of the most remote regions in the U.S., NANA's villages have access to neither roads nor a power grid. Diesel fuel is the primary source of energy for heat and power generation in the region. Total annual (non-transportation) energy consumption by communities in Northwest Alaska is estimated to be 5.3 million gallons in diesel fuel or equivalent, not including the operations of the Red Dog Mine and port. The majority (53%) of this energy consumed in Northwest Alaska is in the form of heating fuel. For the purposes of this SEP, overall community energy use is assumed to remain relatively flat in the years ahead, with at most a 2% annual increase (largely due to population).

Diesel and Heating Fuel

An estimated 2.7 million gallons of heating oil (diesel) is used region-wide annually (Figure 2 and Table 1 below). In several communities located near forest land, wood heat is also used, equivalent to about 124,000 gallons of heating oil annually. . While fuel consumption rates have remained relatively stable, the escalating price of imported fuels has dramatically increased overall energy costs for Northwest Alaska communities.

Figure 2 - Annual Heating Fuel Consumption in Northwest Alaska

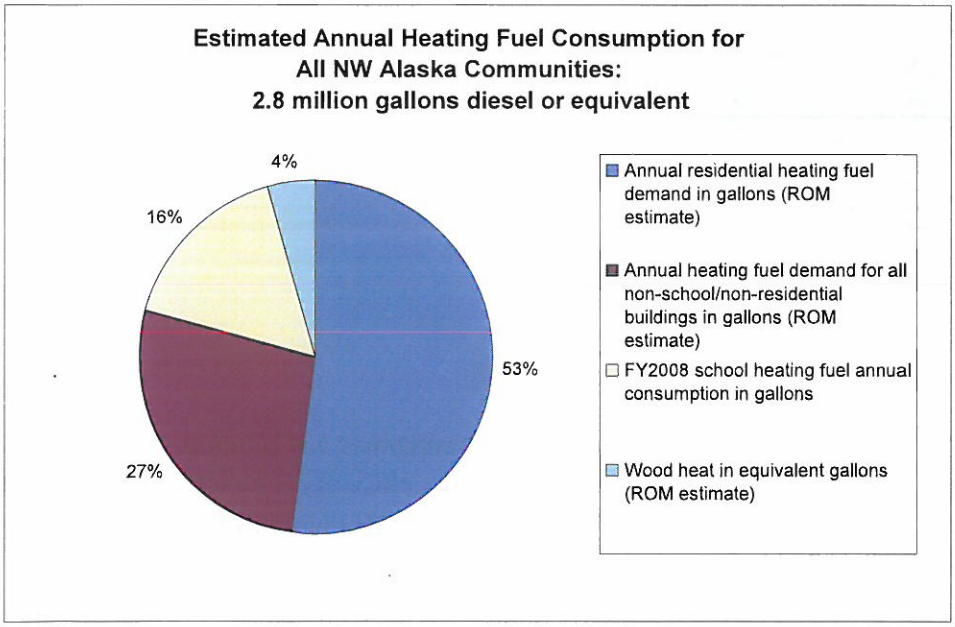


Table 1 - Estimated Annual Fuel Consumption by Community

Community:	FY2007 annual fuel consumption for power generation in gallons[3]	# of occupied households (2000 census)	Annual residential heating fuel demand in gallons (ROM estimate)[4]	Annual heating fuel demand for all non-school/non-residential buildings in gallons (ROM estimate)[5]	FY2008 school heating fuel annual consumption in gallons[6]	Wood heat in equivalent gallons (ROM estimate)[7]	Total heating fuel consumption by community in gallons or equivalent (ROM estimate)	Total fuel consumption by community in gallons or equivalent (ROM estimate)
Kotzebue	1,455,277	889	755,650	500,000	140,160		1,395,810	2,851,976
Ambler	100,053	79	55,300	22,000	26,604	40,000	143,904	244,036
Buckland	109,943	84	71,400	25,200	35,016		131,616	241,643
Deering	62,878	42	35,700	12,600	15,744		64,044	126,964
Kiana	103,820	97	67,900	29,100	46,464	35,000	178,464	282,381
Kivalina	93,795	78	66,300	23,400	28,872		118,572	212,445
Kobuk	-	26	18,200	10,000	8,736	14,000	50,936	50,962
Noatak	112,458	100	85,000	30,000	30,720		145,720	258,278
Noorvik	149,669	136	115,600	40,800	48,168		204,568	354,373
Selawik	209,058	172	146,200	51,600	58,584		256,384	465,614
Shungnak	109,965	56	39,200	17,000	22,140	35,000	113,340	223,361
Total:	2,506,916		1,456,450	761,700	461,208	124,000	2,803,358	5,310,274

[3] FY2007 PCE report (Alaska Energy Authority), Kotzebue Electric Association

[4] Rough Order of Magnitude (ROM) annual residential heating fuel demand is based on the multiplying the number of occupied households (according to 2000 U.S. Census) by 850 gallons/year, except for communities with wood heat: 700 gallons/year

[5] ROM annual public/commercial building heating demand estimated from Maniilaq Association figures on Ambler, Shungnak and Kobuk, extrapolated to other communities based on population

[6] Northwest Arctic Borough School District

[7] Wood heat in equivalent gallons based on 1981 *Shungnak, Kiana and Ambler Reconnaissance Study of Energy Requirements and Alternatives*, by Wind Systems, Inc. for the Alaska Power Authority.

Table 1 - Estimated Annual Fuel Consumption by Community

Community:	FY2009 annual fuel consumption for power generation in gallons[8]	# of occupied households (2010 Count) A indicate Grid connected as of 2009.	Annual residential heating fuel demand in gallons (ROM estimate)[9]	Annual heating fuel demand for all non-school/non-residential buildings in gallons (ROM estimate)[10]	FY2010 school heating fuel annual consumption in gallons[11]	Wood heat in equivalent gallons (ROM estimate)[12]	Total heating fuel consumption by community in gallons or equivalent (ROM estimate)	Total fuel consumption by community in gallons or equivalent (ROM estimate)
Kotzebue	1,430,483	975, 1350A,	755,650	500,000				
Ambler	90,941	69, 83A	55,300	22,000		40,000		
Buckland	109,943	90A	71,400	25,200				
Deering	55,145	42A	35,700	12,600				
Kiana	128,931	129A	67,900	29,100		35,000		
Kivalina	98,423	85A	66,300	23,400				
Kobuk	-	32, 31A	18,200	10,000		14,000		
Noatak	141,480	111A,	85,000	30,000				
Noorvik	176,711	155A,	115,600	40,800				
Selawik	229,070	194,184A,	146,200	51,600				
Shungnak	108,121	65, 59A	39,200	17,000		35,000		
Total:	2,506,916	1947,2319A	1,456,450	761,700		124,000		

[8] FY2009 PCE report (Alaska Energy Authority), Kotzebue Electric Association

[9] Rough Order of Magnitude (ROM) annual residential heating fuel demand is based on the multiplying the number of occupied households (according to 2000 U.S. Census) by 850 gallons/year, except for communities with wood heat: 700 gallons/year

[10] ROM annual public/commercial building heating demand estimated from Maniilaq Association figures on Ambler, Shungnak and Kobuk, extrapolated to other communities based on population

[11] Northwest Arctic Borough School District

[12] Wood heat in equivalent gallons based on 1981 *Shungnak, Kiana and Ambler Reconnaissance Study of Energy Requirements and Alternatives*, by Wind Systems, Inc. for the Alaska Power Authority.

Energy Production: Ninety-seven percent of the total electricity production for all communities in Northwest Alaska comes from diesel fuel (See Table 2 and Figure 3, below).

Table 2 - Power Generation Comparison

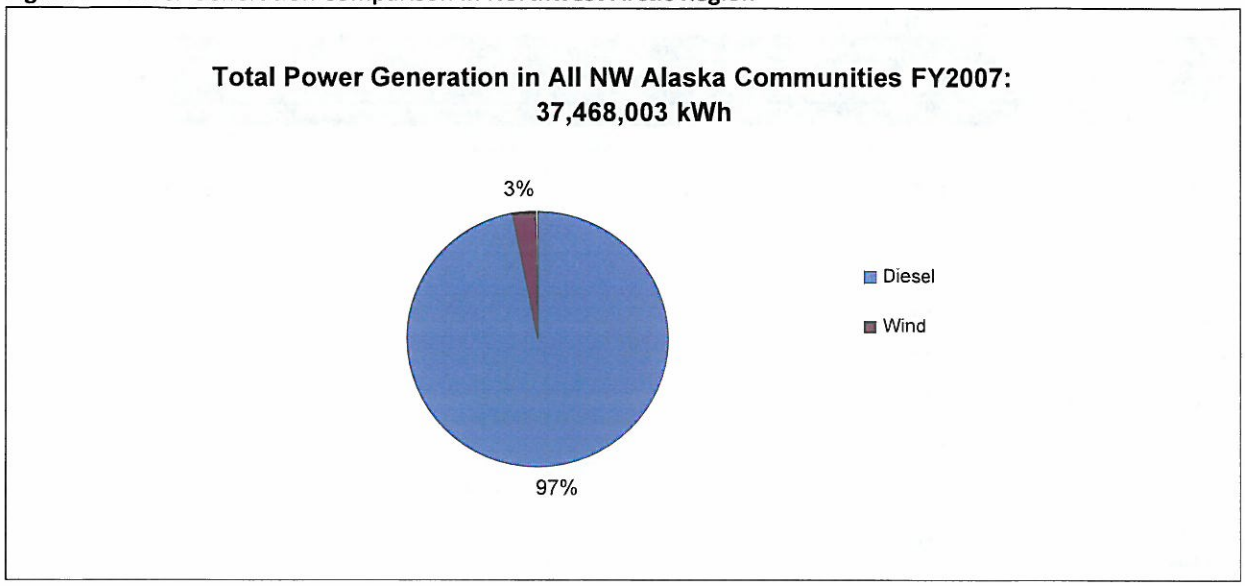
Community	FY 2006 Diesel (kWh)	FY 2007 Diesel (kWh)	FY 2006 Wind (kWh)	FY 2006 % Wind	FY 2007 Wind (kWh)	FY2007 % Wind	FY 2006 Total Generation	FY 2007 Total Generation
Kotzebue	22,524,973	21,807,319	787,794	3.38%	1,064,242	4.65%	23,330,767	22,871,561
Ambler	1,293,905	1,363,646					1,293,905	1,363,646
Buckland	1,497,970	1,518,027					1,497,970	1,518,027
Deering	661,760	709,559					661,760	709,559
Kiana	1,519,107	1,529,950					1,519,107	1,529,950
Kivalina	1,215,636	1,307,779					1,215,636	1,307,779
Noatak	1,488,500	1,492,730					1,488,500	1,492,730
Noorvik	1,951,017	1,991,566					1,951,017	1,991,566
Selawik	2,757,588	2,945,834	109,157	3.81%	184,918	5.91%	2,866.745	3,130,752
Shungnak-Kobuk	1,506,432	1,552,433					1,506,432	1,552,433
Total	36,434,888	36,218,843	896,951	2.40%	1,249,160	3.33%	37,331,839	37,468,003

Sources: FY2007 and FY2006 PCE report (Alaska Energy Authority), Kotzebue Electric Association

Community	FY 2008 Diesel (kWh)	FY 2009 Diesel (kWh)	FY 2008 Wind (kWh)	FY 2008 % Wind	FY 2009 Wind (kWh)	FY2009 % Wind	FY 2008 Total Generation	FY 2009 Total Generation
Kotzebue	20,915,914	20,962,858	874.900	4.18%	1,054,480	4.79%	21,790,814	22,017,338
Ambler	1,321,573	1,245,599					1,321,573	1,245,599
Buckland	1,545,961	1,518,027					1,545,961	1,518,027
Deering	668,630	711,319					668,630	711,319
Kiana	1,687,222	1,663,716					1,687,222	1,663,716
Kivalina	1,252,110	1,253,855					1,252,110	1,253,855
Noatak	1,771,796	1,948,974					1,771,796	1,948,974
Noorvik	2,031,037	2,067,727					2,031,037	2,067,727
Selawik	2,802,375	3,031,333	108,010	3.85%	263,116	7.99%	2,910,385	3,294,449
Shungnak-Kobuk	1,483,862	1,477,747					1,483,862	1,477,747
Total	36,736,894	35,881,155	983,851	2.68%	1,317,596	3.67%	36,463,390	37,198751

Sources: FY2008 and FY2009 PCE report (Alaska Energy Authority), Kotzebue Electric Association

Figure 3 - Power Generation Comparison in Northwest Arctic Region



Cost of Fuel

As a result of complex and lengthy logistics and the need for on-site fuel storage, retail fuel costs are exceedingly high. The region experiences some of the highest electricity prices in the nation, as shown below in Table 3. Recent increases in the price of oil have had a direct impact in the cost of heating and power generation with diesel fuel, especially in rural Alaska communities.

The impacts of increasing fuel costs within the region are magnified by unique regional conditions such as limited logistical options for bulk fuel shipping, the poor economies of scale in fuel transportation, power generation and distribution, and possible reduction and/or elimination of Alaska's Power Cost Equalization (PCE) program and the State-Municipal Sharing programs. Summer water levels along the Noatak River and

the upper stretches of the Kobuk River have been insufficient to allow for annual delivery of fuel by barge. As a result, fuel is often shipped into the communities of Noatak, Ambler, Shungnak and Kobuk by airplane, greatly increasing energy delivery costs. As shown in Table 3 below, these four communities consequently have the highest fuel costs in the region.

Table 3 - Fuel and power costs in the Northwest Arctic Borough

Community	Reported June/July 2008 price of gasoline (per gallon)	Reported June/July 2008 price of diesel/#2 heating oil (per gallon)	Average FY2007 price of diesel for power generation (per gallon)[13]	Average FY2007 pre-PCE residential electric rate (per kWh)[14]
Kotzebue	$ 5.50	$ 4.28	$ 2.27	$ 0.3850
Ambler	8.18	5.78	3.96	0.5349
Buckland	5.71	9.77	2.51	0.4036
Deering	5.17	3.95	3.11	0.4900
Kiana	7.02	6.45	2.72	0.5103
Kivalina	5.29	4.85	2.48	0.5116
Kobuk	7.25	7.06	-	0.5300
Noatak	9.44	8.13	4.48	0.7118
Noorvik	4.90	5.00	2.46	0.5271
Selawik	5.19	4.61	2.48	0.5062
Shungnak	7.69	6.50	3.37	0.6113

[1] Statistical Report of the Power Cost Equalization Program for Fiscal Year 2007, Alaska Energy Authority
[1] Ibid.

Community	Reported June/July 2009 price of gasoline (per gallon)	Reported June/July 2009 price of diesel/#2 heating oil (per gallon)	Average FY2008 price of diesel for power generation (per gallon)[15]	Average FY2008 pre-PCE residential electric rate (per kWh) [16]
Kotzebue	$ 5.50	$ 4.28	$ 2.61	$ 0.3605
Ambler	8.95	9.50	6.27	0.8259
Buckland	7.00	7.00	3.09	0.4000
Deering	7.52	7.75	3.20	0.6215
Kiana	7.00	6.45	3.04	0.5413
Kivalina	7.00	6.45	3.13	0.5368
Kobuk	8.25	7.00	-	0.5300
Noatak	10.79	9.79	5.75	0.7572
Noorvik	7.30	7.22	2.98	0.5333
Selawik	6.10	6.60	3.14	0.5114
Shungnak	7.99	9.99	5.31	0.7364

[1] Statistical Report of the Power Cost Equalization Program for Fiscal Year 2008, Alaska Energy Authority
[1] Ibid.

Community	Reported June/July 2010 price of gasoline (per gallon)	Reported June/July 2010 price of diesel/#2 heating oil (per gallon)	Average FY2009 price of diesel for power generation (per gallon)[17]	Average FY2010 pre-PCE residential electric rate (per kWh) [18]
Kotzebue	$ 6.73	$ 6.75	3.60	
Ambler	8.95	9.50	4.29	
Buckland	6.55	6.75	6.99	
Deering	5.55	5.05	4.59	
Kiana	6.50	6.00	4.92	
Kivalina	5.49	5.49	4.76	
Kobuk	8.25	7.00	-	
Noatak	8.99	8.99	6.44	
Noorvik	7.55	6.27	4.90	
Selawik	6.10	6.60	4.94	
Shungnak	8.49	6.99	5.35	

[1] Statistical Report of the Power Cost Equalization Program for Fiscal Year 2009, Alaska Energy Authority
[1] Ibid.

Additional info 2010

ULSD (Ultra Low Sulfur Diesel) & Propane cost

Delivery by	ULSD Bulk	ULSD Drum/G @ 55G	Propane 100Lb		
Crowley FOB Kotzebue	--	7.66	163.63		
Brooks Fuel FOB Up River Kobuk	6.80	7.30	185.00		

Propane usage Region wide as of 2010

Approximately 350 households in the region currently use propane, primarily for cooking. According to Crowley and Brooks, the total amount of propane sold in 2010 was approximately 35,000 Gallons. In addition to the increasing cost of petroleum and other fossil fuels, the burning of these hydrocarbon fuels results in air pollution and an increased risk of fuel spills during transportation and storage. Community members are becoming increasingly aware of the effects of greenhouse gases on climate change and the resulting coastal erosion along the Chukchi Sea. The goal of reducing greenhouse gas emissions from the region's communities should be integrated into the regional energy planning process.

The Northwest Arctic Strategic Energy Plan

Since the mid-1990s, Northwest Alaska has been a leader in promoting and developing renewable energy resources with the Kotzebue wind/diesel hybrid system. There is much wind energy potential throughout the region, and other known energy resources include geothermal, small-scale hydropower, and a substantial biomass potential in the upper Kobuk River area. Finally, there are stranded natural gas sources, which could prove to be economically viable energy resources. Long-term strategies may include incremental reduction of diesel fuel shipments and gradual implementation of alternative energy sources. However, for the short to medium-term, efficient use of diesel fuel will remain an energy planning priority for the region.

Previous energy resource studies and energy planning efforts within the region have targeted specific resources (e.g. wind) or have been completed for privately funded projects. The need to coordinate energy work and synthesize findings is of paramount importance. The integration of multiple energy sources, combined with strategies to conserve energy and promote end-use energy efficiency, is essential for regional energy security and economic wellbeing. With proper planning, a synergy can be developed between different energy sources and uses, with the composition of the optimal 'energy-mix' custom-tailored for each community. The SEP will be used to guide energy decision making in the following manner:

- *Investment* - If a particular energy source is identified as economically viable, NRC and/or steering committee members could make capital investment decisions based upon the outcomes of the planning and analysis. Private industry and mining interests could be guided by the analysis and invest accordingly.
- *Planning* - Results of the SEP could be used for planning of critical power generation and heating infrastructure. There will be a prioritization process undertaken that identifies energy needs. Two

steering committee members have been actively involved in energy infrastructure development for the region.

- *Advocacy* - NRC and the steering committee will also use the outcomes of the SEP to advocate various agencies for energy and energy efficiency investments in the region.

COMMUNITY SURVEYS

As part of the Energy Planning process, NRC coordinated a community-based survey of energy knowledge, attitudes, and practice (KAP Study). Results of the survey are described below.

Community Views of Energy Alternatives in Northwest Arctic Alaska

This section summarizes the results of community surveys designed to assess Northwest Arctic residents' opinions on energy options. The results of the survey were presented at the North West Arctic Regional Energy Summit on July 29, 2008. Since that presentation, additional communities have participated in the study.

The Purpose and Use of the Community Survey

The overall purpose of the survey was to assess Northwest Arctic residents' opinions of various regional energy options. Specifically, the survey was expected to:

- Explore short-term (immediate) and long-term (3 years or more) energy solutions.
- Document preferences among communities.
- Contribute to the Northwest Alaska Regional Energy Plan.
- Help support grant applications.
- Ensure consistency of public opinion data.
- Integrate perceptions of energy options for all NW Alaska communities at the Energy Summit.

Survey Development

This survey began with an examination of the common factors influencing energy decisions in other northern communities. A working paper was prepared by the survey team and submitted to NANA Development in December 2007. A draft survey was developed in January 2008, and pretested in Deering. The results of the pretest led to modifications in the survey.

The revised survey was reviewed with the NANA Resource Technicians in Kotzebue in February 2008. Additional revisions were made prior to distribution of the survey to participating communities.

Slow survey implementation resulted in the review and revision of the survey by the research team and advisory group in June 2008. The revised survey instrument had greater relevance to energy issues in the Northwest Arctic. The survey was administered to eight communities by July 2008. Following the presentation of results at the Northwest Arctic Regional Energy Summit, additional communities have participated in the study and this report includes all 10 communities in the Northwest Arctic Borough.

Survey Administration

The final survey instrument is provided in Attachment 1. The survey was administered by resource technicians under the supervision of the survey team. Participants were selected using a convenience sampling method between June and August, 2008. Survey data was entered by staff at the Northwest Arctic Borough, and then forwarded to the survey team for editing. Statistical analysis was completed using SPSS software.

Community Participation

Table 4 shows the participation of communities within the Northwest Arctic Borough. There were 166 surveys completed, representing 804 individuals. Forty Elders participated in the survey, representing 30.3% of all household surveys received.

Table 4 - Community Participation

Community	Households Responding	Percent of Surveys Completed
Ambler	20	12.0
Buckland	17	10.2
Deering	13.	7.8
Kiana	22	13.3
Kivalina	15	9.0
Kobuk	9	5.4
Noatak	28	16.2
Noorvik	10	6.0
Selawik	13	7.8
Shungnak	19	11.2
Total	166	

Short Term Energy Solutions

The survey first examined issues surrounding current energy use. The objective was to explore ways of providing immediate relief to communities. This section examined current home heating methods used by Northwest Arctic households, the use of electricity, options for improving home energy efficiency and the impact of increased fuel prices on transportation, including subsistence activities.

A Description of Respondent Housing

One of the principal objectives of the study was to find ways of providing efficient heating and lighting for people living in the region. Therefore, the first question that must be asked is "In what kind of houses do people in the Northwest Arctic Borough live?"

The survey found that the average family consisted of five people (4.99). The largest household participating in the survey had 15 people living in the same home. The average household had three bedrooms. On average, homes are approximately 25 years old and were built in 1983. The oldest home was built in 1930. Almost 63% (62.7%) are HUD homes, mostly built in the early 1980s.

Home Heating Sources

Figure 4 shows that almost half (47.8%) of all homes used more than one energy source for heating their homes. Figure 5 indicates that many households use wood to heat their homes, especially during the day throughout cold winters.

Figure 4 - Number of Heat Sources

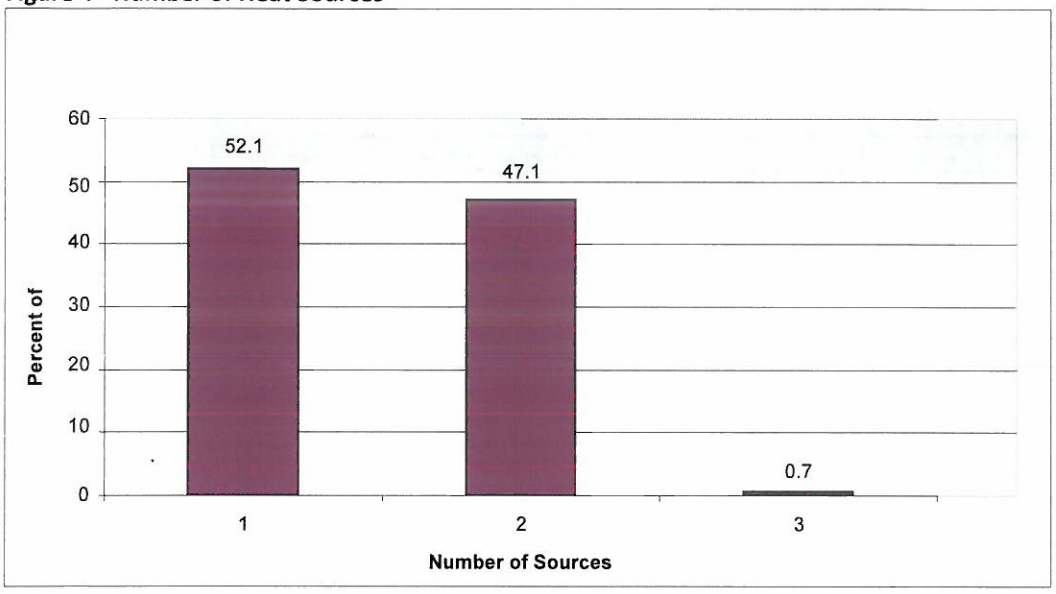
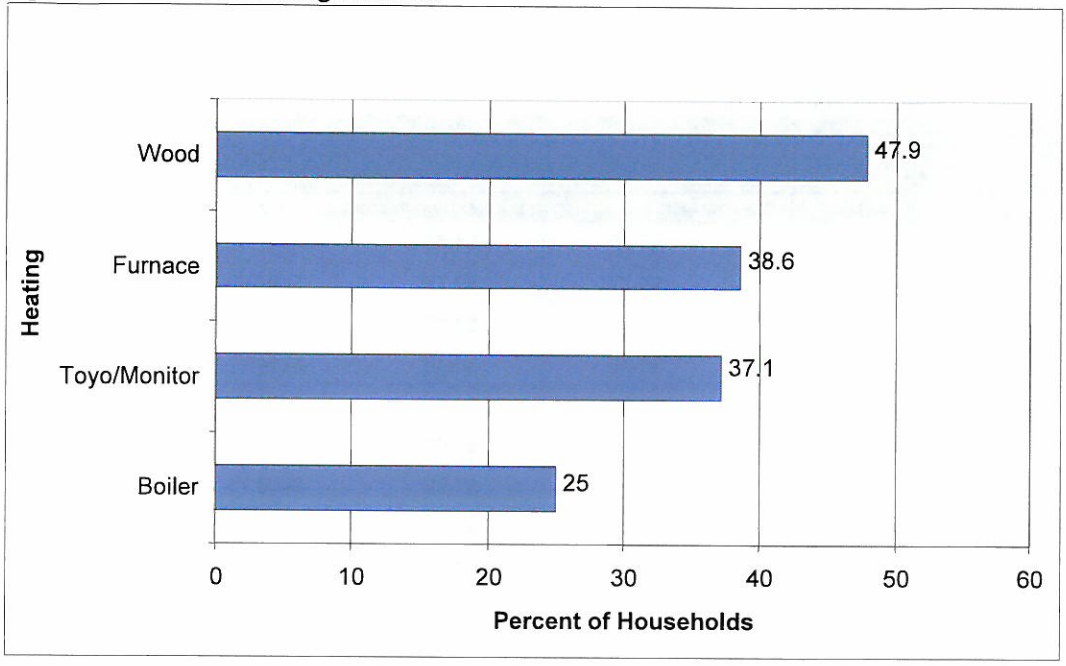


Figure 5 - Residential Heating Methods



Household Energy Expenditures

Table 5 shows the amount of money that households in the north Northwest Arctic spend on energy. The average amount, the middle (50th percentile or median), and the highest cost are shown in the table below. The median cost of gasoline is seven dollars per gallon. Stove oil is approximately five dollars per gallon, for a median monthly expenditure of $530. The cost of wood as an energy source is extremely variable with a mean of $120 per month and a maximum of $500 per month. Electricity costs approximately $258 per month.

Table 5 - Monthly Household Energy Expenditures- 2008 data

Energy Source	Average	Middle	High
Gasoline (per gallon)	$6.69	$7.00	$9.97
Stove oil (per gallon)	$6.16	$5.00	$9.96
Stove oil used (gal/winter month)	129	106	600
Total stove oil cost ($/winter month)	$794.64	$530.00	$5,976
Wood (per month)	$137.04	$120	$500.00
Electricity (per month)	$298.06	$258.00	$900.00

Energy Costs by Community

Energy costs reported by survey respondents vary from community to community. The average cost per gallon of gasoline and stove oil, and the average monthly electric bill are shown in Table 6 below. Gasoline prices are highest in Noatak, while the price of stove oil is highest in Buckland. The cost of electricity appears to be highest in Noorvik. The energy costs shown below are based on data collected in June and

July of 2008. As prices continue to rise, the data below will be less useful in measuring energy costs in each community.

Table 6 - Energy Costs by Community (2008 data)

	Cost of gasoline per gallon		Cost of stove oil per gallon		Monthly electric bill	
Community	Average	Middle	Average	Middle	Average	Middle
Ambler	$8.18	$8.24	$5.78	$4.62	$347.85	$305.00
Buckland	$5.71	$5.75	$9.77	$9.79	$187.00	$200.00
Deering	$5.17	$5.15	$3.95	$3.86	$292.54	$230.00
Kiana	$7.02	$7.00	$6.45	$6.45	$264.77	$241.00
Kivalina	$5.29	$5.25	$4.85	$4.85	$291.54	$250.00
Kobuk	$7.25	$7.25	$7.06	$7.00	$215.00	$200.00
Noatak	$9.44	$9.29	$8.13	$7.95	$406.73	$430.00
Noorvik	$4.90	$4.90	$5.00	$5.00	$418.00	$310.00
Selawik	$5.19	$5.19	$4.61	$4.61	$209.75	$155.00
Shungnak	$	$	$5.23	$4.79	$	$

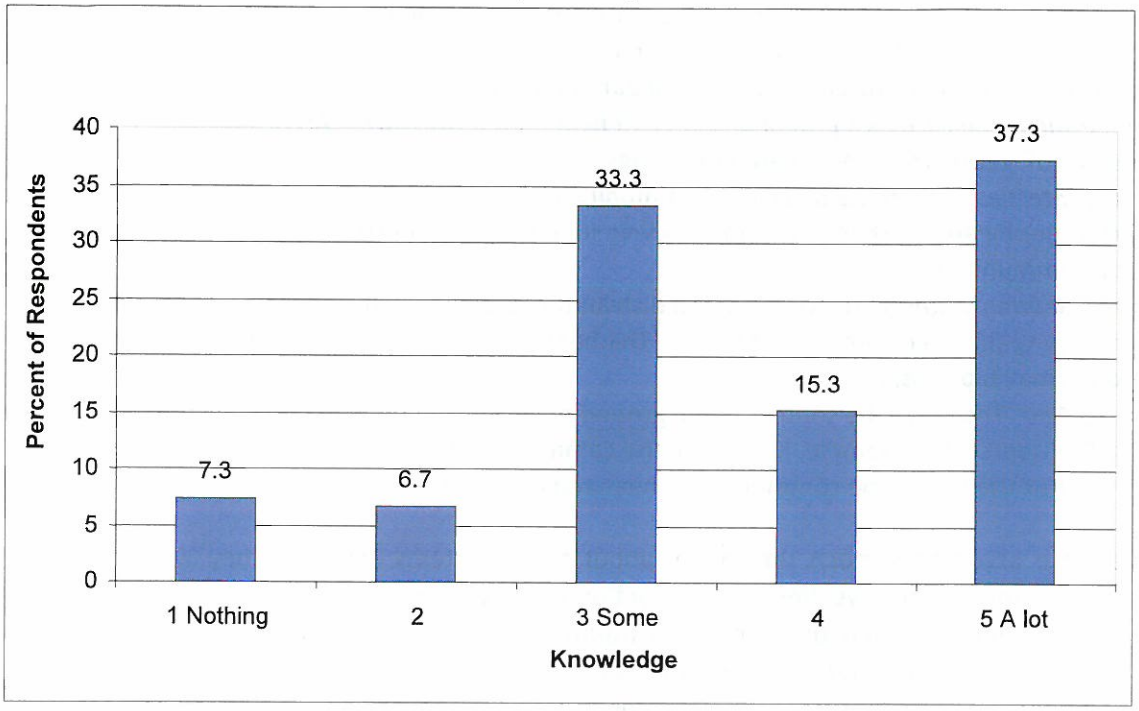
Improving Energy Efficiency

Respondents were asked how they could reduce the amount of energy used to heat and light their homes. Almost three quarters (73.8%) suggested that they could reduce electricity use by turning off or unplugging lights and appliances. Over 11% (11.5%) said they should just use less energy, while over half (50.9%) thought they could reduce energy by using more energy efficient appliances.

People were also asked about ways that they could reduce their use of stove oil. Almost 40% (39.4%) thought they could accomplish this by supplementing their stove oil home heating systems with wood heat. Over one quarter of the respondents (26.8%) suggested that they could reduce the amount of stove oil that they used by lowering the temperature of their homes.

Survey results indicate that Northwest Arctic households would benefit from additional information on energy efficient techniques. As illustrated by Figure 6, just over one half of the respondents knew "a lot" about energy efficiency. The remaining 47% of households had no knowledge or just some knowledge of energy efficiency. An expanded educational program may be valuable in helping households reduce energy costs.

Figure 6 - How much do you know about energy efficiency?



The Energy Requirements of Transportation

Almost all respondents (95%) were familiar with the impact of increased energy prices on transportation. Eight out of 10 respondents said that escalating fuel costs limited their subsistence activities and reduced travel to other communities. Almost three quarters of the respondents (73.6%) reported that rising fuel costs impacted the amount of time that they spent in camp.

Long-term Energy Solutions

As noted previously, the advisory group decided to separate discussions regarding short-term energy issues and long-term energy solutions. Long-term solutions were defined as those that could take three or more years to develop. The proposed long-term solutions are listed below together with a brief definition of each alternative energy source or distribution mechanism.

- *Combined Heat and Power System /Recovered Heat*- Waste heat recovery as a potential source of economic benefits for the community is a potential end-use for the heat for facilities in close proximity to the energy source. A potential use of the cogeneration heat is to keep washeterias warm and maintain hot water.
- *Wind Energy Systems* - Many parts of the Northwest Arctic Borough have enough wind to make wind power generation a feasible option. Communities would continue to use their diesel generators, but supplement them with wind-generated power from wind turbines.
- *Hydroelectric* - Some communities are located near rivers or coastal waters with hydroelectric generation potential. Typically, this requires the construction of dams or other means of harnessing water power. These structures take time to design and build. Minimal power would be generated from December through April,. Hydroelectric power would include certain inherent environmental constraints, such as the presence of whitefish and arctic grayling in the stream.

- *Solar* - While solar is not widely used in Alaska, it does remain an option for power generation and home heating. Solar power generation requires the installation of panels that collect the rays of the sun and turn it into electricity or heat that can be used in homes. Energy collected while the sun is bright must be stored for use during dark periods.
- *Geothermal* - The earth is a potential source of heat. In the Northwest Arctic Borough, the known sources of geothermal energy are hot springs.
- *Electric Interties / Transmission Lines* - Communities that are located within reasonable proximity of each other be able to share a common power source. These interties may also link mines and local communities.
- *District Heating Systems* - District heat is a distribution system in which buildings within a community share a common heat source. The heat can be produced in a variety of ways (diesel, geothermal, biomass, etc.).
- *Natural Gas* - There may be sources in the ground near communities that could be tapped and used as a fuel source. For example, in Barrow, the community taps into the local gas deposits and distributes the fuel to the community for heat and electricity.

Respondents were asked how much they knew about these systems, whether they would oppose or support the development of the systems, their impact on the environment, future economic development, the future of the community and the impact on traditional and subsistence activities. Of all of these variables, the strength of a respondent's opposition or support was most closely tied to their decision to pursue the alternative energy source or distribution system. Therefore an analysis of the support or opposition was used to assess regional opinions about alternative energy sources.

Regional Energy Sources and Distribution Systems Preferences

Table 7 shows the average score (1 = strongly opposed and 5 = strongly support) and regional rank of the proposed energy sources and distribution systems. Regional respondents preferred renewable nonpolluting wind and solar energy.

Table 7 - Regional Ranking of Energy Sources and Distribution Systems

Alternative Energy Source	Average Score	Rank
Combined heat and power systems	3.67	3
Wind energy systems	4.13	1
Hydroelectric energy	2.91	7
Solar energy	3.70	2
Geothermal energy	3.17	5
Interties and timelines	2.95	6
District energy distribution systems	2.94	8
Natural gas	3.27	4

Community Energy Sources and Distribution Systems Preferences

Community energy preferences were analyzed using the same method described above. In many cases, community preferences were markedly different than the regional preferences. For example, Kobuk rated interties as its first energy preference. This probably reflects extensive community discussions about interties with the community of Shugnak and an adjacent mine. The preference for geothermal power in Ambler, Buckland and Deering reflect a growing community awareness of the availability of nearby geothermal energy.

Table 8 - Community Energy and Distribution Systems Preferences

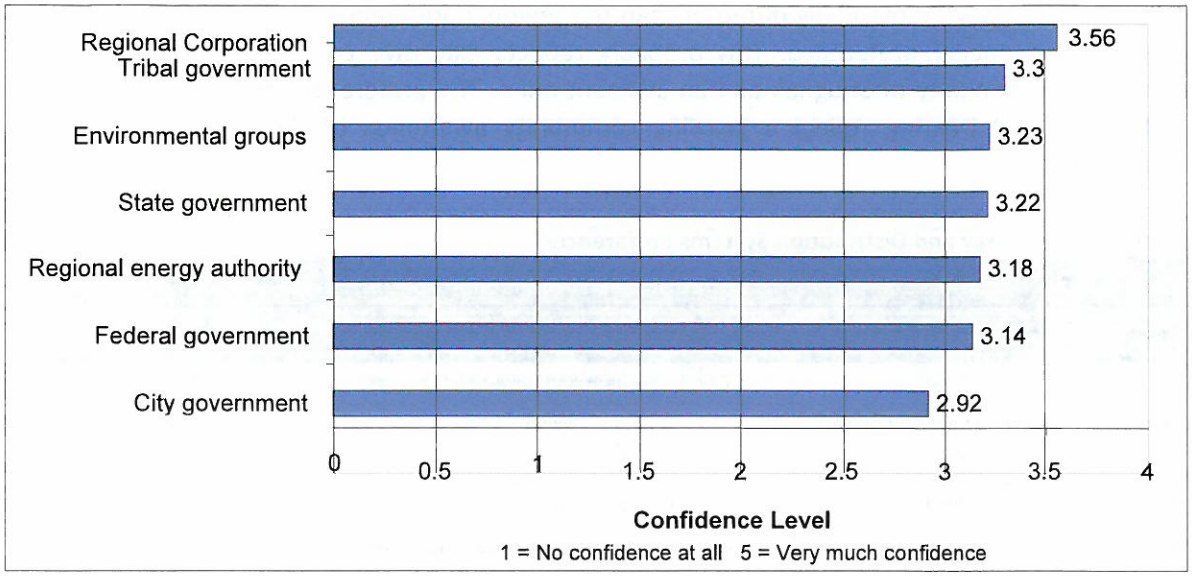
	Energy Preference		
Community	First Choice	Second Choice	Third Choice
Ambler	Wind	Combined heat and power/Natural gas	Geothermal
Buckland	Combined heat and power	Wind	Geothermal
Deering	Wind	Combined heat and power	Geothermal
Kiana	Wind	Combined heat and power	Solar
Kivalina	Wind	Natural gas/ Combined heat and power	Solar
Kobuk	Interties	Wind	Solar
Noatak	Wind	Combined heat and power	Interties/ Natural gas
Noorvik	Wind	Combined heat and power	Solar
Selawik	Wind/Natural gas	Hydroelectricity/ Combined heat and power	Hydroelectricity
Shungnak	Wind	Solar	Combined heat and power

THE MANAGEMENT OF ENERGY PROJECTS AND INITIATIVES

Short-term and long-term energy solutions require extensive management support. Short-term solutions, including the management of fuel supplies such as gasoline, stove oil and biofuel production, require the involvement of units of government, as do educational or weatherization programs aimed at improving household energy efficiency. Long-term solutions typically involve major publicly funded infrastructure development to locate and develop alternative fuel supplies or energy sources, and convert them to usable household energy.

A unit of government must be selected to help manage these complex projects. Figure 7 shows respondents' confidence in the ability of various entities to assume management or oversight responsibility for these projects. The data suggests that respondents would have the highest confidence in the regional Corporation. They appeared to have the least confidence in local city governments to manage these large and complex projects. The outcomes suggest that there is generally a positive rapport with the various regional organizations.

Figure 7 - Confidence in Various Regional Organizations



REGIONAL ENERGY PLAN-

In July of 2008, a regional energy summit was organized by NANA Regional Corporation in Kotzebue. This involved over 250 people from all communities in the region. A strong delegation from each community was present to discuss the regional energy concerns. Break-out sessions were organized by community and sub-region to discuss alternatives and identify. The communities' preferences have been highlighted in the report. A copy of this report is found in the document appendices.

ENERGY PLAN INITIATIVES

Regional Policy, Planning, & Program Management

The importance of continuity of planning, infrastructure development, and recognition that energy security and sustainability will be achieved by working across disciplines and programs cannot be understated. Furthermore, it is important to fully involve communities in the decision making process for energy initiatives and local policy development.

One of the policy initiatives is to ensure that the region participates in the various energy assistance programs currently available to the residents of Alaska to the greatest extent practical. Some of these state-administered programs include the Community Energy Assistance Program, the Power Cost Equalization (PCE) program, the Power Project Load Fund, the Bulk Fuel Revolving Loan Fund (BFRLF), the Bulk Fuel Bridge Loan Program (for communities which are ineligible for BFRLF), and the Low Income Home Energy Assistance Program (LIHEAP).

Table 9- Regional Policy Initiatives

Energy Initiative	Budget Need
Regional Policy, Planning, & Program Management (annual)	$250

There has been significant progress on this initiative. The NWAB has hired a full-time coordinator and has held quarterly energy steering committee meetings. The coordinator has conducted village by village meetings and assessments in all communities. This position and regional energy programming should be continued.

Energy Conservation & End-Use Energy Efficiency

Energy conservation and end-use energy efficiency initiatives are needed to more effectively utilize all forms of energy in Northwest Alaska, regardless of source. A leading initiative, and a project differentiator, is the promotion of energy conservation practices. NANA and the NWAB will continue to serve as leaders in the promotion of energy conservation initiatives in the region.

End-use efficiency measures for housing, commercial buildings and community-based water and sewer system are pragmatic investments. Cogeneration (combined heat and power) systems recover heat from power generation to be used for direct space and water heating. Power generation efficiency should also be aggressively pursued to maximize the kWh of electricity generated per gallon from diesel fuel. Community water and sewer systems which are warmed by an improperly installed heat-trace can waste large amounts of energy, and should be inspected and repaired if necessary. To ensure the highest level of energy efficiency, LEED-type standards[19] should be encouraged for all new construction and retro-fits of commercial and public buildings within Northwest Alaska.

The overall approach to conservation would include energy efficiency audits of local infrastructure (homes, schools, buildings, water and sewer facility, and power plant) using thermal sensing, blower door tests, and other appropriate assessment technologies. Once the energy audit is complete, mitigation and improvement efforts would be undertaken, such as weatherization and insulation, lighting and heating upgrades, co-generation (if feasible), and other improvement efforts as identified with the energy audits. The 2004 *Alaska Rural Energy Plan* estimated that a comprehensive end-use efficiency program (mostly lighting and heating upgrades) in rural Alaska communities would have an aggregate weighted average benefit/cost (b/c) ratio of 1.35.[20]

[19] The Leadership in Energy and Environmental Design (LEED) standard is a national 'green building' rating system developed by the US Green Building Council (www.usgbc.org). The LEED system addresses five major aspects of building design: sustainable building sites, water consumption, energy use and emissions, materials and resource use, and indoor environmental quality. The first LEED-certified building constructed in Alaska was the National Weather Service's Tsunami Warning Center in Palmer, which opened in 2003.

[20] Alaska Rural Energy Plan: Initiatives for Improving Energy Efficiency and Reliability, by MAFA in collaboration with Northern Economics, Inc, April 2004; prepared for the Alaska Energy Authority with support from the Denali Commission and USDA Rural Dev.

Older, low-efficiency diesel generation units should be replaced with electronically controlled units. Also recommended is the installation of automatic demand level paralleling switchgear where appropriate, which allows a community power system to automatically switch between a larger generator (during peak demand) and a smaller generator (during low demand). This ensures that the size of generator provides the greatest fuel efficiency for a particular load, since a larger generator operates at a fraction of its capacity is much less fuel-efficient. Such systems also provide remote, continuous monitoring of the fuel efficiency of each generator. Automatic demand level paralleling switchgear is estimated to save a powerhouse with three or four generators an estimated 10% to 20% in fuel costs. According to the 2004 *Alaska Rural Energy Plan,* the installation of more efficient diesel generators in rural Alaska communities was estimated to have an aggregate weighted average b/c ratio of 1.06.[21]

In addition, alternatives for heat recovery from diesel generators should be explored as part of a cogeneration feasibility study. Since 2005, Kotzebue Electric Association has operated a heat recovery system in cooperation with the City of Kotzebue. This system now saves over 60,000 gallons of diesel fuel annually, and is the most important working example of this technology in the region. According to the 2004 Alaska Rural Energy Plan, the installation of diesel cogeneration/waste heat recovery systems in rural Alaska communities was estimated to have an aggregate weighted average b/c ratio of 1.13.[22]

CAP and NIHA are the weatherization agencies responsible for Western Alaska and have instated weatherization services in all communities of the region. Weatherization is an important intervention that can be immediately implemented. CAP is scheduled to work in Kiana in 2008 and Noatak in 2010. If possible, regional entities should cooperate with the Alaska Housing Finance Corporation's building weatherization program, and programs such as CAP's Weatherization and Energy Star-Energy Smart program (to disseminate energy efficiency information to the public), and the RurAL CAP VISTA energy volunteer program. Public education programs on home energy efficiency and conservation measures should also be developed. Recently, RURAL CAP, NRC, and the NWAB have planned for the deployment of Energy Wise- an innovative workforce development and energy efficiency program. The program was previously implemented statewide with a pilot effort in Selawik. This program should be deployed to all other communities.

Table 10 - Regional Energy Conservation and End-Use Energy Efficiency Budget

Energy Initiative	Budget Need
Energy Conservation and End-Use Energy Efficiency	$8 million

Home Heating Fuel

Oil will remain the dominant source of heating for homes in Northwest Alaska for the short term. However, because oil is a fossil fuel whose price is subject to the global economics of crude oil, additional energy source options for heating oil should be reviewed. Biomass fuels, in particular wood from local sources,

[21] Ibid.

[22] Alaska Rural Energy Plan: Initiatives for Improving Energy Efficiency and Reliability, by MAFA in collaboration with Northern Economics, Inc, April 2004; prepared for the Alaska Energy Authority with support from the Denali Commission and USDA Rural Development.

should be studied where appropriate. Another option worth exploring is district heating for homes and larger buildings, particularly in conjunction with a community-scale cogeneration system. District heating systems, which pipe hot water for heating alongside other utility lines, usually are most feasible for urban applications with large commercial, residential, and institutional buildings. However, centrally-located buildings in Kotzebue or other communities in Northwest Alaska may still benefit from the economy-of-scale savings of district heating systems.

There has been recent discussions with the Alaska Natural Gas Development Authority about the use of propane in the region. A pilot propane project for both home heating and cooking should be considered.. A survey of propane use in the region is currently being conducted.

Table 11- Energy Initiative

Energy Initiative	Budget Need
Home Heating Pilot Projects	$1,000,000

"Mini-Grids" and Electrical Intertie Lines

Inter-community electrical interties could be an important means of enhancing energy security in the region by encouraging economies of scale in both infrastructure development and generation. These "mini-grids" will make the development of renewable energy more feasible and economically viable at the locations listed below in Table 12. Due to the remoteness of the region, a cost of $350,000/mile is anticipated. The evolving development of small-scale DC transmission is an emerging technology that could potentially reduce the estimated cost.

An evaluation project led by "Polar Consult" and stakeholders in "DC-grid" technology is currently in progress to evaluate "SWER (Single wire earth return) technology for DC transmission lines in Alaska. If successful, this project may have the potential to reduce transmission line cost to $ 50,000.00/mile for construction. A test set-up for 1Mw will be conducted during 2011-12.

Table 12 - NW Alaska Electric Interties

Mini-Grid	Distance
Red Dog Mine Port- Kivalina	16 miles
Ambler-Shungnak	25
Kiana-Noorvik	20
Noorvik-Selawik	30

Table 13 - Intertie Budget Needs

Energy Initiative	Budget Need
Mini-Grids and Electrical Interties	$15 million

AVEC, in conjunction with NANA Regional Corporation, has secured feasibility study funding from the Alaska Energy Authority to assess an electrical intertie between Kivalina and the Red Dog Mine Port. This will be implemented in 2011.

Transportation Infrastructure Development

Multi-modal transportation corridors and inter-connectivity between communities can promote energy security. Interconnecting Noatak with the Red Dog Mine Road[23] is one of the few options available to Noatak to help reduce the impact of air freighting fuel to the community. There are other multi-modal transportation corridors that could be developed in the region. A road from the potential deep port at Cape Blossom to Kotzebue can help reduce the cost of fuel and goods to the whole region by avoiding the lighterage expense over the shallow waters into Kotzebue.

Table 14 - Transportation Infrastructure Development

Energy Initiative	Budget Need
Noatak to Red Dog Mine Port	$50 million
Cape Blossom Port to Kotzebue Road	$40 million

There has been progress on both of these projects. Grant funding is being secured for the Noatak interconnection; design dollars are secured for the Cape Blossom Port to Kotzebue.

Bulk Fuel Storage Improvement and Development

An investment in the critical energy infrastructure of the region will ensure improved efficiencies of both traditional and renewable technologies. Potential use of aalternative fuels such as hydrogen, synthetic gas, propane, and regionally available natural gas should be a consideration in this design.

Hub Community Bulk Fuel Upgrades

Kotzebue remains a primary service center for the region's remote communities. Increases in tankage, suppliers, and regional efficiencies could have a positive impact on the energy prices in the region's communities. Improved infrastructure, such as dolphin tie up structures at Cape Blossom with tankage and a pipeline, to Nimiuk Point could service the upper Kobuk with spring deliveries. This could allow line haul fuel barges to offload fuel more efficiently. The proposed airport relocation for Kotzebue to Cape Blossom could lead to tankage and delivery solutions that could benefit the region.

Sub-Region Bulk Fuel Staging/Intermediate Area

There are a number of initiatives that could promote diesel fuel infrastructure transportation, logistics, and storage efficiencies. A leading concept of improved transportation of diesel fuel includes sub-regional staging areas for bulk fuel to expedite the transport fuel to the Upper Kobuk via surface transportation during winter months. Other technologies could include remote monitoring of bulk fuel, renewable energy, and rural power system critical infrastructure.

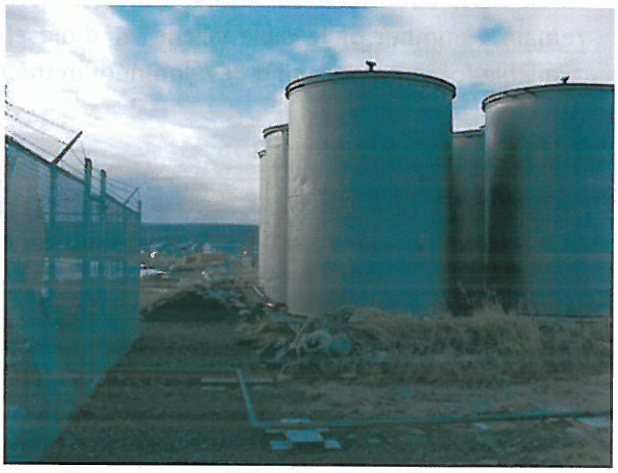
Table 15 - Sub-Region Bulk Fuel Staging/Intermediate Area

Energy Initiative	Budget Need
Improved Bulk Fuel Storage and Logistics	$15-20 million

[23] The closest straight-line distance between Noatak and Red Dog Mine Road is 18 miles.

Bulk Fuel and Rural Power Systems Upgrades

An important investment in the energy security of the region is continued investment in regional infrastructure. There are six communities in the region in need of bulk fuel and power system upgrades currently available through the Denali Commission.



Downstream fuel facilities such as 'day tanks' and individual residence fuel storage/piping, whilenot part of the Denali Commission's bulk fuel upgrade program, are nonetheless a key part of the energy infrastructure in Northwest Alaska communities. In many rural Alaska communities, these downstream day tanks and residential fuel tanks lack overfill protection and are subject to leaks. If possible, improvements to these downstream fuel facilities should be conducted in cooperation with initiatives such as the Low Income Home Energy Assistance Program (LIHEAP).

Rural power system upgrades include powerhouse (generation) upgrades or replacements, assessments and repairs of electrical distribution lines, demand-side energy efficiency improvements, and lines to new customers. Another type of rural power system upgrade is the development of mini-grids connecting communities, impacting the placement of bulk fuel, primary generation, emergency generation, and wind systems in the region. The communities in need of bulk fuel and power system upgrades are listed below.

Table 16 - NW Alaska Bulk Fuel and RPSU Upgrades

Communities	Amount Needed (million)
Shungnak/Kobuk/Ambler	$10-15
Noatak/ Kivalina	$10-15
Kiana/Noorvik	$10-15
TOTAL	$30-$45 million

Note: All communities are assumed to be interconnected.

These upgrades should be performed in close collaboration with AVEC, the NW Arctic Borough School District, the Alaska Energy Authority, local village organizations, and other significant bulk fuel owners and operators.

Table 17 - Regional Bulk Fuel Upgrades

Energy Initiative	Budget Need
Bulk Fuel Upgrades	$30-45 Million

WIND-DIESEL AND WIND SYSTEMS

Wind-diesel is a proven technology with demonstrable projects in Northwest Alaska. Both AVEC and KEA have real world experience in the development and operation of wind diesel and wind power plants. According to the 2004 Alaska Rural Energy Plan, the installation of wind-diesel hybrid systems in selected rural Alaska communities was estimated to have an aggregate weighted average b/c ratio of 1.10.[24] There remain a number of feasible village wind-diesel and larger public private partnership (PPP) opportunities available for improved wind development in the region, as shown below in tables 18 and 19.

Table 18 - NW AlaskaWind Initiatives

Community/Sub-Region	Type of Project	Amount (million)
Deering	Wind Diesel (Village Power)	$3
Buckland	Wind Diesel (Village Power)	$3
Kiana	Wind Diesel (Village Power)	$3
Noorvik	Wind Diesel (Village Power)	$3
Red Dog Mine Corridor / Kivalina (Tech Cominco)	PPP	$15
Upper Kobuk / NOVA Gold	PPP	$15
Kotzebue Wind Farm	Utility Scale	5 million[25]

Table 19 - Wind and Wind Diesel Systems

Energy Initiative	Budget Need
Wind-Diesel and Wind Systems	$50 million

NRC and the NWAB assisted with grant proposal funding from the Alaska Energy Authority for Deering, Buckland, and Noorvik. Deering in particular has advanced in their development efforts. Future initiatives should focus on advancing these projects to design and to construction.

FEASIBILITY STUDIES AND IMPROVED UNDERSTANDING OF REGIONAL RENEWABLE ENERGY RESOURCES

It is important to understand the potential impact of new technologies on known resources. Additionally, the introduction of new technologies requires the availability of a trained and capable local workforce able to service facilities. Existing energy facilities must be capable of promoting energy security in the region. A series of feasibility studies is needed for communities in Northwest Alaska, addressing potential renewable energy sources.

[24] Alaska Rural Energy Plan: Initiatives for Improving Energy Efficiency and Reliability, by MAFA in collaboration with Northern Economics, Inc, April 2004. Prepared for the Alaska Energy Authority with support from the Denali Commission and USDA Rural Development.

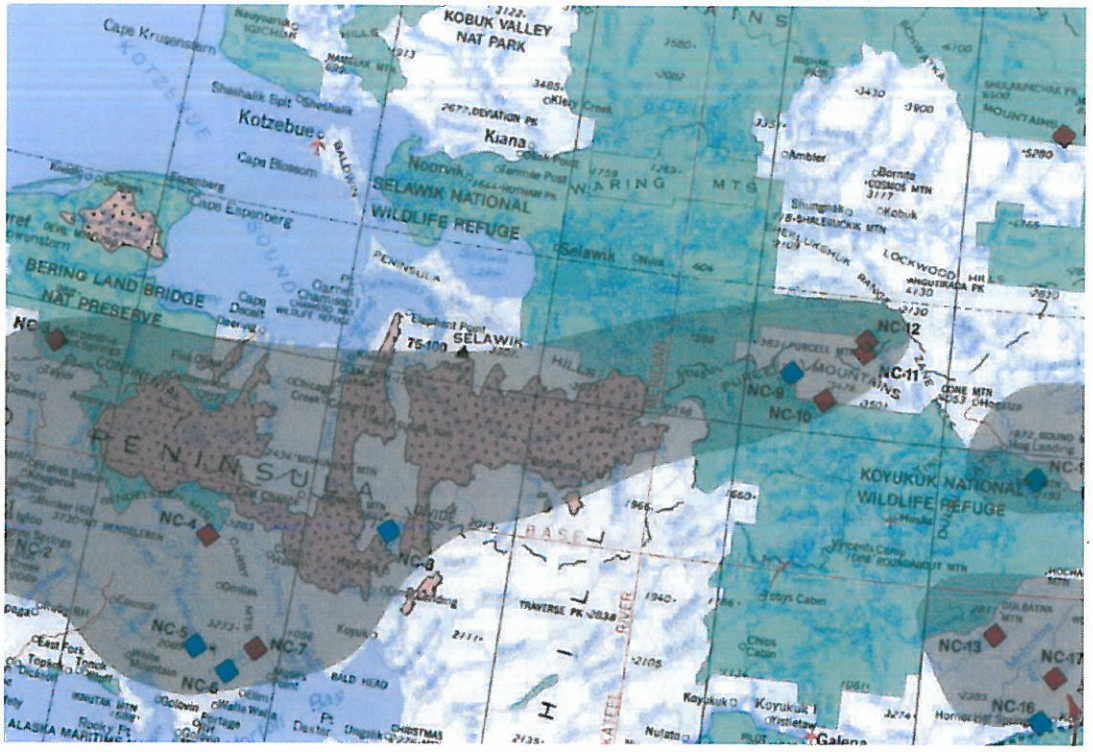
[25] Includes private sector investment

Geothermal

Regional partners have identified geothermal potential in the region for the Buckland and Upper Kobuk (Ambler, Kobuk and Shungnak) areas. There are important geo-scientific and drilling feasibility studies that could further define the potential of this resource. Figure 8 shows known hot springs in Northwest Alaska, as identified by the 1983 *Geothermal Resources of Alaska Map*.

NRC completed a geothermal feasibility study for the region. The key outcome is that the likely sources for geothermal energy are too far from communities to be developed in an economic manner. Furthermore, geothermal energy and power development in the Kotzebue area was also considered to be unfeasible. Greenhouse and other economic development initiatives appear to be the only economically feasible options at this time.

Figure 8 – Map of Hot Springs in NW Alaska[26]



[26] Hot springs in the NANA region, as identified by the 1983 Geothermal Resources of Alaska Map. Red diamonds = hot springs above 50°C; blue diamonds = hot springs below 50°C. Shaded areas indicate regions favorable for geothermal, but probably only small areas within the shaded region are viable for production.

Biomass

Through the region's energy options analysis, biomass was identified as one of the few viable options in the Upper Kobuk area. Wood-fired heat is already used in the upper Kobuk River area (Ambler, Kobuk and Shungnak), with most of the harvested wood coming from NANA land close to villages. Wood-fired combined heat and power (CHP) systems should be investigated for the upper Kobuk River area.

The boreal forest in the region consists of open woodland and small trees along the Kobuk River, interspersed with large expanses of arctic tundra. Spruce and balsam poplar grow in the lower and middle reaches of the valleys of the Kobuk River's tributaries that extend into the Baird and Waring mountains. Thickets of willow and alder trees, along with some isolated stands of cottonwood, grow up to the headwaters of the rivers and streams. In some areas, sparse stands of spruce, birch, and poplar grow above a thick ground cover of lichens. According to the Alaska Department of Natural Resources, very little forest inventory data exists for the upper Kobuk River area, but it is apparent that the current levels of harvest are well below a maximum "sustainable yield." Fast growing willows that are harvestable after a 3-4 year growing cycle are being evaluated for use in the generation of energy in other parts of the country.

The NW Inupiat Housing Authority is currently conducting a biomass feasibility study for the region, looking at both thermal heating and power generation. Preliminary findings suggest that increasing biomass thermal energy/heating deployment in Shungnak, Ambler, and Kobuk appears to be feasible. The feasibility report will be available in June of 2011.

Hydropower

Hydroelectric power has proven to be a reliable long term energy source; an evaluation of this technology for cold regions would be beneficial. Preliminary studies were conducted on small hydropower potential for villages in the region during the late 1970s and early 1980s. These older studies concluded that hydropower was not economically feasible due to very low flows during winter. More recently, the hydropower potential of the Upper Kobuk region was evaluated as part of an energy study for a proposed mining project. More up-to-date studies are needed to evaluate potential for new hydroelectric technologies to improve project economics. In-stream, or hydrokinetic, turbines are an emerging technology which could find applications in Northwest Alaska's rivers and streams. Figure 9 shows the Kogoluktuk River, a tributary of the Kobuk River, which has been identified as a possible hydroelectric site near the village of Kobuk.

Figure 9 – Kogoluktuk River

In 2010, AVEC initiated a feasibility study for small scale hydroelectric development in the Cosmos Hills area for the potential benefit of Shungnak, Ambler, and Kobuk. The most up to date information can be found at www.cosmoshills.org. Work done to date includes deployment of stream gauge monitoring. The feasibility study will be available by December of 2011.

Solar

Continued escalation of energy costs calls for a re-examination of solar energy. While solar electric generation and solar space heating were deemed expensive in the past, the rising cost of conventional fuels make solar an increasingly attractive and affordable alternative. Another use of solar energy that might have immediate benefits is the use of solar water heating to supplement electric or oil water heaters. Solar energy remains a viable resource for the region for up to 6 months out of the year.

SOLAR-PV

In 2009, the NW Arctic Borough initiated a Solar PV study for evaluation of the available resource. The test set-up consisted of a high efficiency Monocrystaline 200 watt solar array fixed at an angle of approximately 66 degrees in conjunction with a Microinverter type Enphase. The system produced 166 Kwh of electricity during one year of operation. This equated to approximately $90.00 of electricity for the building where it was installed. As the building was not equipped with PCE (power cost equalization), the project realized the full potential of the array, as the cost of electricity was $ 0.54/Kwh. Pay back is estimated at 10 to11 years. The recommendation for Solar PV usage would be to target buildings without PCE in the region and also ccommunity buildings where PCE is limited. Electricity is likely to rise in cost per KWh, as oil prices climb due to the use of ddiesel ggenerators in the Communities, making Solar PV a more attractive option.

Solar Heating

A test project is currently underway to determine the value of ssolar to supplement water or space heating. NIHA together with KEA have installed 10 small solar heating systems on selected households in Kotzebue. Two separate technologies are used in the evaluation, based ondata collected in 2011.

New Technology Initiatives Feasibility Analysis

It is imperative that the region remains at the forefront of technology development in the energy sector. Issues such as distribution, generation, and storage could profoundly improve the energy picture if commercial development is effectively monitored. Emerging technologies worthy of exploration include large-scale electric battery storage systems.

NANA Regional Corporation initiated a new technology screening study in 2010. The objective was to identify emerging or new technologies that could be deployed in the region. A copy of the summary presentation can be found on NANA Regional Corporation's web-site.

Transportation Feasibility Analysis

While we have developed some pragmatic logistics, transportation, and infrastructure concepts, there is more cost savings potential with more efficient transportation, logistics, and delivery improvements. Increasing transportation costs are one of the issues that will need to be addressed in order to reduce the cost of energy. An evaluation of current and potential future configurations of equipment or partnerships should be reviewed. Currently in Canada, there are efforts at evaluating the use of large payload airships to deliver fuel and supplies. An examination of the use of higher efficiency and electric transportation for

personal equipment would be part of the study. We are requesting an additional $100,000 to undertake a transportation feasibility analysis. Furthermore, electric cars may be a consideration in Kotzebue.

Table 20 - Feasibility Study Budget Needs

Energy Initiative	Budget Need
Feasibility Studies	$5-10million

TRAINING AND WORKFORCE DEVELOPMENT

There remains the need to maintain and improve regional ability to maintain and develop the new energy infrastructure through training and workforce development. The training and workforce development objective will have three prongs; needs assessment; increasing awareness and collaboration; and training and development.

Region-wide Needs Assessment

The first step to a region-wide needs assessment is developing a firm understanding of regional needs as it relates to work-force development. There is anecdotal information that diesel power generation technician, utility management and training, and youth mentoring is needed. Review and confirm the workforce and training needs in the energy sector at all levels of the region is needed.

Increasing Awareness and Collaborations

It is important to increase interest and awareness of these new and emerging technologies in order to motivate residents to learn about more energy issues in the region. This could include education events in schools, stakeholder visits/youth mentoring, site visits where these new technologies are being used, curriculum development at the local schools and college, clubs, job shadowing and internships, regional and local conferences, and other training programs.

Energy Education & Classes

A College class was created in collaboration with Chukchi College & UAA by Dr. Andres Soria. The course instructed the student on the principles behind renewable energy systems, including solar, wind, hydro and biomass. Topics included available technologies, energy storage, applications for renewable energy systems, sizing and selection of system components, installation of successful systems, grid and off grid tied system and safety considerations. The course also included a hands-on exercise of building of an alternate energy system during springtime. The course was also broadcast via WEB to Ambler & Buckland. A similar class will be available in the spring of 2011.

Energy Awareness Project

In 2009 The Northwest Arctic Borough initiated the "Green Community Initiative" by launching an Energy awareness project using EECBG funding. The project consists of the installation of a "Smart Energy meter" in each household in the region. The equipment selected is type TED 1001 & TED 5000 by Energy Inc. and also ECO-meter by Landis+Gyr. The units will track household energy consumption by hourly, daily and monthly increments. The units will also alert the consumers when the PCE threshold has been reached. An ongoing collaboration with the school system will allow high school students to learn about energy efficiency using the meters in their homes. The project hopes to initially reduce average household energy

consumption by 10-20 percent. Installation of Smart Meters in all households should be complete by the end of 2011.

Finally, Chukchi College has secured funding for a demonstration house in Buckland. The design concept closely follows the work completed by Anaktuvuk Pass and the Cold Climate Research Housing Center.

Meeting the Training and Workforce Development Needs

From the above exercises, stakeholders will better understand the region's workforce development needs and be able to identify appropriate technical schools and training programs that can promote energy security. This will involve collaborations with existing training providers and other entities who can add value to the region's workforce needs.

Table 21- Training and Workforce Development

Energy Initiative	Budget Need
Training and Workforce Development	$350,000/yr

OPERATIONS AND MAINTENANCE

It is important to maintain the integrity of existing infrastructure through operations and maintenance (O&M) business planning. In particular, bulk fuel O&M planning should be performed in cooperation with entities such as Rural Alaska Fuel Services (RAFS), a not-for-profit corporation organized to contract for the operation and maintenance of rural Alaskan bulk fuel storage facilities. RAFS also provides training services related to tank farm safety and O&M. The construction of renewable generation capacity, efficiency projects, and electrical inter-ties between communities, would also be a factor in O&M planning.

Table 22 - O&M Budget

Energy Initiative	Budget Need
Operations and Maintenance	$500,000/yr

HYDROCARBON RESOURCE DEVELOPMENT

Although the goal will be to displace as much fossil fuel as possible with renewable and other climate-friendly energy sources, it will also be necessary to look to traditional fuels that are or may be available in the region such as quantities of natural gas and coal. Energy costs, especially for village residents, are beyond the critical state.

Natural gas exploration is being conducted in the region and the results of that work and other drilling work in the region should be reviewed for potential gas extraction sites. Massive coal reserves exist north of the region in the Deadfall Syncline located near Point Lay. Coal quantities there are estimated to be approximately 25% of known U.S. reserves. This is a high thermal yield (12,500 BTU), low sulfur bituminous coal. In the past, coal was used for home heating in the region. A review of high efficiency heaters should be conducted. There are also projects currently underway to demonstrate carbon sequestration for the use of coal for electric generation. Also, the efforts for developing cleaner burning synfuels from coal should be monitored. Underground coal gasification (UCG) has been identified as a possible means of extracting the regions coal energy in an environmentally sensitive manner.

Table 23 - Hydrocarbon Resource Development

Energy Initiative	Budget Need
Hydrocarbon Resource Exploration and Development	$ 2 – 5 million

MINING AND ECONOMIC DEVELOPMENT

The development of natural resources in the region will also have a large impact in the development of an appropriate energy future for local communities. Mines are being proposed in the upper Kobuk, Seward Peninsula and Squirrel River regions that could assist in the planning and development of energy projects. The vision for the joint development of resources and the region's economic development will be a critical component for a successful energy future.

Table 24 - Mining and Economic Development

Energy Initiative	Budget Need
Energy Supply for Mining Development	$ 5 – 10 million

APPLICATIONS FOR SURPLUS ELECTRIC POWER

At the present time, none of the communities in Northwest Alaska have "excess electricity", or a surplus of power available above standard electric loads. However, if additional renewable generation capacity is constructed, such as a wind farm or hydroelectric installation, the amount of power generated could potentially exceed the village-level electric load. Applications for waste heat should also be explored. Possible uses include:

- Electric heat-trace lines installed in the pipes of community water systems.
- "Dump-load" electric space and water heaters. The main purpose of electric heating would be to displace hydrocarbon fuels.
- Battery charging for electric vehicles, including snow machines. Electric snow machines have been developed, and should be tested in Northwest Alaska.
- Other long-term uses of a community's surplus power, including heated greenhouses for agriculture/horticulture, aquaculture, and production of hydrogen with electrolysis.
- Demand-side management and 'smart grid' applications to manage excess power uses.

In the future, it is conceivable that with enough renewable power generation, and practical means of storing large amounts of electric energy, an "all electric village" to be completely powered by renewable energy. It should be noted that electric heating and other power-intensive applications may require an upgrade to a community's electric distribution system.

Table 25 - Budget

Energy Initiative	Budget Need
Surplus power applications	$ 2 – 5 million

METRICS AND MEASURING SUCCESS

We believe in "what gets measured gets achieved." Table 26 below is a list of process, impact, and proxy indicators that will indicate success of the program.

Table 26 - Metrics and Measuring Success

Indicator	Metric	How Measured/Who Responsible
Diesel fuel displacement	Gallons of diesel	AVEC, KEA, and NW Arctic Borough annual delivered fuel as a proxy indicator for the rest of the community.
Kobuk to Selawik interconnected via transmission interties by 2025	Intertie lines (capacity, number of electric consumers served)	Review of targeted areas.
Community support and willingness to engage	# of City and Tribal Resolutions	City and Tribal Council provided initiatives
New technologies adopted	Wind and/or other renewable energy technologies	Review of new technologies in community by NANA, AVEC, KEA, NAB, state and federal agencies, others
100% representation of youth and elders trained in energy planning in 5 years.	Number of people trained	NW Arctic Borough, Chuchi College
10% decrease of imported fossil fuels for generation and heating by 2015;	Gallons of diesel and other fuels	AVEC, KEA, and NW Arctic Borough annual delivered fuel.
25% decrease of imported fossil fuels by 2020;	Gallons of diesel and other fuels	AVEC, KEA, and NW Arctic Borough annual delivered fuel.
50% decrease of imported fossil fuels by 2030	Gallons of diesel and other fuels	AVEC, KEA, and NW Arctic Borough annual delivered fuel.
50% decrease the need for transportation fuel imported into the region by the year 2030.	Gallons of diesel and other fuels	AVEC, KEA, and NW Arctic Borough annual delivered fuel.
All new construction commercial buildings built to the LEED standard.	Number of buildings that are LEED certified	U.S. Green Building Council
All commercial building retrofitted to meet the LEED standard by.2025.	Number of buildings that are LEED certified	U.S. Green Building Council
100% of existing homes weatherized by 2015 under AHFC energy efficiency guidelines.	Number of buildings that are LEED certified	NIHA, AHFC
All new homes built in the region to reflect the AHFC 5-Star Plus rating.	Number of buildings that are LEED certified to have the AHFC 5-Star Plus rating	NIHA, AHFC, others
Reduction of greenhouse gas (GHG) emissions in the region	Tons of GHG emissions avoided due to energy efficiency/conservation, substitution of hydrocarbon energy with renewables.	TBD

ROLES AND RESPONSIBILITY

Table 27 below outlines to the potential roles and responsibilities of the various stakeholders for each energy initiative described in this SEP.

Table 27 - Potential Roles and Responsibilities of Regional Organizations

Energy Initiative	Who is responsible
Power generation and distribution	Utility, borough, city and tribal councils
Bulk fuel storage	Utility, school district, village corporations
Transportation infrastructure development	Borough, city and tribal councils
Home energy efficiency	Housing authority, city and tribal councils.
School energy efficiency	School district and borough
Commercial building energy efficiency	Private sector, city and tribal councils
Workforce development	University and school district

NEW ENERGY SOURCE OPTIONS FOR NORTHWEST ALASKA COMMUNITIES

Table 28 is a summary of the energy option analysis section found in the appendices, with a listing of the presently installed electric power generation capacity [diesel only] for each community.

Table 28 – Summary of Energy Options

Site	Electric Intertie	Infrastructure Development	Wind	Geothermal	Hydropower	Biomass
Ambler (982-kW)	The straight-line distance between Ambler and Shungnak is about 24 miles, An intertie is not likely to be economically feasible, but should be investigated.	Mines are being proposed in the upper Kobuk region that could assist in the planning and development of energy projects.	The wind resource for Ambler is predicted to be Class 1 or "Poor". Thus, wind energy appears unfeasible for the Ambler area.	The closest known geothermal sources are at Division Hot Springs, about 60 miles south-southeast of Ambler. The distance required for electric transmission does not make geothermal economically feasible for Ambler.	A 1981 study determined that a small hydroelectric plant on the East Fork of Jade Creek, located 9 miles northwest of Ambler, to be uneconomic. Hydropower resources are worth re-examining given new technology and economics.	The boreal forest in the Ambler area is open woodland of small trees along the Kobuk River, interspersed with large expanses of arctic tundra. Biomass energy resources for the upper Kobuk River are being investigated.
Buckland (650-kW)	The closed other community is Deering (about 50 miles away), thus an intertie is economically unfeasible.	Possible future road development could connect the Buckland area with communities in the Norton Sound region to the south.	Good wind resources (Class 4) are predicted to exist along the ridges about 5 miles west of Buckland, and are being investigated.	Granite Mountain Hot Springs is located approximately 40 miles south of Buckland. Exploration is recommended for possible sub-surface geothermal energy sources closer to Buckland.	A 1981 study determined that a small hydroelectric plant on Hunter Creek, located 23 miles southwest of Buckland, to be uneconomic. However, local hydropower resources are worth re-examining given new technology and economics.	No significant biomass resources are known to exist in the Buckland area.
Deering (453-kW)	The closed other community is Buckland (about 50 miles away), thus an intertie is economically unfeasible.	Possible future road development could connect the Deering area with communities in the Norton Sound region to the south.	Excellent wind resources (Class 5 and 6) are predicted to exist near Cape Deceit, 1.5 miles northwest of Deering, and are being investigated.	The closest known geothermal sources are at Lava Creek Hot Springs, located about 50 miles south of Deering. The distance would make this unfeasible as a power source for Deering.	No feasible hydroelectric sites are known to exist in the Deering area.	No significant biomass resources are known to exist in the Deering area.
Kiana (1163-kW)	The straight-line distance between Kiana and Noorvik is about 19 miles. An intertie is not likely to be economically feasible, but should be investigated.		The wind resource for Kiana is predicted to be Class 2 to 3 (or "Marginal" to "Fair"). However, much stronger wind resources (Class 5 to 7) are predicted to exist atop hills 6 miles to the east of Kiana, and should be investigated.	No significant geothermal energy resources are known to exist in the Kiana area.	A 1981 study determined that a small hydroelectric plant on Canyon Creek, located 8 miles northeast of Kiana, to be uneconomic. However, local hydropower resources are worth re-examining given new technology and economics.	The boreal forest in the Kiana area is open woodland of small trees along the Kobuk River, interspersed with large expanses of arctic tundra. Biomass energy resources for the Kiana are being investigated.
Kivalina (1040-kW)	At its present location, Kivalina is about 16 miles (straight line) from the Port of Red Dog Mine, although a new village location presumably would be closer. An electrical intertie line between the community and the port could be economically feasible, and is worth investigating.	Due to severe erosion and wind-driven ice damage, the City intends to relocate to a new site 7.5 miles away. The community needs a road to the proposed new town site near the Port of Red Dog Mine.	Good wind resources (Class 4) are predicted to exist both in Kivalina and the proposed new town site, and are worth investigating.	No significant geothermal energy resources are known to exist in the Kivalina area.	No feasible hydroelectric sites are known to exist in the Kivalina area.	No significant biomass resources are known to exist in the Kivalina area.

Table 29 – Summary of Energy Options (continued)

Site	Electric Intertie	Infrastructure Development	Wind	Geothermal	Hydropower	Biomass
Kotzebue (~12 MW)	It does not appear that electrical interties to Noorvik, Kiana, Selawik, or Buckland would be economically feasible.	Shore Avenue erosion protection project. Proposed Cape Blossom deep water port and road to Cape Blossom.	Kotzebue Electric Association presently has seventeen wind turbines integrated into the community power system. It would be feasible to augment the existing machines with additional wind turbines, or replace them with higher capacity models.	According to the Alaska Geothermal Resources Map and local knowledge, there are no known geothermal sources in close proximity to Kotzebue. However, drilling for hydrocarbon resources (see above) in the area could also yield information on whether a subsurface geothermal resource exists.	A 1979 study by the U.S. Department of Energy[27] concluded that there are no practical hydroelectric sites in close proximity to Kotzebue.	
Noatak (982-kW)	Noatak is about 30 miles (straight line) from the Port of Red Dog Mine, An intertie is not likely to be economically feasible, but should be investigated.	A new road is proposed to connect Noatak to the Red Dog Mine Road, and would enable easier fuel shipments to the community.	The wind resource for Noatak is predicted to be Class 1 or "Poor". Thus, wind energy appears unfeasible for the Noatak area. However, better wind resources may exist along a new road connecting to the Red Dog Mine Road.	No significant geothermal energy resources are known to exist in the Noatak area.	No feasible hydroelectric sites are known to exist in the Noatak area.	Some biomass resources are known to exist in the Noatak area, and should be investigated.
Noorvik (1163-kW)	The straight-line distance between Noorvik and Kiana is about 19 miles. An intertie is not likely to be economically feasible, but should be investigated.		The wind resource for Noorvik is predicted to be Class 2 to 3 (or "Marginal" to "Fair"), and are being investigated.	No significant geothermal energy resources are known to exist in the Noorvik area.	No feasible hydroelectric sites are known to exist in the Noorvik area.	The boreal forest in the Noorvik area is open woodland of small trees along the Kobuk River, interspersed with large expanses of arctic tundra. Biomass energy resources for this area should be investigated.

[27] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

Site	Electric Intertie	Infrastructure Development	Wind	Geothermal	Hydropower	Biomass
Selawik (1686-kW)	Selawik is about 25 miles (straight-line distance) from Kiana, and about 32 miles from Noorvik. An intertie is not likely to be economically feasible, but should be investigated.		Selawik presently has four AOC 15/50 wind turbines integrated into the community power system. It would likely be feasible to augment the four existing AOC machines with additional wind turbines, or replace them with higher capacity models, and should be investigated.	No significant geothermal energy resources are known to exist in the Selawik area.	No feasible hydroelectric sites are known to exist in the Selawik area.	No significant biomass resources are known to exist in the Selawik area.
Shungnak-Kobuk (1248-kW)	There is an existing electric intertie between Shungnak and Kobuk. The straight-line distance between Shungnak and Ambler is about 24 miles, An intertie is not likely to be economically feasible, but should be investigated.	Mines are being proposed in the upper Kobuk region that could assist in the planning and development of energy projects.	The wind resource for the Shungnak and Kobuk is predicted to be Class 1, or Poor". However, much stronger wind resources (Class 5 to 7) are predicted to exist atop hills 5 miles north of Kobuk, and should be investigated.	The closest known geothermal sources are at Division Hot Springs, located about 40 miles south of the Shungnak-Kobuk area. Due to the distance required for electric transmission, geothermal does not appear to be economically feasible for Shungnak-Kobuk.	Several possible hydroelectric sites (small-scale: Dahl, Cosmos, and Camp creeks and large-scale: Shungnak and Kogoluktuk rivers) have been studied in the Shungnak-Kobuk area. Resources are investigating, especially if a gold mine is developed in the area.	The boreal forest in the Shungnak-Kobuk area is open woodland of small trees along the Kobuk River, interspersed with large expanses of arctic tundra. Biomass energy resources for the Shungnak-Kobuk area should be investigated.

FINANCING PLANS

The energy projects outlined by the SEP will likely require support from a variety of government agencies, foundations and corporate entities to secure the needed resources for such an undertaking. Possible funders, with contact information, are listed in Appendix XIII. Grant funds are the most obvious means of financing construction of such a facility, but there are other options to consider as well.

State of Alaska

The *Alaska Energy Authority* has assisted the Northwest Arctic region in the past with a variety of grant and loan programs such as the Alternative Energy and Energy Efficiency programs, Power Project Load Fund, Bulk Fuel Upgrade Program, Power System Upgrade Program, and community technical assistance and training programs. In 2008, the legislature's passage of HB152 created a Renewable Energy Fund, to which several regional stakeholders submitted applications for both pre-construction and construction funding for energy projects.

The *Alaska Department of Transportation and Public Facilities* prioritizes projects with the Statewide Transportation Improvements Program (STIP) and the Needs List programs, both of which could include new roads connecting communities in the NW Arctic Borough.

Federal Government

With a new administration in Washington, D.C., there are high expectations for both increased federal support of renewable energy development, and for federal infrastructure spending as part of an economic stimulus package. If federal taxation of greenhouse gas emissions becomes a reality, this would provide a great incentive for renewable development and mitigation funds for climate change impacts on infrastructure. Given that Northwest Alaska is already disproportionately affected by the impacts of climate change, most notably the village of Kivalina, the Northwest Arctic would be well-positioned to pursue these funds.

The *U.S. Department of Energy (DOE)* has a wide variety of grant programs for renewable energy development, energy efficiency programs, and projects involving tribal entities. In addition to the Tribal Energy Program, DOE funding may also be available through the Geothermal Technology Program, and the Wind and Hydropower Technologies Program.

The federal-state *Denali Commission* has funded bulk fuel upgrades in Northwest Alaska, in addition to a feasibility study of a wind-diesel system for Deering. The Denali Commission is involved in funding non-energy infrastructure projects as well.

The *USDA Rural Utilities Service's High Energy Cost Grant Program* provides financial assistance for the improvement of energy generation, transmission, and distribution facilities serving eligible rural communities with home energy costs that are over 275 percent of the national average.

The *U.S. Department of Housing and Urban Development's Community Development Block Grant Program* could be used by the Northwest Arctic Borough and the Indian Community Development Block Grant (ICDBG) for Tribal Entities, for energy efficiency and weatherization programs.

The federal government's *Production Tax Credit (PTC)* allows owners of qualifying renewable energy projects to take between one and 1.9 cents off their federal tax bill for every kWh of electricity generated for the first ten years of operation. The projects which qualify for the PTC tend to be for-profit, privately-owned facilities. In the NANA region, the Red Dog Mine's proposed wind generation would fall under this category. Other for-profit renewable generation options should be explored by NANA, perhaps in form of projects owned and operated by a NANA subsidiary. Under present legislation, the PTC will last the end of 2010, but hopefully will be extended. Federal tax deductions and credits are also available for energy efficiency investments for homes and commercial buildings.

Private Equity and Corporate Giving

ConocoPhillips, BP, Alyeska Pipeline, Federal Express are all major corporations with a strong Alaskan presence that could be considered for a capital campaign. NANA Regional Corporation, as the regional corporation, is another entity to approach. Teck Cominco, due to its close proximity with the Red Dog Mine, is another viable option. Other mining projects in the region, such as Mantra Mining's proposed Ambler Project under exploration in the Upper Kobuk area, could offer similar opportunities. Shell, which is pursuing offshore oil and gas exploration near the Northwest Arctic region, is assisting with community energy efficiency programs as a direct result of company's participation in the July 2008 Northwest Arctic Regional Energy Summit.

On the national level, several large technology firms not previously involved with energy projects, most notably Google, are starting to invest large amounts in renewable energy ventures. Funding a renewable energy project in a rural Alaska community affected by climate change could be a noteworthy 'showcase' for such a company.

Appendix A
Reviewers and Contributors

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Appendix B
Kotzebue Energy Options Analysis

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KOTZEBUE OVERVIEW[28]

Kotzebue, population 3,100, is on the Baldwin Peninsula in Kotzebue Sound, on a 3-mile-long spit, which ranges in width from 1,100 to 3,600 feet. It is located near the discharges of the Kobuk, Noatak and Ssezawick Rivers, 549 air miles northwest of Anchorage and 26 miles above the Arctic Circle. This site has been occupied by Inupiat Eskimos for at least 600 years. "Kikiktagruk" was the hub of ancient arctic trading routes long before European contact, due to its coastal location near a number of rivers. The German Lt. Otto Von Kotzebue "discovered" Kotzebue Sound in 1818 for Russia. The community was named after the Kotzebue Sound in 1899 when a post office was established. The City was formed in 1958; an Air Force Base and White Alice Communications System were later constructed. The residents of Kotzebue are primarily Inupiat Eskimos, and subsistence activities are an integral part of the lifestyle. Each summer, the North Tent City fish camp is set up to dry and smoke the season's catch. Kotzebue is located in the transitional climate zone, which is characterized by long, cold winters and cool summers. Kotzebue Sound is ice-free from early July until early October.

Air is the primary means of transportation year-round. The State-owned Ralph Wien Memorial Airport supports daily jet service to Anchorage and several air taxis to the region's villages. It has a 5,900' long by 150' wide main paved runway and 3,800' long by 100' wide crosswind gravel runway. A seaplane base is also operated by the State. The shipping season lasts 100 days, from early July to early October, when the Sound is ice-free. Due to river sediments deposited by the Noatak River 4 miles above Kotzebue, the harbor is shallow. Deep draft vessels must anchor 15 miles out, and cargo is lightered to shore and warehoused. Crowley Marine Services operates shallow draft barges to deliver cargo to area communities. The City wants to examine the feasibility of developing a deep water port, since the cost of cargo delivery is high with the existing transportation systems. There are 26 miles of local gravel roads, used by cars, trucks and motorcycles during the summer. Snowmachines are preferred in winter for local transportation.

Kotzebue is the service and transportation center for all villages in the northwest region. It has a healthy cash economy, a growing private sector, and a stable public sector. Due to its location at the confluence of three river drainages, Kotzebue is the transfer point between ocean and inland shipping. It is also the air transport center for the region. Activities related to oil and minerals exploration and development have contributed to the economy. The majority of income is directly or indirectly related to government employment, such as the School District, Maniilaq Association, the City and Borough. The Red Dog Mine is a significant regional employer. Commercial fishing for chum salmon provides some seasonal employment. 128 residents hold commercial fishing permits. Most residents rely on subsistence to supplement income.
Water is supplied by the 150-million-gallon Vortac Reservoir, located one and a half miles from the City. Water is treated and stored in a 1.5-million-gallon tank. Funds have been requested to construct a second 1.5-million-gallon tank. Water is heated with a waste heat recovery system at the electric plant, and distributed in circulating mains. Piped sewage is treated in a 32-acre zero discharge facultative lagoon west of the airport. Around 80% of homes are fully plumbed, and 521 homes are served by the City system. A new transfer station and Class 2 permitted landfill with bale-fill has recently been completed.

CURRENT ENERGY CONDITIONS

Kotzebue Electric Association currently provides power to the city of Kotzebue, with a 11,520-kW (11.5 MW) diesel power plant as well as 1,165-kW (1.1 MW) of installed wind generation capacity for a total

[28] State of Alaska Department of Community and Economic Development Community website.

installed capacity of 12,675-kW (12.6 MW) . Kotzebue Electric Association generated 22,101,534 kWh total during fiscal year 2007, of which 95.2% (21,037,261 kWh) was from diesel and 4.8% (1,064,273 kWh) was from wind. During the same period of time, the community imported 1,490,063 gallons of fuel for power generation use, and consumed 1,420,457 gallons for the year. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Kotzebue was 38.50 cents per kWh. The average fiscal year 2007 price of diesel fuel purchased by Kotzebue Electric Association for power generation purposes was $2.6890 per gallon.

The primary source used for home heating for the community is home heating oil, which is shipped to Kotzebue on the spring and fall barges. It unlikely that biomass (i.e. wood) is viable as a primary source as a home heating fuel.[29] However, this should be confirmed.

The current usable bulk fuel storage capacity in Kotzebue by tank farm owner: Crowley Marine Services Tank Farm (6,200,000 gallons); Airport/Bering Air (20,000), Army National Guard (17,000); other bulk fuel storage listed (capacities unknown): Pacific Alaska Fuel Services, Baker's Fuel, Hanson's, Bison Street, Lee's Auto, K.I.C., NAPA Auto Parts.

KOTZEBUE ENERGY OPTIONS

A preliminary screening analysis of best available energy options was undertaken for Kotzebue. This included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration)*. The preliminary screening analysis for Selawik suggested waste heat recovery as a potential source of economic benefits for the community if a potential end-use for the heat is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency*. End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Kotzebue. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrades to the thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid System*. Kotzebue Electric Association presently has seventeen wind turbines integrated into the community power system. It would be feasible to augment the existing machines with additional wind turbines, or replace them with higher capacity models.
- *Home Heating Oil*. Home heating oil is and will likely remain a source of heating for Kotzebue homes future.. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.

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[29] A review of the Alaska Department of Natural Resources Biomass Map did not suggest significant potential for biomass.

- *Electrical Intertie*. The closest communities to Kotzebue are separated by the waters of Kotzebue Sound, and over 50 miles away. Therefore, it does not appear that electrical interties to Noorvik, Kiana, Selawik, or Buckland would be economically feasible.
- *Exploration for Natural Gas and other Hydrocarbon Fuels*. The area near Kotzebue may be explored for natural gas, and possibly oil, in the near future. The amount, if any, of these hydrocarbon resources in the Kotzebue Sound/Chukchi Sea area is presently unknown, and would require exploration drilling to determine.
- *Geothermal*. According to the Alaska Geothermal Resources Map and local knowledge, there are no known geothermal sources in close proximity to Kotzebue. However, drilling for hydrocarbon resources (see above) in the area could also yield information on whether a subsurface geothermal resource exists.
- *Hydroelectric*. A 1979 study by the U.S. Department of Energy[30] concluded that there are no practical hydroelectric sites in close proximity to Kotzebue.
- *Solar*. While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.

RECOMMENDED ENERGY OPTIONS FOR KOTZEBUE

The following recommendations are provided for the community of Kotzebue in order to frame energy policy for the region.

- *Wind Energy*. Kotzebue could expand its existing wind generation capacity, and the community should work with Kotzebue Electric Association in studying the feasibility of installing additional wind turbines. Also, performance data of the existing wind turbines should be analyzed to aid in the planning of future wind turbine installations. Electrical energy storage systems integrated with the Kotzebue Electric Association wind/diesel system could provide a means of capturing more wind energy and improving diesel generator efficiency.
- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study*. Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to implement a feasibility study of such systems for Kotzebue.
- *Coordinate an End-Use Energy Efficiency Study*. Kotzebue stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed.
- *Coordinate Exploration Drilling/Geophysical Investigations for Hydrocarbon and Geothermal Resources*. The extent of natural gas, oil, or geothermal resources in the Kotzebue area is presently unknown, and would required exploratory drilling and geophysical work to assess the resource.

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[30] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

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Appendix C
Ambler Energy Options Analysis

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AMBLER OVERVIEW[31]

Ambler, population 277, is located on the north bank of the Kobuk River, near the confluence of the Ambler and the Kobuk Rivers. It is 138 miles northeast of Kotzebue, 30 miles northwest of Kobuk and 30 miles downriver from Shungnak. Ambler is located in the continental climate zone, which is characterized by long, cold winters and mild summers. The Kobuk River is navigable from early July to mid-October. Crowley Marine Services barges fuel and goods from Kotzebue each summer. Small boats, ATVs and snow machines are used for local travel.

Ambler's economy is a mix of cash and subsistence activities. Chum salmon and caribou are the most important food sources. Freshwater fish, moose, bear, and berries are also harvested. Birch baskets, fur pelts, jade, quartz, bone, and ivory carvings are sold in gift shops throughout the state. The community is interested in developing a lapidary facility for local artisans.

The main source of water for the community is pumped from a 167' well near the Kobuk River to the treatment facility and stored in a 210,000-gallon insulated storage tank. An 80' standby well is also located at the water treatment plant. Sewage is collected via 6- and 8-inch arctic pipes and flows to a facultative lagoon through two lift stations, where it discharges to a natural watershed, then to the Kobuk River. A new water treatment plant, washeteria, and sewage lagoon have been funded. The landfill is not permitted.

CURRENT ENERGY CONDITIONS

The Alaska Village Electric Cooperative currently provides power to the community of Ambler with a 982-kW diesel power plant. The utility generated 1,363,646 kWh total in Ambler during fiscal year 2007 (PCE report for fiscal year 2007). During the same period, the community imported 100,053 gallons of fuel for power generation use. The average pre-PCE residential electric rate for fiscal year 2007 (based on 500 KWh monthly usages) was 53.49 cents per kWh.

According to AVEC's end-of-year 2006 generation statistics, the peak demand recorded to date at the Ambler AVEC power plant is 319 kW, with an overall average plant load in 2006 of 150 kW. The average 2006 price of diesel fuel purchased by AVEC in Ambler for power generation purposes was $2.66 per gallon. The average 2006 cost of generating a kWh of electricity was 19.55 cents per kWh.

The primary source for community home heating is heating oil, which is shipped to Ambler on the spring and fall barges. The current usable fuel storage capacity in Ambler by tank farm owner: Village Council (238,100 gallons); AVEC (98,550); Northwest Arctic Schools (29,000); Nunamiut (12,000); Ambler Air Service (2,153).

AMBLER ENERGY OPTIONS

A preliminary screening analysis of best available energy options for the Ambler community included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

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[31] State of Alaska Department of Community and Economic Development Community website.

- *Combined Heat and Power Systems (Cogeneration).* The preliminary screening analysis for Ambler suggested waste heat recovery as a potential source of economic benefits for the community if a potential end-use for the heat is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency.* End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Ambler. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrades to the thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid Systems.* The NANA Region Wind Resource Status Report predicted for Ambler a low wind resource, Class 1 or "Poor." Potentially developable wind resources are predicted for hills about 10 miles to the northwest of Ambler.
- *Home Heating Oil.* Home heating oil will remain as a source of heating for Ambler homes and will likely remain as an option into the future. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.
- *Electrical Intertie.* Two communities are within a reasonable distance from Ambler for an electrical intertie line: Shungnak and Kobuk, both of which are already connected by an existing electrical intertie that is about 7 miles long. Kobuk has very limited capacity for power generation, and purchases virtually all of its electricity from the Shungnak AVEC power plant via the intertie. The distance between Ambler and Shungnak is about 24 miles, and an intertie could be economically feasible.
- *Geothermal.* According to the Alaska Geothermal Resources Map and local knowledge, the closest known geothermal sources are at Division Hot Springs, located about 60 miles south of Ambler. The water temperatures of the Division Hot Springs are significantly below the necessary temperature of ~80º C for Chena-type power generation, although field investigations are needed to determine if hotter fluid exists below ground.
- *Hydroelectric.* Both a 1979 study by the U.S. Department of Energy[32] and a 1981 study commissioned by the U.S. Army Corps of Engineers[33] examined two potential hydroelectric sites on Jade Creek, located 9 miles northwest of Ambler. With a possible installed capacity ranging between 106 kW and 370 kW, a hydroelectric plant on Jade Creek was judged to be uneconomic. The 1981 study proposed a 106-kW installation on the East Fork of Jade Creek, with an estimated average annual plant factor of 0.27. Minimal power production would occur from December through April, and the environmental constraints listed were the presence of whitefish and arctic grayling in the stream.
- *Solar.* While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.
- *Biomass.* The biomass map in the Renewable Energy Atlas of Alaska identifies the Ambler area as "mixed forest and broadleaf." Wood from local trees is already used as a practical home heating source and should be investigated further.

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[32] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

[33] Regional Inventory and Reconnaissance Study for Small Hydropower Projects: Northwest Alaska. Ott Water Engineers, Inc., prepared for the U.S. Army Corps of Engineers, Alaska District. May 1981.

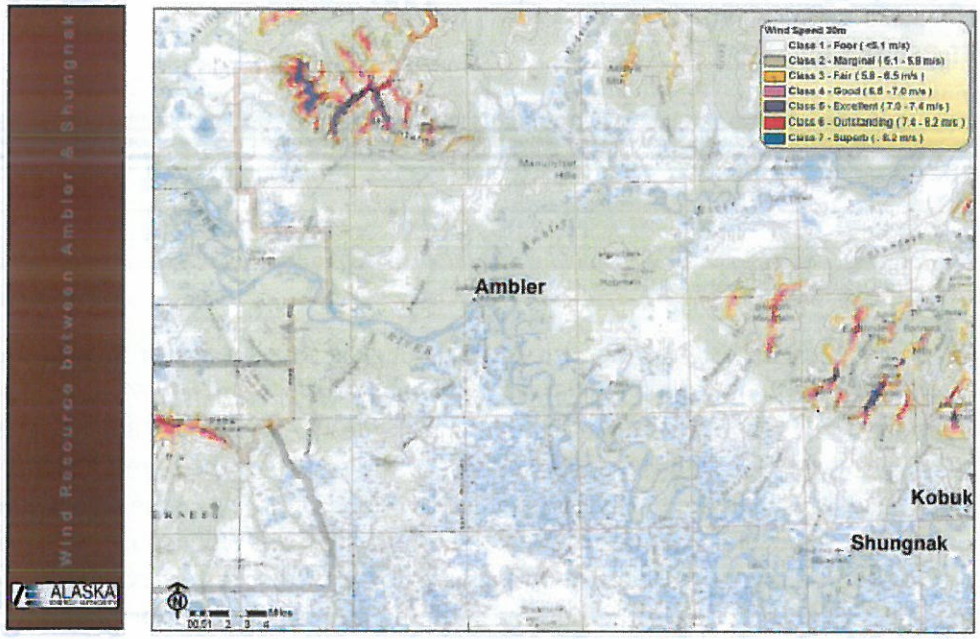
RECOMMENDED ENERGY OPTIONS FOR AMBLER

The following recommendations are provided for the community of Ambler in order to frame energy policy for the region.

- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study.* Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to implement a feasibility study of such systems for Ambler. This could be done at the time that the Bulk Fuel and Power System Upgrades are undertaken in Ambler. UCG of local coals sources may be a feasible option with further study.
- *Coordinate an End-Use Energy Efficiency Study.* Ambler stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Research Additional Home Heating Energy Options.* While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed. In particular, local biomass (wood) options should be studied.
- *Research Electrical Intertie with Shungnak.* The 25-mile distance between Ambler and Shungnak may be short enough to justify an electric intertie line.

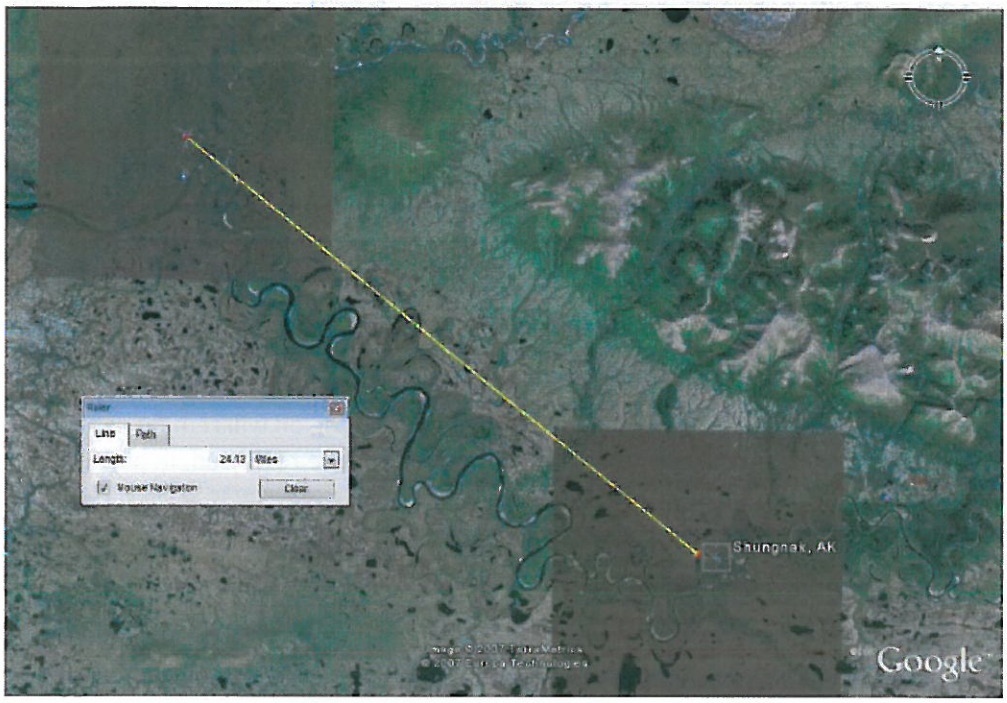
AMBLER EXHIBITS

Exhibit C-1 - Ambler to Shungnak Area Wind Resource Map



Source: NANA Region Wind Resource Status Report

Exhibit C-2 - Ambler to Shungnak Tie-line Distance Google Earth Image



Source: NANA Region Wind Resource Status Report

GEOTHERMAL PROSPECTS OF AMBLER AREA

Table C-1 – Division Hot Springs

Temp.	Flow (LPM)	TDS	SiO_2 geothermometer	Giggenbach geothermometer
68°C / 154°F	820	-	-	-
56°C / 133°F	2070	-	-	-

Source: NANA Geothermal Assessment Project (GAP) Draft Literature Review

Several hot springs comprise the Division Hot Springs, also called Shungnak Hot Springs or Selawik Hot Springs. They are approximately 40 miles from the Kobuk-Shungnak area and approximately 60 miles from Ambler. They are located on the north side of the Purcell Mountains, inside the Selawik National Wildlife Refuge. The lower springs are slightly cooler than the upper springs, so the source of the thermal water is probably topographically high. Like Hawk and South Hot Springs, the Division Hot Springs issue from within the Cretaceous-age, anomalously radioactive Wheeler Creek Pluton (Miller and Johnson, 1978; see description of Wheeler Creek Pluton above). Division Hot Springs are some of the hottest springs in the NANA region, but they are still significantly below the necessary temperature of ~80 ºC for Chena-type power generation. At this time, there are no geothermometer predictions of hotter fluid at depth – but is due to a lack of data. The flow rate of the upper spring is extremely high relative to other CAHSB Hot Springs, which would reduce the amount of pumping required for production. Hence, based on resource factors alone, these springs should be prospective for development; however their location inside of a National Wildlife Refuge could complicate development plans.

Appendix D
Buckland Energy Options Analysis

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BUCKLAND OVERVIEW[34]

Buckland, population 457, is located on the west bank of the Buckland River, about 75 miles southeast of Kotzebue. Buckland is located in the transitional climate zone which is characterized by long, cold winters and cool summers. Crowley Marine barges fuel in and various lighterage companies deliver cargo and supplies each summer. Small boats, ATVs and snow machines are used for local travel.

Buckland's economy is a mix of cash and subsistence activities. Residents depend on a subsistence lifestyle for most food sources. Chum salmon and caribou are the most important food sources. Freshwater fish, moose, bear, and berries are also harvested. A herd of more than 2,000 caribou are managed; workers are paid in meat. Cash employment is primarily with the school, city government, health clinic, stores, and some mining activities. The community is interested in developing a Native food products and crafts manufacturing facility to produce reindeer sausage, berry products, Labrador tea and ivory and wood carving.

Water is pumped from Buckland River, treated in the washeteria building, and stored in a 100,000-gallon tank. Some residents have water delivered to home tanks, but most haul their own water. The City of Buckland pumps flush/haul waste tanks or hauls honey buckets to the sewage lagoon. A flush/haul system has been problematic on the South side of town and freezes and fails during the winter. Only 8 homes and the school have functioning plumbing; 74 homes are not served. A new water treatment plant and sewage lagoon improvements are under construction. The landfill is not permitted.

CURRENT ENERGY CONDITIONS

The City of Buckland currently provides power to the community, with a 1,173-kW diesel power plant. The facility, operated by the city under contract to the Kotzebue Electric Association, generated 1,518,027 kWh total in Buckland during fiscal year 2007 (most recent PCE report). During the same period of time, the community imported 109,943 gallons of fuel for power generation use. The average fiscal year 2007 price of diesel fuel purchased by the City of Buckland for power generation purposes was $2.52 per gallon. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Buckland was 40.36 cents per kWh.

The primary source used for home heating for the community is home heating oil, which is shipped to Buckland on the spring and fall barges. It is unlikely that biomass (i.e. wood) is viable as a primary source as a home heating fuel.[35] However, this should be confirmed.

The current usable fuel storage capacity in Buckland by tank farm owner: Village Council Fuel Depot (151,800 gallons); Northwest Arctic Schools (62,500); City Power Plant (178,980 gallons); City Water/Washeteria (16,100); City Office/Clinic (14,800); Army National Guard (4,600); Alaska Dept. of Transportation and Public Facilities (2,700).

BUCKLAND ENERGY OPTIONS

A preliminary screening analysis of best available energy options for the Buckland community included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and

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[34] State of Alaska Department of Community and Economic Development Community website.

[35] A review of the Alaska Department of Natural Resources Biomass Map did not suggest significant potential for biomass.

other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration).* The preliminary screening analysis for Buckland suggested waste heat recovery as a potential source of economic benefits for the community if a potential end-use for the heat is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency.* End-Use Energy Efficiency, including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heaters, has been identified as a potential source of economic benefits for Buckland. Types of interventions that could be considered for this initiative could include a light bulb replacement program, upgrades to thermal performance (insulation) of homes, replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid Systems.* The NANA Region Wind Resource Status Report predicted that good wind resources exist along the ridges several miles west of Buckland. The possible wind energy sites in this area are close to an existing road.
- *Home Heating Oil.* Home heating oil will remain as a source of heating for Buckland homes and will likely remain as an option into the future. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.
- *Electrical Intertie.* The only community within a reasonable distance for an electrical intertie line is Deering. The distance between Buckland and Deering is about 50 miles, and could make an intertie economically unfeasible.
- *Geothermal.* According to the Alaska Geothermal Resources Map and local knowledge, there are known geothermal sources in close proximity. Villagers use these sources for recreational purposes during winter. Granite Mountain Hot Springs is located approximately 40 miles south of Buckland. Another possible geothermal site is the Inmachuk Springs, which are located approximately 30 miles equidistant from both Deering and Buckland. Little is currently known about the geothermal potential in the Deering/Buckland area aside from state maps and local knowledge. The water temperatures of the Division Hot Springs are significantly below the necessary temperature of ~80º C for Chena-type power generation, although field investigations are needed to determine if hotter fluid exists below ground.
- *Hydroelectric.* A 1981 study commissioned by the U.S. Army Corps of Engineers[36] examined a potential hydroelectric site on Hunter Creek, located 23 miles southwest of Buckland. The 1981 study proposed a 238-kW installation on Hunter Creek, with an estimated average annual plant factor of 0.27. Minimal power production would occur from December through April, and the environmental constraints listed were the presence of whitefish and arctic grayling in the stream. Partly due to the length of a needed transmission line, the project was judged to be economically unfeasible.
- *Solar.* While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.

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[36] Regional Inventory and Reconnaissance Study for Small Hydropower Projects: Northwest Alaska. Ott Water Engineers, Inc., prepared
for the U.S. Army Corps of Engineers, Alaska District. May 1981.

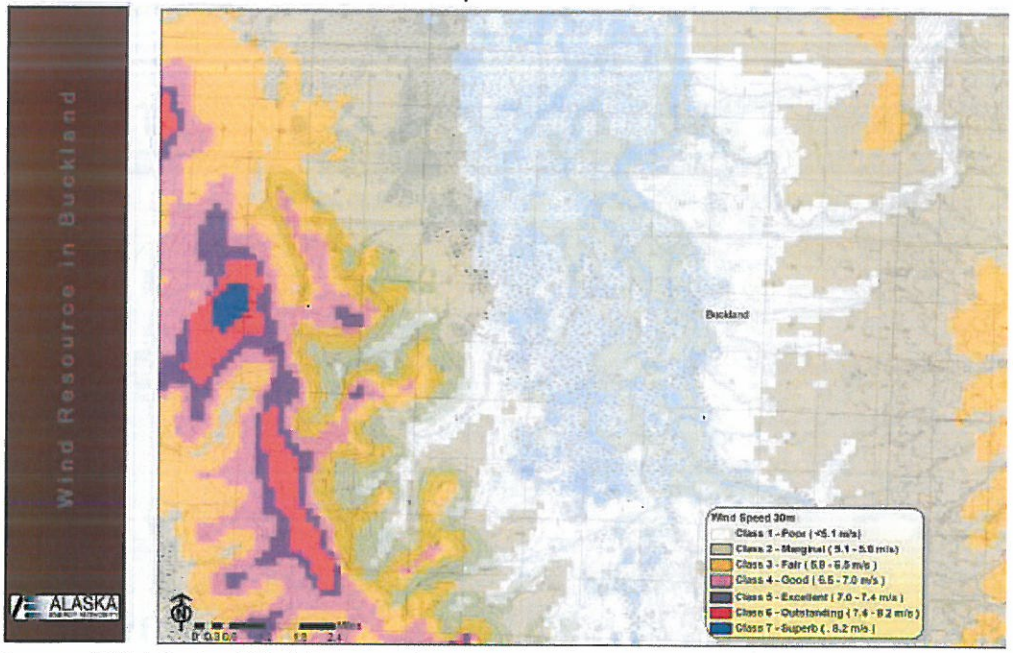
RECOMMENDED ENERGY OPTIONS FOR BUCKLAND

The following recommendations are provided for the community of Buckland in order to frame energy policy for the region.

- *Wind Resource Assessment Program*. The Buckland community is presently collecting wind data through the Alaska Energy Authority's wind resource assessment program. Data from an AEA met tower, installed in 2005 near the village, indicates Class 2 winds. In June 2008, this met tower was moved to a new location on a hill top several miles west of Buckland, where stronger winds are expected.
- *Coordinate a Geothermal Power Generation Feasibility Study.* The geothermal power potential should be reviewed for the community of Buckland by a qualified individual.
- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study*. Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to implement a feasibility study of such systems for Buckland. This could be done at the time that the Bulk Fuel and Power System Upgrades are undertaken for Buckland.
- *Coordinate an End-Use Energy Efficiency Study*. Buckland stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed. In particular, local biomass (wood) options should be studied.

BUCKLAND EXHIBITS

Exhibit D-1 - Buckland Wind Resource Map



Source: NANA Region Wind Resource Status Report

Table D-1 – Granite Mountain Hot Springs

Temp.	Flow (LPM)	TDS	SiO_2 geothermometer	Giggenbach geothermometer
49°C / 120°F	1630	260	121.7 °C	100.7 °C
			117.5 °C	95.7 °C

Source: NANA Geothermal Assessment Project (GAP) Draft Literature Review

Granite Mountain Hot Springs is located approximately 40 miles south of Buckland and 60 miles south of Deering. The springs issue from the contact between the anomalously radioactive Granite Mountain Pluton and the Cretaceous age volcanic rocks. The Granite Mountain Pluton is uranium-enriched, however not enough to be commercial (Gault and others, 1951). The springs are located on Spring Creek, a tributary of Sweepstakes Creek. The temperature of these hot springs is significantly below the temperature of the fluids utilized for power generation at Chena Hot Springs (~80 ºC) However, if the geothermometer predictions are correct and there is hotter fluid at depth, these springs could be suitable for development. The flow rate is fairly high relative to other CAHSB Hot Springs, meaning that less pumping may be required for production.

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Appendix E
Deering Energy Options Analysis

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ENERGY OPTIONS ANALYSIS

The objective of an energy options analysis is to provide preliminary screening analysis of energy options for a particular community. The energy sources described below are considered to be a first order, pre-feasibility screening. Additional analysis/study is needed to determine the feasibility of different energy sources for the community. This document will remain in draft until it is integrated into NW Alaska Regional Energy Plan.

DEERING OVERVIEW[37]

Deering, population 131, is located on Kotzebue Sound at the mouth of the Inmachuk River, 57 miles southwest of Kotzebue. It is built on a flat spit composed of sand and gravel, about 300 feet wide and a half-mile long. Deering is located in the transitional climate zone, which is characterized by long, cold winters and cool summers. Kotzebue Sound is ice-free from early July until mid-October. Crowley Marine Services barges fuel and goods from Kotzebue each summer. Small boats, ATVs and snow machines are used for local travel. Winter trails are available to Candle and Buckland.

Deering's economy is a mix of cash and subsistence activities. Moose, seal and beluga whale provide most meat sources; pink salmon, tom cod, herring, ptarmigan, rabbit and waterfowl are also utilized. The village wants to develop eco-tourism, including a 38-mile road to Inmachuk Springs for tourists.
Water is derived from the Inmachuk River, is treated and pumped to two raw water storage tanks, 400,000-gallon in capacity and one with a 425,000-gallon capacity. Major improvements are under construction for a water haul and vacuum sewer system. A new washeteria and water treatment plant are in operation. Archaeological remains were discovered while excavating for the new system. The City would like to purchase an incinerator with waste heat recovery to reduce the volume of refuse.

CURRENT ENERGY CONDITIONS

The Ipnatchiaq Electric Company currently provides power to the community of Deering, with a diesel power plant with a total generating capacity of 585-kW. The facility generated 709,559 kWh total in Deering during fiscal year 2007 (most recent PCE report). During the same period of time, the community imported 62,878 gallons of fuel for power generation use, and the price of diesel fuel purchased by the Ipnatchiaq Electric Company for power generation purposes was $3.11 per gallon. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Deering was 49.00 cents per kWh.

The primary source used for home heating for the community is home heating oil, which is shipped to Deering on the spring and fall barges. It unlikely that biomass (i.e. wood) would be a viable as a primary source as a home heating fuel.[38] However, this should be confirmed.
The current usable fuel storage capacity in Deering by tank farm owner: Village Council (88,600 gallons); City (84,500); Northwest Arctic Schools (36,800).

DEERING ENERGY OPTIONS

A preliminary screening analysis of best available energy options for the Derring community included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and

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[37] State of Alaska Department of Community and Economic Development Community website.
[38] A review of the Alaska Department of Natural Resources Biomass Map did not suggest significant potential for biomass.

other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration)*. The preliminary screening analysis for Deering suggested waste heat recovery as a potential source of economic benefits for the community if a potential end-use for the heat is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user. Finally, the City of Deering would like to purchase an incinerator with waste heat recovery to reduce the volume of refuse and to provide a source of heat to a potential end-user.
- *End-Use Energy Efficiency*. End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Deering. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrades to the thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid Systems*. According to the Alaska Rural Energy Plan, Deering has been identified as an attractive opportunity for wind-diesel hybrid development with a benefit cost ratio of 1.55. To be considered for development, the B/C ratio should be greater than 1; Deering has been identified as the fifth most attractive community for wind power development according to the Alaska Rural Energy Plan. Additional efficiencies could result if improved switchgear, SCADA systems, and remote monitoring systems are incorporated into the wind/diesel design.
- *Home Heating Oil*. Home heating oil will remain as a source of heating for Deering homes and will likely remain as an option into the future. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed, such as coal deposits or other resources which could exist in the region.
- *Electrical Intertie*. The only community within reasonable distance for a tie-line/inter-tie is Buckland. The distance between Buckland and Deering is about 50 miles, and could make an intertie economically unfeasible.
- *Geothermal*. According to the Alaska Geothermal Resources Map and local knowledge, there are known geothermal sources in close proximity. Villagers use these sources for recreational purposes during the winter. Granite Mountain Hot Springs is located approximately 60 miles southeast of Deering. Another possible geothermal sites are Inmachuk Springs, which are located approximately 30 miles equidistant from both Deering and Buckland; Lava Creek Hot Springs, located about 50 miles south of Deering; and Serpentine Hot Springs, located about 60 miles west of Deering. Little is currently known about the geothermal potential in the Deering/Buckland area aside from state maps and local knowledge. The water temperatures of Division Hot Springs are significantly below the necessary temperature of ~80º C for Chena-type power generation, although field investigations are needed to determine if hotter fluid exists below the ground.
- *Hydroelectric*. Both a 1979 study by the U.S. Department of Energy[39] concluded that there are no potential hydroelectric sites in close proximity to Deering.
- Solar. While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.

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[39] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

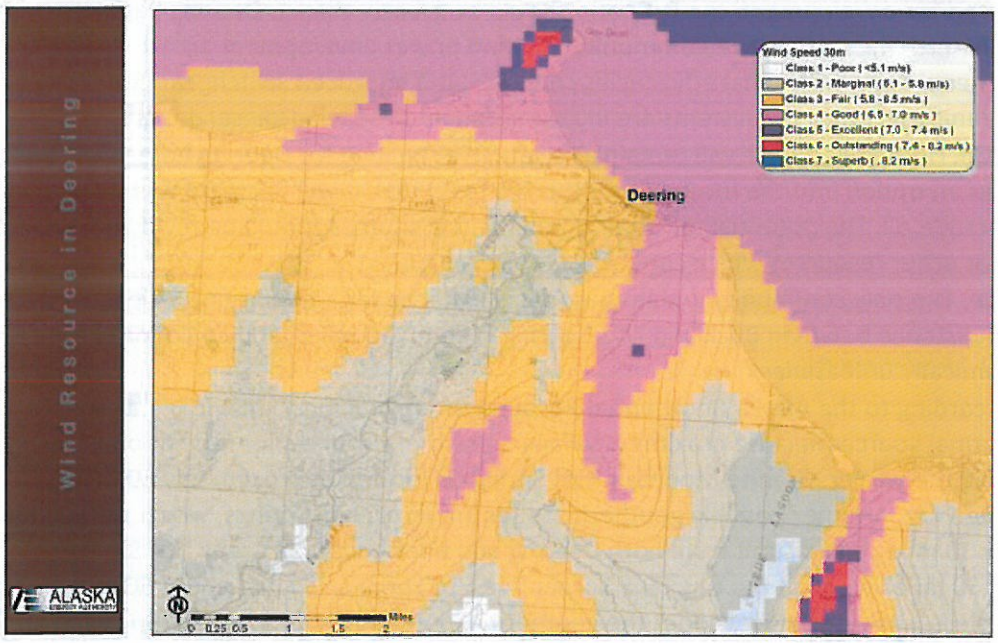
RECOMMENDED ENERGY OPTIONS FOR DEERING

The following recommendations are provided for the community of Deering in order to frame energy policy for the region.

- *Wind Resource Assessment Program*. The Deering Community is currently collecting wind data with a met tower, installed in August 2008, borrowed through the Alaska Energy Authority's wind resource assessment program.
- *Coordinate a Geothermal Power Generation Feasibility Study*. The geothermal power potential should be reviewed for the community of Deering by a qualified individual.
- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study*. Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to implement a feasibility study of such systems for Deering. UCG with local coal resources may be feasible for CHP with further study.
- *Coordinate an End-Use Energy Efficiency Study*. Deering stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed.

DEERING EXHIBITS

Exhibit E-1 – Deering Wing Resource Map



Source: NANA Region Wind Resource Status Report

GEOTHERMAL PROSPECTS OF DERRING AREA

Table E-1 – Serpentine Hot Springs

Temp.	Flow (LPM)	TDS	SiO_2 geothermometer	Giggenbach geothermometer
75°C / 167°F	520	3290	137.10 °C	119.0 °C
60°C / 140°F	137 GPM	2472.7	130.8 °C	111.4 °C

Serpentine Hot Springs, located approximately 60 miles west of Deering in the Bering Land Bridge National Preserve, is the hottest of all the springs in the CAHSB. It is also anomalously saline relative to other CAHSB springs, containing elevated concentrations of total dissolved solids (TDS), mostly Cl, Na, Ca, K, Li , Br, and B

(Miller, 1973). The hot springs issue out of the Serpentine Hot Springs granite, which is actually a composite body of several different granites emplaced at different times. The composite body is cut by several sets of steep faults. An intricate network of faults southeast of the granite is associated with major geochemical anomalies and mineralized areas lying along a NW-trending fault zone (Sainsbury and others, 1980). The Serpentine Hot Springs granite contains small amounts of radioactive material disseminated throughout; however not in large enough quantities to be commercially interesting (Moxham and West, 1953). Based on temperature data alone, these springs appear be suitable for Chena-type power generation, though the salinity of the fluids could be an issue in terms of scaling in wells and pipes.

Table E-2 – Lava Creek Hot Springs

Temp.	Flow (LPM)	TDS	SiO2 geothermometer	Giggenbach geothermometer
53°C / 127°F	360	330	118.2 °C	96.6 °C
50°C / 122°F	360	295.5	-	-

Lava Creek Hot Springs is located approximately 50 miles south of Deering and 70 miles southwest of Buckland. The hot springs are about 15 miles south of the Lost Jim lava flow and the Imuruk Lake volcanic field, some of the youngest lava flows in western Alaska. The Imuruk Lake volcanic field is a vast geologic feature consisting of flows and ~75 vents (cones) that covers nearly 2,300 km2 of area. The largest and most recent cone is the Lost Jim vent, which erupted 1,655 years ago; but the bulk of the volcanic deposits are much older (5.7 to 2.2 million years old). This suggests that this part of the Seward Peninsula may still be a volcanically "active" region. The hot spring, however, issues from within granitic rocks of the Bendeleben Mountains, not the volcanic deposits. It is so named because the spring is located approximately 3 miles from the probable source area for the basalt that flowed down Lava Creek in the Bendeleben Mountains (Miller and others, 1973). The Imuruk Lake area lies in a poorly defined graben (Hopkins, 1959) with giant scarps as high as 30 m and as long as 5 km (Wood and Kienle, 1990). Several faults in the Bendeleben Mountains continue this trend, but it is not clear whether the Lava Creek Hot Springs are situated on or near such faults. The hot springs are also about 10 miles northeast of the Death Valley / Boulder Creek uranium deposit, which follows a northwest-trending linear strike. If the geothermometer predictions are correct and hotter fluid exists at depth, then depending on the depth of the reservoir these springs could be suitable for Chena-type power generation. One concern is that the flow rate is somewhat low so substantial pumping may be required.

Table E-3 – Granite Mountain Hot Springs

Temp.	Flow (LPM)	TDS	SiO_2 geothermometer	Giggenbach geothermometer
49°C / 120°F	1630	260	121.7 °C	100.7 °C
			117.5 °C	95.7 °C

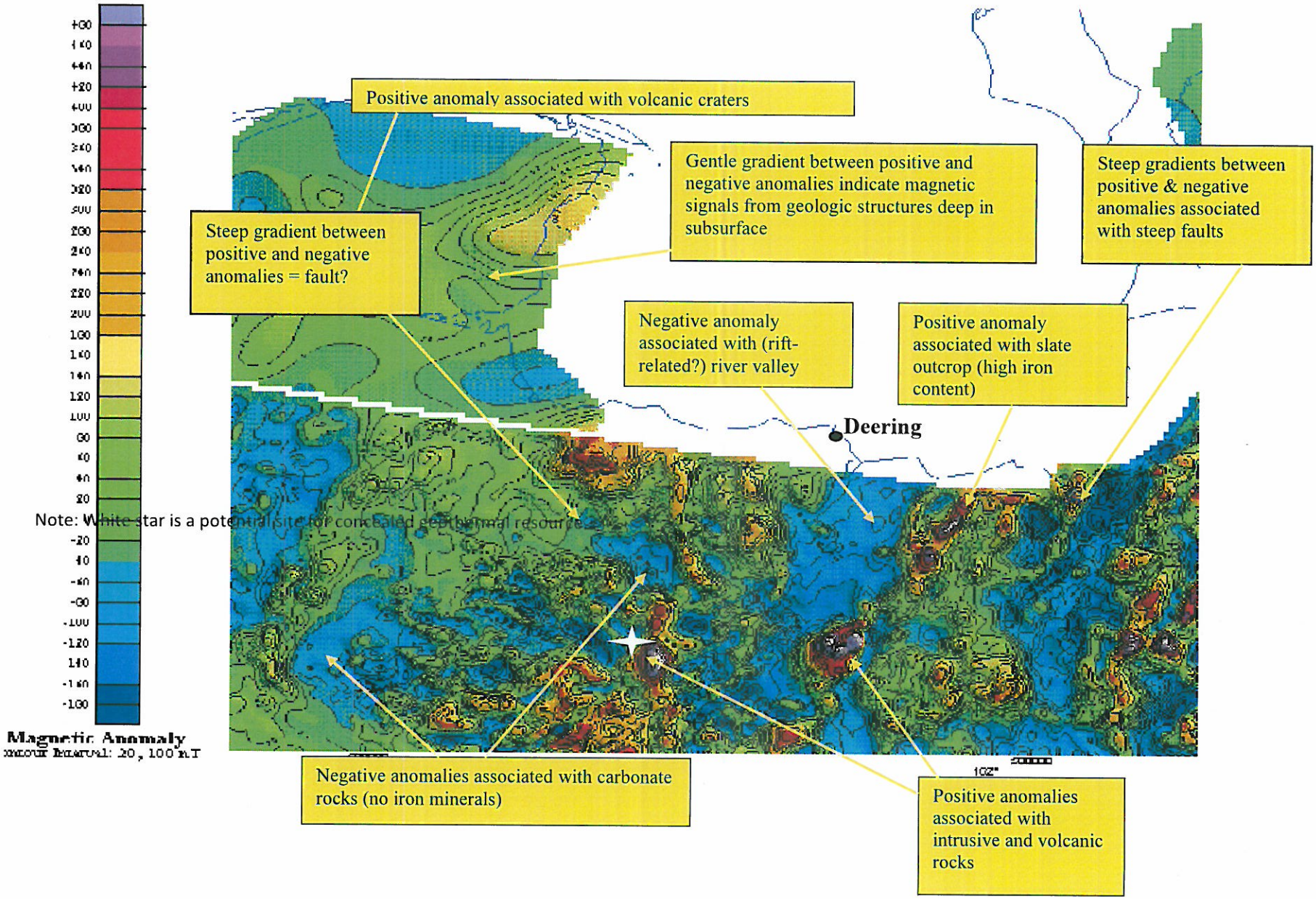
Granite Mountain Hot Springs is located approximately 40 miles south of Buckland and 60 miles south of Deering. The springs issue from the contact between the anomalously radioactive Granite Mountain Pluton and the Cretaceous age volcanic rocks. The Granite Mountain Pluton is uranium-enriched, however not enough to be commercial (Gault and others, 1951). The springs are located on Spring Creek, a tributary of Sweepstakes Creek. The temperature of these hot springs is significantly below the temperature of the fluids utilized for power generation at Chena Hot Springs (~80 ºC) However, if the geothermometer predictions are correct and there is hotter fluid at depth, these springs could be suitable for development. The flow rate is fairly high relative to other CAHSB Hot Springs, meaning that less pumping may be required for production.

AEROMAGNETIC MAPS

Six aeromagnetic maps were obtained from the USGS Alaska Digital Aeromagnetic Database that cover the NANA region. Details on the aeromagnetic data can be found at http://pubs.usgs.gov/of/1999/ofr-99-0503/. Aeromagnetic maps show the spatial distribution and relative abundance of magnetic minerals (iron oxides) in the upper levels of the crust. Because different rock types differ in their content of magnetic minerals, the magnetic map allows a visualization of the geologic structure of the upper subsurface (www.wikipedia.org). For example, the iron mineral magnetite is abundant in volcanic and some plutonic rocks, distinguishing them from sedimentary rocks that tend to have low to zero iron content.

It is important to note that aeromagnetic maps cannot be used to "see" geothermal resources; but they can aid in geologic interpretations and thus aid in predicting the occurrences of subsurface thermal reservoirs. An example of an aeromagnetic map is shown in Fig. 5. This map, considered in the context of other geologic and geophysical data, can be utilized to target certain locations that satisfy the seemingly requisite conditions for geothermal resources in the NANA region. Based on what we know about almost all hot springs in the CAHSB, geothermal resources are likely to occur at the pluton margins; or if it is a composite pluton, at the contact between different plutonic phases (see Sainsbury and others, 1980; and Kolker and others, 2007). Fig. 5 shows the location of one possible intersection between fault(s) and a pluton (indicated by a white star). In the case of known hot springs, careful examination of aeromagnetic maps can also aid in understanding subsurface structures and therefore speculating on the geometry of the feeder hydrothermal reservoir.

Figure E-1 - Aeromagnetic map of the Deering area, with geologic interpretations



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Appendix F
Kiana Energy Options Analysis

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KIANA OVERVIEW[40]

Kiana, population 401, is located on the north bank of the Kobuk River, 57 air miles east of Kotzebue. The Kobuk River is navigable from the end of May to early October. Kiana is located in the transitional climate zone, which is characterized by long, cold winters and mild summers. Crowley Marine Services barges fuel and goods from Kotzebue each summer and local store owners have large boats to bring supplies upriver. Small boats, ATVs and snow machines are used for local travel. A road extends along the river to Kobuk Camp, and a network of old trading trails exists.

Kiana's economy is a mix of cash and subsistence activities. Chum salmon, freshwater fish, moose, caribou, waterfowl and berries are harvested. The school, City, Maniilaq Association and three general stores provide the majority of year-round jobs. The Red Dog Mine also provides some jobs, and seasonal employment also includes work on river barges, BLM fire-fighting and jade mining. There is local interest in constructing a whitefish and turbot value-added processing plant. The City is also interested in developing eco-tourism, primarily guided river trips to the Great Kobuk Sand Dunes.

A 200,000-gallon steel tank is intermittently filled from two wells near the Kobuk River. Water is chlorinated prior to distribution through buried water mains. Piped water and sewer are provided to 73 homes, a clinic, school, and community hall. Kiana maintains a 6-inch buried gravity sewer system, which drains to a lift station and is pumped through a buried force main to the sewage treatment lagoon northeast of the village. In addition, 19 households haul water and use honey buckets or septic tanks. The landfill is located west of the sewage disposal lagoon, and needs to be relocated. A water and sewer master plan, new water treatment, and additional service connections have been funded.

CURRENT ENERGY CONDITIONS

The Alaska Village Electric Cooperative currently provides power to the community of Kiana, with a 1163-kW diesel power plant. The utility generated 1,529,950 kWh total in Kiana during fiscal year 2007 (most recent PCE report). During the same period of time, the community imported 103,820 gallons of fuel for power generation use. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Kiana was 51.03 cents per kWh.

According to AVEC's end-of-year 2006 generation statistics, the peak demand recorded to date at the Kiana AVEC power plant is 365 kW, with an overall average plant load in 2006 of 172 kW. The average 2006 price of diesel fuel purchased by AVEC in Kiana was $2.45 per gallon. The average 2006 fuel-only cost of generating a kWh of electricity in Kiana was 18.78 cents per kWh.

The primary source used for home heating for the community is home heating oil, which is shipped to Kiana on the spring and fall barges.

The current usable fuel storage capacity in Kiana by tank farm owner: AVEC (136,621 gallons); Northwest Arctic Schools (107,700); City (94,300); Kiana Trading Post (51,400); Blankenship Trading Post (7,100); Alaska Dept. of Transportation and Public Facilities (2,900); City Firehouse (2,200).

KIANA ENERGY OPTIONS

A preliminary screening analysis of best available energy options was undertaken for Kiana. This included a high level review of reports, resource maps, and understanding of best available technology. Below is a list

[40] State of Alaska Department of Community and Economic Development Community website.

of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration)*. The preliminary screening analysis for Kiana suggested waste heat recovery as a potential source of economic benefits for the community if a potential end-use for the heat is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency*. End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Kiana. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrade to thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid Systems*. The NANA Region Wind Resource Status Report predicted for Kiana a wind resource of Class 2 to 3 (or "Marginal" to "Fair"). However, wind resources of Class 5 to 7 (or "Excellent" to "Superb") are predicted for hills about 6 miles to the east-northeast of Kiana.
- *Home Heating Oil*. Home heating oil will remain as a source of heating for Kiana homes and will likely remain as an option into the future. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.
- *Electrical Intertie*. The closest community within a reasonable distance for an electrical intertie line is Noorvik. The straight-line distance between Kiana and Noovik is about 19 miles, and could make an intertie economically feasible.
- *Geothermal*. According to the Alaska Geothermal Resources Map and local knowledge, there are no known geothermal sources in close proximity to Kiana.
- *Hydroelectric*. Both a 1979 study by the U.S. Department of Energy[41] and a 1981 study commissioned by the U.S. Army Corps of Engineers[42] examined a potential hydroelectric site on Canyon Creek, located 8 miles northeast of Kiana. The 1979 study also identified a second possible hydroelectric site at Portage Creek, located 7 miles south of Kiana. The 1981 study proposed a 205-kW installation on Canyon Creek, with an estimated average annual plant factor of 0.22. Minimal power production would occur from December through April, and the environmental constraints listed were the presence of whitefish and arctic grayling in the stream, as well as potential peregrine falcon nesting habitat.
- *Solar*. While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.
- *Biomass*. The biomass map in the Renewable Energy Atlas of Alaska identifies the Kiana area as "mixed forest and broadleaf."

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[41] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

[42] Regional Inventory and Reconnaissance Study for Small Hydropower Projects: Northwest Alaska. Ott Water Engineers, Inc., prepared for the U.S. Army Corps of Engineers, Alaska District. May 1981.

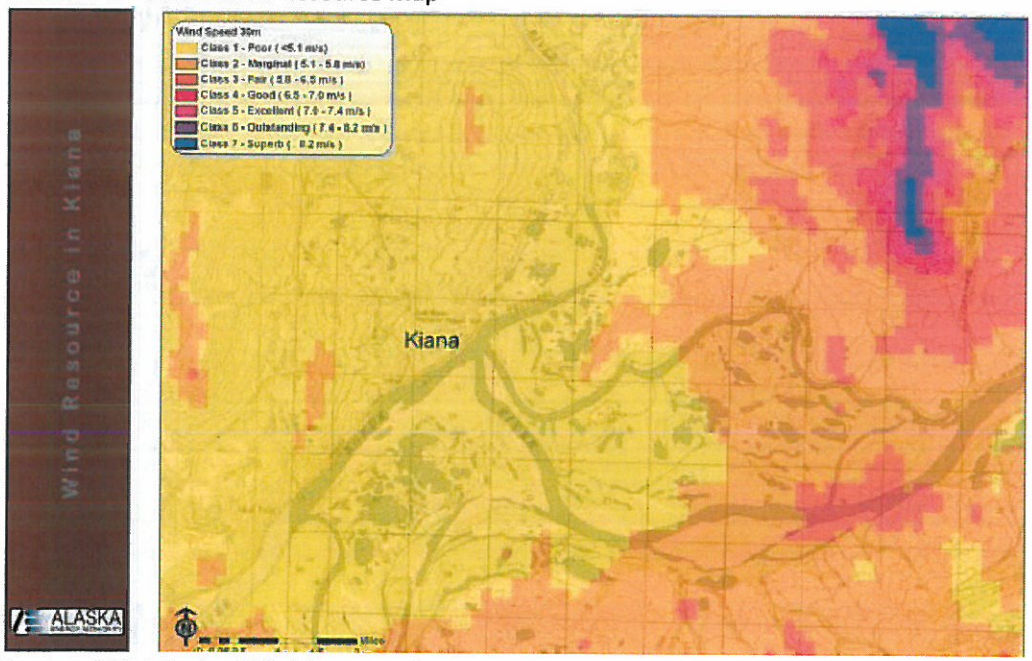
RECOMMENDED ENERGY OPTIONS FOR KIANA

The following recommendations are provided for the community of Kiana in order to frame energy policy for the region.

- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study*. Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to implement a feasibility study of such systems for Kiana. This could be done at the time that the Bulk Fuel and Power System Upgrades are undertaken in Kiana. UCG with local coal resources for CHP may be feasible based on further study.
- *Coordinate an End-Use Energy Efficiency Study*. Kiana stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Wind Resource Assessment Program*. Unless an inexpensive way to access the wind resources on the hills outside Kiana can be found, the community should combine a wind resource assessment program with Noorvik (in case an intertie is built between the two communities).
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed. In particular, local biomass (wood) options should be studied.
- *Research Electrical Intertie with Noorvik*. The 19-mile distance between Kiana and Noorvik may be short enough to justify an electric intertie line.
- *Research Local Hydroelectric Options*. Although small-scale hydropower could only provide significant power for Kiana from May through November, the Canyon Creek site (located 8 miles from town) warrants further investigation.

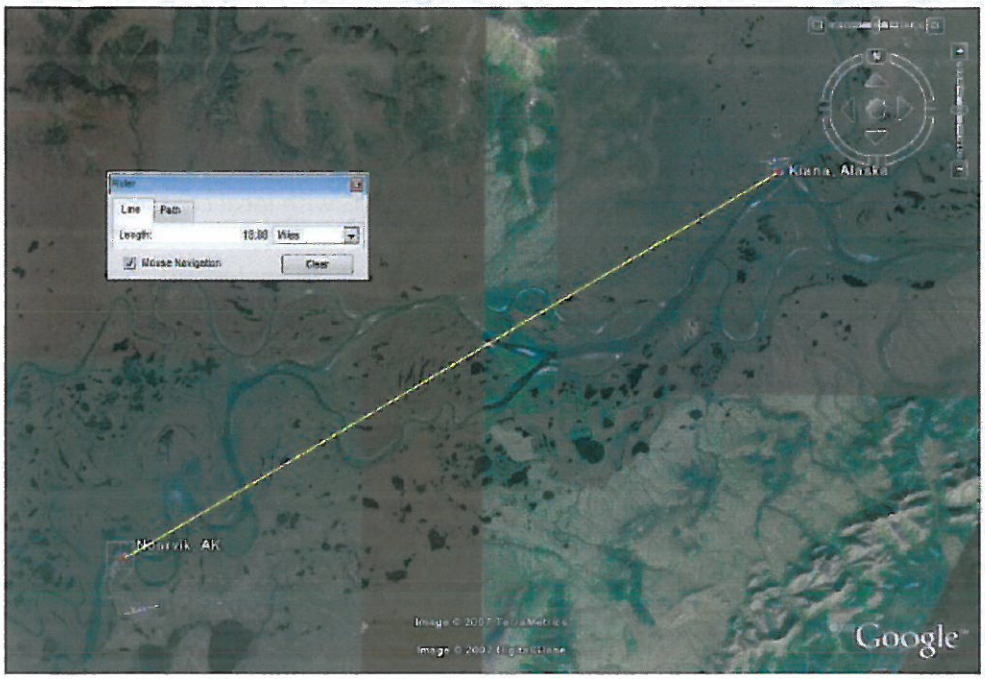
KIANA EXHIBITS

Exhibit F-1 – Kiana Wind Resource Map



Source: NANA Region Wind Resource Status Report

Exhibit F-2 – Kiana Wind Resource Map



Source: NANA Region Wind Resource Status Report

Appendix G
Kivalina Energy Options Analysis

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KIVALINA OVERVIEW[43]

Kivalina, population 391, lies about 80 air miles northwest of Kotzebue at the tip of an 8-mile barrier reef in between the Chukchi Sea and Kivalina River. Kivalina is located in the transitional climate zone which is characterized by long, cold winters and cool summers. The Chukchi Sea is ice-free and open to boat traffic from mid-June to the first of November. The major means of transportation into the community are plane and barge. Crowley Marine Services barges goods from Kotzebue during July and August. Small boats, ATVs and snow machines are used for local travel. Two main hunting trails follow the Kivalina and Wulik Rivers.
Due to severe erosion and wind-driven ice damage, the City intends to relocate to a new site 7.5 miles away. Relocation alternatives have been studied and a new site has been designed and engineered. The relocation is estimated to cost $102 million. The community needs a road to the proposed new town site.
Kivalina's economy is a mix of cash and subsistence activities. Residents depend on a subsistence lifestyle for most food sources. Seal, walrus, whale, salmon, whitefish and caribou are utilized. Cash employment is primarily with the school, city government, Maniilaq Association, village council, airlines and local stores. The nearby Red Dog Mine also offers some employment. Native carvings and jewelry are produced from ivory and caribou hooves. The community is interested in developing an Arts and Crafts Center that could be readily moved to the new city site.

Wells have proven unsuccessful in Kivalina. Water is drawn from the Wulik River via a 3-mile surface transmission line, and is stored in a 700,000-gallon raw water tank. It is then treated and stored in a 500,000-gallon steel tank. Water is hauled by residents from this tank. One-third of residents have tanks which provide running water for the kitchen, but homes are not fully plumbed. The school and clinic have individual water and sewer systems. Residents haul their own honey buckets to bunkers. A new landfill and honey bucket disposal site were recently completed. A Master Plan is underway to examine sanitation alternatives at the new community site.

CURRENT ENERGY CONDITIONS

The Alaska Village Electric Cooperative currently provides power to the community of Kivalina, with a 1040-kW diesel power plant. The utility generated 1,307,779 kWh total in Kivalina during fiscal year 2007 (most recent PCE report). During the same period of time, the community imported 93,795 gallons of fuel for power generation use. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Kivalina was 51.16 cents per kWh.

According to AVEC's end-of-year 2006 generation statistics, the peak demand recorded to date at the Kivalina AVEC power plant is 267 kW, with an overall average plant load in 2006 of 144 kW. The average 2006 price of diesel fuel purchased by AVEC in Kivalina for power generation purposes was $2.39. The average 2006 fuel-only cost of generating a kWh of electricity in Kivalina was 17.18 cents per kWh.
The primary source used for home heating for the community is home heating oil, which is shipped to Kivalina on the spring and fall barges. It is unlikely that biomass (i.e. wood) is viable as a primary source as a home heating fuel[44]. However, this should be confirmed.

The current usable fuel storage capacity in Kivalina by tank farm owner: Native Store (135,800); AVEC (101,037 gallons); Northwest Arctic Schools (49,600); Army National Guard (10,000); City Washeteria (7,800); Alaska Dept. of Transportation and Public Facilities (2,700).

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[43] State of Alaska Department of Community and Economic Development Community website.
[44] A review of the Alaska Department of Natural Resources Biomass Map did not suggest significant potential for biomass.

KIVALINA ENERGY OPTIONS

A preliminary screening analysis of best available energy options was undertaken for Kivalina. This included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration)*. The preliminary screening analysis for Kivalina suggested waste heat recovery as a potential source of economic benefits for the community if a potential source is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency*. End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Kivalina. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrades to the thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid Systems*. The NANA Region Wind Resource Status Report predicted that good wind resources exist in Kivalina (Class 4). However, if the community decides to move to a new location, a met tower could be erected on-site, or at the nearby Port of Red Dog Mine, to collect the data needed to support wind power development.
- *Home Heating Oil*. Home heating oil will remain as a source of heating for Kivalina homes and will likely remain as an option into the future. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.
- *Electrical Intertie and Road Connection*. At its present location, Kivalina is about 16 miles (straight line) from the Port of Red Dog Mine, although a new village location presumably would be closer. The relatively short distance between the community and the port could make both an electrical intertie line and new road economically feasible.
- *Geothermal*. According to the Alaska Geothermal Resources Map and local knowledge, there are no known geothermal sources in close proximity to Kivalina.
- *Hydroelectric*. A 1979 study by the U.S. Department of Energy[45] concluded that there are no potential hydroelectric sites in close proximity to Kivalina.
- *Solar*. While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.

RECOMMENDED ENERGY OPTIONS FOR KIVALINA

The following recommendations are provided for the community of Kivalina in order to frame energy policy for the region.

- *Wind Resource Assessment Program*. The Kivalina community should commence with a wind resource assessment program through the Alaska Energy Authority. A met tower should be

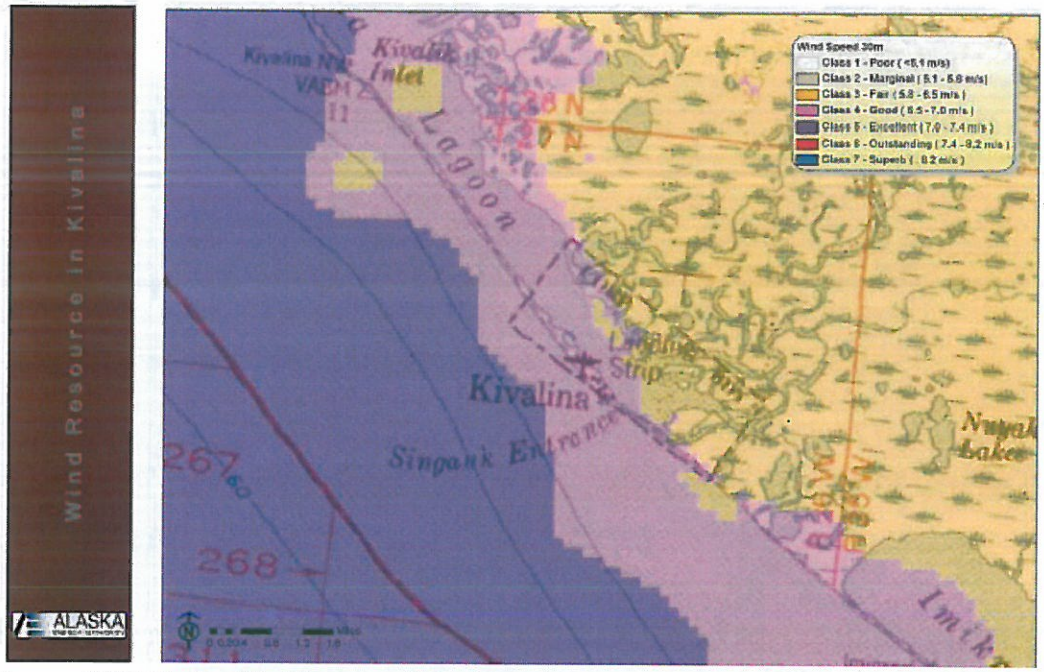
[45] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

installed at the Port of Red Dog Mine, and the possibility of building an intertie between the port and the village investigated.

- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study*. Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to implement a feasibility study of such systems for Kivalina. This could be done at the time that the Bulk Fuel and Power System Upgrades are undertaken for Kivalina.
- *Coordinate an End-Use Energy Efficiency Study*. Kivalina stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed.
- *Research Electrical Intertie and Road Connection with Red Dog Mine Port*. The 16-mile distance between the present site of Kivalina and the Port of Red Dog Mine may be short enough to justify an electric intertie line. If the community of Kivalina is moved, it is expected that the new town site would be even closer to the port area and could then also justify the construction of a new road. An intertie would also provide access to locations for wind power generation away from Kivalina where FAA airspace and erosion conditions exist.

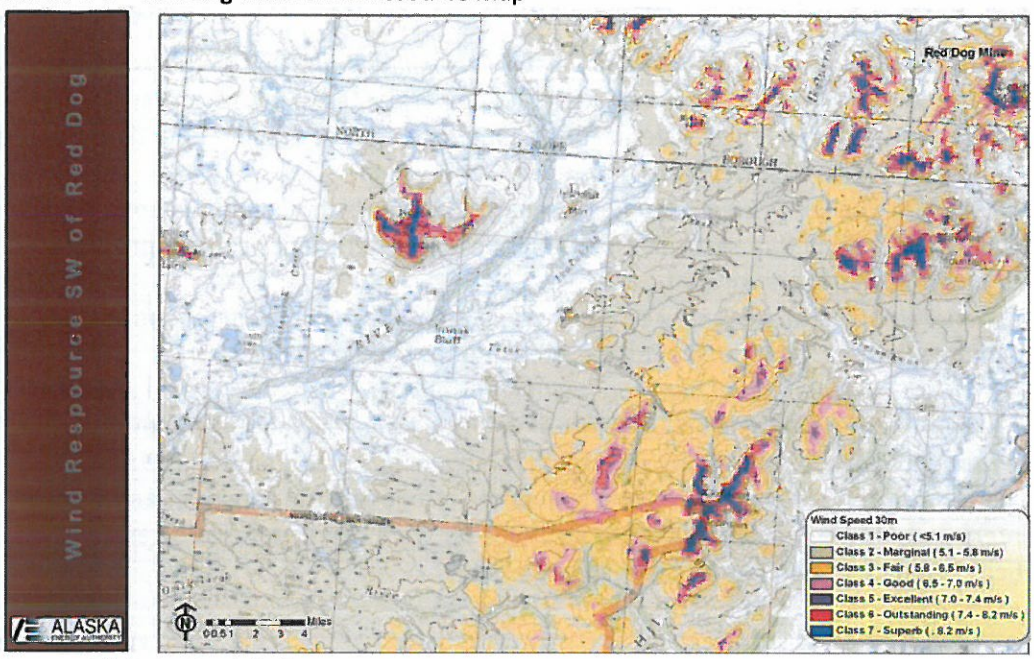
KIVALINA EXHIBITS

Exhibit G-1 – Kivalina Wind Resource Map



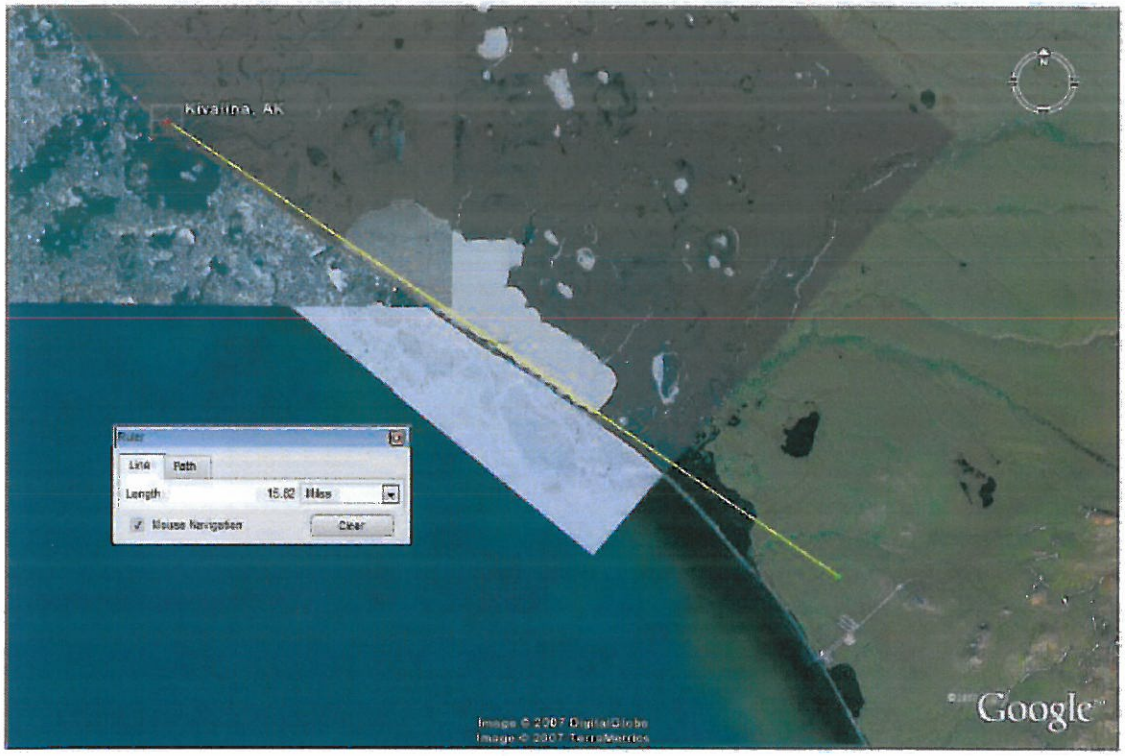
Source: NANA Region Wind Resource Status Report

Exhibit G-2 – Red Dog Mine Wind Resource Map



Source: NANA Region Wind Resource Status Report

Exhibit G-3 – Red Dog Port to Kivalina Tie-line Distance Google Earth Image



Source: NANA Region Wind Resource Status Report

Appendix H
Noatak Energy Options Analysis

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NOATAK OVERVIEW[46]

Noatak, population 500, is located on the west bank of the Noatak River, 55 miles north of Kotzebue and 70 miles north of the Arctic Circle. This is the only settlement on the 396 mile-long Noatak River, just west of the 66-million acre Noatak National Preserve.

Noatak is located in the transitional climate zone which is characterized by long, cold winters and mild summers. The Noatak River is navigable by shallow-draft boats from early June to early October. Noatak is primarily accessed by air; there are currently no barge services to Noatak. Small boats, ATVs and snow machines are used for local travel. Many historic trails along the Noatak River are important today for inter-village travel and subsistence uses.

Noatak's economy is a mix of cash and subsistence activities. Residents depend on a subsistence lifestyle for most food sources. Chum salmon, whitefish, caribou, moose and waterfowl are harvested. Cash employment is primarily with the school, local government, Maniilaq Association, and local stores. During the summer, many families travel to seasonal fish camps at Sheshalik, and others find seasonal work in Kotzebue or fire-fighting.

Water is derived from the Noatak River and is treated. The primary well occasionally runs dry -- groundwater wells have been unsuccessful in the area. A piped, re-circulating water and sewer distribution system serves over 150 homes, the school and businesses in Noatak. The village has recently upgraded the water supply, expanded the piped system, and constructed a washeteria. The landfill has recently been relocated west of the airport.

CURRENT ENERGY CONDITIONS

The Alaska Village Electric Cooperative currently provides power to the community of Noatak, with a 982-kW diesel power plant. The utility generated 1,492,730 kWh total during fiscal year 2007 (most recent PCE report). During the same period of time, the community imported 112,458 gallons of fuel for power generation use. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Kivalina was 71.18 cents per kWh.

According to AVEC's end-of-year 2006 generation statistics, the peak demand recorded to date at the Noatak AVEC power plant is 349 kW, with an overall average plant load in 2006 of 170 kW. The average 2006 price of diesel fuel purchased by AVEC in Noatak for power generation purposes was $3.98. The average 2006 fuel-only cost of generating a kWh of electricity in Noatak, 31.32 cents per kWh, was the highest of all the NANA communities.

The primary source used for home heating for the community is home heating oil, which is shipped to Noatak by air. It is unlikely that biomass (i.e. wood) would be viable as a primary source as a home heating fuel.[47] However, this should be confirmed.

The current usable fuel storage capacity in Noatak by tank farm owner: AVEC (91,922 gallons); Northwest Arctic Schools (89,500); IRA Native Store (65,300); Village Council (26,500); Army National Guard (7,400); Alaska Dept. of Transportation and Public Facilities (3,100).

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[46] State of Alaska Department of Community and Economic Development Community Web-site.

[47] A review of the Alaska Department of Natural Resources Biomass Map did not suggest significant potential for biomass.

NOATAK ENERGY OPTIONS

A preliminary screening analysis of best available energy options was undertaken for Noatak. This included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration)*. The preliminary screening analysis for Noatak suggested waste heat recovery as a potential source of economic benefits for the community if a potential use for the heat energy is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency*. End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Noatak. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrades to the thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Road Connection*. A road could be built to connect Noatak to the Red Dog Mine Road, which at its closest point to the community is about 18 miles (straight line) away. Trucks could use such a road to transport fuel from the Port of Red Dog Mine to Noatak, in order to eliminate the need of shipping fuel to Noatak by air, and thus reduce fuel costs in the community.
- *Wind-Diesel Hybrid Systems*. The NANA Region Wind Resource Status Report predicted that poor wind resources exist in Noatak (Class 1). The report also states that a met tower was installed in Noatak around 2003; but no known data has been collected from the site.
- *Home Heating Oil*. Home heating oil will remain as a source of heating for Noatak homes and will likely remain as an option into the future. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.
- *Electrical Intertie*. Noatak is about 40 miles (straight line) from Kivalina, the next closest community, and is about 30 miles (straight line) from the Port of Red Dog Mine. The distances involved would likely make an electrical intertie line economically unfeasible.
- *Geothermal*. According to the Alaska Geothermal Resources Map and local knowledge, there are no known geothermal sources in close proximity to Noatak.
- *Hydroelectric*. A 1979 study by the U.S. Department of Energy[48] concluded that there are no potential hydroelectric sites in close proximity to Noatak.
- *Solar*. While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.

RECOMMENDED ENERGY OPTIONS FOR NOATAK

The following recommendations are provided for the community of Noatak in order to frame energy policy for the region.

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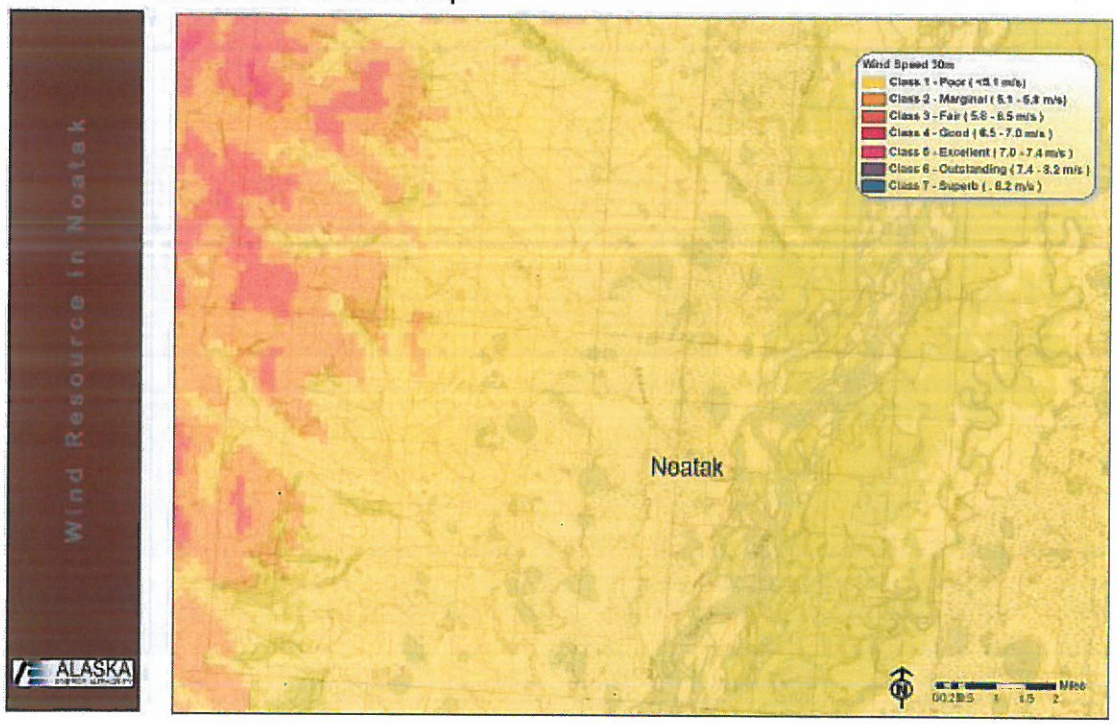
[48] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

- *Coordinate a Cogeneration Feasibility Study for Generation*. Due to the potential economic benefit of cogeneration systems, it is recommended to implement a feasibility study to ascertain the potential of cogeneration. This could be done at the time that the Bulk Fuel and Power System Upgrades are undertaken for Noatak.
- *Coordinate an End-Use Energy Efficiency Study*. Noatak stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Research the Feasibility of a Road to Noatak*. A new road connecting Noatak to the Red Dog Mine Road should be studied, in order to possibly eliminate the costly shipping of fuel to Noatak by air.
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed such as biomass and solar.
- *Wind Resource Assessment Program*. The Noatak Community should recommence with a wind energy feasibility study through the Alaska Energy Authority's wind resource assessment program. The met tower installed in Noatak should be investigated to see if it could be re-used.

NOATAK EXHIBITS

Exhibit H-1 – Noatak Wind Resource Map



Source: NANA Region Wind Resource Status Report

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Appendix I
Noorvik Energy Options Analysis

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NOORVIK OVERVIEW[49]

Noorvik, population 636, is located on the right bank of the Nazuruk Channel of the Kobuk River, 33 miles northwest of Selawik and 45 miles east of Kotzebue. The village is downriver from the 1.7-million acre Kobuk Valley National Park. The Kobuk River is navigable from the end of May to mid-October. Noorvik is located in the transitional climate zone, which is characterized by long, cold winters and mild summers. Crowley Marine Services barges fuel and goods from Kotzebue each summer. Small boats, ATVs and snowmachines are used for local travel. There is no road linking Noorvik to any other communities.

Noorvik's economy is a mix of cash and subsistence activities. Chum salmon, freshwater fish, moose, caribou, waterfowl and berries are harvested. The school, City, Maniilaq Association and two stores provide the majority of year-round jobs. The Red Dog Mine also provides some jobs, and seasonal employment also includes work on river barges and BLM fire-fighting.

Water is pumped from the Kobuk River to the water treatment/utility building and stored in a tank. From there, a pressurized circulating system distributes water in utilidors. Groundwater wells have proven unsuccessful. Noorvik has a vacuum sewer system in which waste is carried by air instead of water. Vacuum pressure pumps the sewage to the 60,000-gallon tank at the collection and treatment plant. The system requires special toilets and water valves which collect wastewater from the sinks, toilets and showers. Over 100 homes, the schools and businesses are served. Funds have been requested to connect and plumb the remaining 16 unserved homes on the south side of town and along River Road. A new landfill and access road are under development. Funds have also been requested to construct a multi-purpose facility, including a new washeteria, recreation center, Head Start, day care center, a restaurant, Native Crafts production and a food processing plant.

CURRENT ENERGY CONDITIONS

The Alaska Village Electric Cooperative currently provides power to the community of Noorvik, with a 1163-kW diesel power plant. The utility generated 1,991,566 kWh total in Noorvik during fiscal year 2007 (most recent PCE report). During the same period of time, the community imported 149,669 gallons of fuel for power generation use. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Noorvik was 52.71 cents per kWh.

According to AVEC's end-of-year 2006 generation statistics, the peak demand recorded to date at the Noorvik AVEC power plant is 474 kW, with an overall average plant load in 2006 of 226 kW. The average 2006 price of diesel fuel purchased by AVEC in Noorvik for power generation purposes was $2.42 per gallon. The average 2006 fuel-only cost of generating a kWh of electricity in Noorvik was 17.24 cents per kWh.

The primary source used for home heating for the community is home heating oil, which is shipped to Noorvik on the spring and fall barges.

The current usable fuel storage capacity in Noorvik by tank farm owner: AVEC (202,944 gallons); Native Store (130,500); Northwest Arctic Schools (94,900); Morris Trading Post (59,000); City (30,900).

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[49] State of Alaska Department of Community and Economic Development Community website.

NOORVIK ENERGY OPTIONS

A preliminary screening analysis of best available energy options was undertaken for Noorvik. This included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration)*. The preliminary screening analysis for Noorvik suggested waste heat recovery as a potential source of economic benefits for the community if a potential end-use for the heat is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency*. End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Noorvik. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrades to the thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid Systems*. It is understood that a met tower was installed about four miles east of Noorvik for a one-year period from September 2001 to September 2002. The NANA Region Wind Resource Status Report says that the preliminary results of the data collected during the 2001-2002 period indicates a Class 3 (fair) wind resource.
- *Home Heating Oil*. Home heating oil will remain as a source of heating for Noorvik homes and will likely remain as an option into the future. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.
- *Electrical Intertie*. The closest community within a reasonable distance for an electrical intertie line is Kiana. The straight-line distance between Kiana and Noorvik is about 19 miles, and could make an intertie economically feasible.
- *Geothermal*. According to the Alaska Geothermal Resources Map and local knowledge, there are no known geothermal sources in close proximity to Noorvik.
- *Hydroelectric*. A 1979 study by the U.S. Department of Energy[50] concluded that there are no potential hydroelectric sites in close proximity to Noorvik.
- *Solar*. While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.
- *Biomass*. The biomass map in the Renewable Energy Atlas of Alaska identifies the Noorvik area as "mixed forest and broadleaf".

RECOMMENDED ENERGY OPTIONS FOR NOORVIK

The following recommendations are provided for the community of Noorvik in order to frame energy policy for the region.

- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study*. Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to

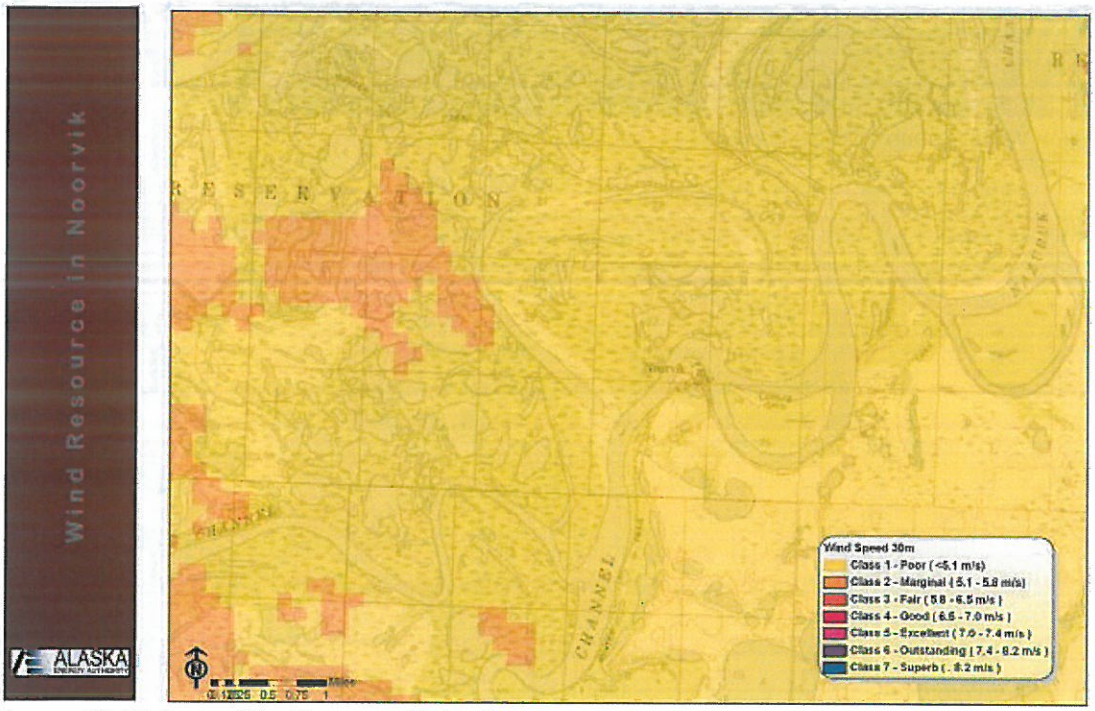
[50] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

implement a feasibility study of such systems for Noorvik. This could be done at the time that the Bulk Fuel and Power System Upgrades are undertaken for Noorvik.

- *Coordinate an End-Use Energy Efficiency Study*. Noorvik stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Wind Resource Assessment Program*. The Noorvik community should commence with a wind energy feasibility study through the Alaska Energy Authority. Noorvik had an installed met tower for a one-year period from September 2001 to September 2002, which produced enough data sufficient to characterize Noorvik as a Class 3 resource, and to plan a wind power project.
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed. In particular, local biomass (wood) options should be studied.
- *Research Electrical Intertie with Noorvik*. The 19-mile distance between Kiana and Noorvik may be short enough to justify an electric intertie line.

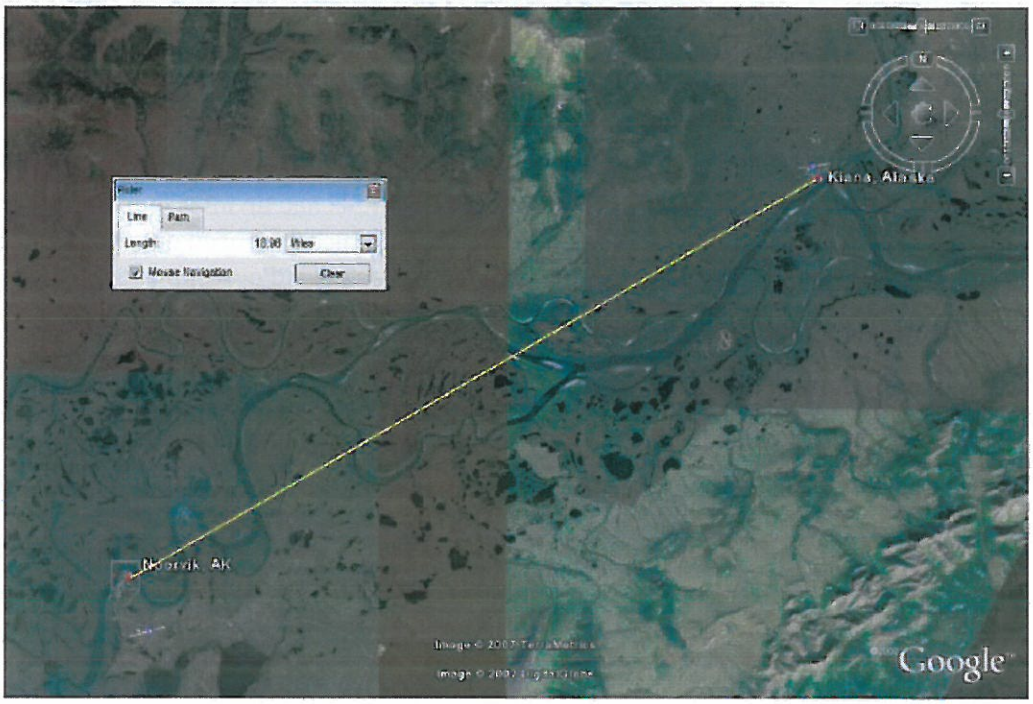
NOORVIK EXHIBITS

Exhibit I-1 – Noorvik Wind Resource MAP



Source: NANA Region Wind Resource Status Report

Exhibit I-2 Noorvik to Kiana Tie-line Distance Google Earth Image



Source: NANA Region Wind Resource Status Report

Appendix J
Selawik Energy Options Analysis

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SELAWIK OVERVIEW[51]

Selawik, population 841, is located at the mouth of the Selawik River where it empties into Selawik Lake, about 90 miles east of Kotzebue. The community is near the Selawik National Wildlife Refuge, a key breeding and resting spot for migratory waterfowl. Selawik is located in the transitional climate zone, which is characterized by long, cold winters and mild summers. The Selawik River is navigable from early June to mid-October. Crowley Marine Services barges fuel and goods from Kotzebue each summer. Small boats, ATVs and snow machines are used for local travel. Boardwalks have been constructed within the village. There is no road linking Selawik to any other communities.

Selawik's economy is a mix of cash and subsistence activities. Whitefish, sheefish, moose, caribou, waterfowl and berries are harvested. Occasionally, bartered seal and beluga whale supplement the diet. The primary employers in the community include the school, the City, the IRA, Maniilaq and three grocery stores. Handicrafts are made and sold locally and at gift shops in larger cities. Seasonal work is also found outside of Selawik at the Red Dog Mine, BLM firefighting or on river barges.

A circulating water and vacuum sewer system was recently completed. A central treatment facility pumps water from the Selawik River, providing up to 8,000 gallons a day. Groundwater wells have been unsuccessful. 53 homes in the West II area of town and 20 new HUD homes have been plumbed and connected. About 30 homes are now connected on the island and near the airport. A new permitted landfill is needed.

CURRENT ENERGY CONDITIONS

The Alaska Village Electric Cooperative currently provides power to the community of Selawik, with a 1,686-kW diesel power plant as well as 200-kW of installed wind generation capacity (for a total of 1,886-kW total installed capacity). The utility generated 3,130,752 kWh total in Selawik during fiscal year 2007 (most recent PCE report), of which 94.1% (2,945,834 kWh) was from diesel and 5.9% (184,918 kWh) was from wind. During the same period of time, the community imported 209,058 gallons of fuel for power generation use. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Selawik was 50.62 cents per kWh.

According to AVEC's end-of-year 2006 generation statistics, the peak demand recorded to date at the Selawik AVEC power plant (both diesel and wind combined) is 669 kW, with an overall average plant load in 2006 of 308 kW. The average 2006 price of diesel fuel purchased by AVEC in Selawik for power generation purposes was $2.44 per gallon. The average 2006 fuel-only cost of generating a kWh of electricity with diesel in Selawik was 18.69 cents per kWh.

The primary source used for home heating for the community is home heating oil, which is shipped to Selawik on the spring and fall barges. It unlikely that biomass (i.e. wood) is viable as a primary source as a home heating fuel.[52] However, this should be confirmed.

The current usable fuel storage capacity in Selawik by tank farm owner: AVEC (272,834 gallons); IRA Store (258,100); Northwest Arctic Schools (92,900); HUD Housing (26,000); Rotman Stores (9,800), Army National Guard (8,500); Alaska Dept. of Transportation and Public Facilities (2,500).

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[51] State of Alaska Department of Community and Economic Development Community website.

[52] A review of the Alaska Department of Natural Resources Biomass Map did not suggest significant potential for biomass.

SELAWIK ENERGY OPTIONS

A preliminary screening analysis of best available energy options was undertaken for Selawik. This included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration)*. The preliminary screening analysis for Selawik suggested waste heat recovery as a potential source of economic benefits for the community if a potential end-use for the heat is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency*. End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Selawik. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrades to the thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid Systems*. Selawik presently has four AOC 15/50 wind turbines integrated into the AVEC power system. It would likely be feasible to augment the four existing AOC machines with additional wind turbines, or replace them with higher capacity models.
- *Home Heating Oil*. Home heating oil is and will likely remain a source of heating for Selawik homes future.. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.
- *Electrical Intertie*. The closest communites within a reasonable distance for an electrical intertie are Kiana and Noorvik. Selawik is about 25 miles (straight-line distance) from Kiana, and about 32 miles from Noorvik. These distances could make an intertie economically unfeasible, but should be studied further.
- *Geothermal*. According to the Alaska Geothermal Resources Map and local knowledge, there are no known geothermal sources in close proximity to Selawik.
- *Hydroelectric*. A 1979 study by the U.S. Department of Energy[53] concluded that there are no potential hydroelectric sites in close proximity to Selawik.
- *Solar*. While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.

RECOMMENDED ENERGY OPTIONS FOR SELAWIK

The following recommendations are provided for the community of Selawik in order to frame energy policy for the region.

- *Wind Energy*. Selawik could expand its existing wind generation capacity, and the community should work with AVEC in studying the feasibility of installing additional wind turbines. Also, performance data of the existing wind turbines should be provided by AVEC to aid in the planning of future wind turbine installations.

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[53] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study*. Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to implement a feasibility study of such systems for Selawik.
- *Coordinate an End-Use Energy Efficiency Study*. Selawik stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed.
- *Research Electrical Intertie with Kiana*. The 25-mile distance between Kiana and Selawik may be short enough to justify an electric intertie line.

Appendix K
Shungnak-Kobuk Energy Options Analysis

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SHUNGNAK AND KOBUK OVERVIEW[54]

Shungnak, population 260, is located on the west bank of the Kobuk River about 150 miles east of Kotzebue. Kobuk, population 135, is located on the right bank of the Kobuk River, about 7 miles northeast of Shungnak and 128 miles northeast of Kotzebue. It is the smallest village in the Northwest Arctic Borough. The two communities are located in the continental climate zone, which is characterized by long, cold winters and mild summers. The Kobuk River is navigable from the end of May through October. Crowley Marine Services barges fuel and goods from Kotzebue each summer. Small boats, ATVs, snow machines and dog sleds are used for local travel. There are many trails along the river for year-round inter-village travel and subsistence activities, including a 7-mile trail connecting Shungnak and Kobuk.

Shungnak's economy is a mix of cash and subsistence activities. Subsistence food sources include sheefish, whitefish, caribou, moose, ducks and berries. Cash employment is limited to the school district, local government, and the Maniilaq Association's seasonal construction. BLM's fire fighting also provides some income. In Shungnak, there is also employment at two stores and a lodge. Shungnak also has a strong arts and crafts industry; residents make and sell finely-crafted baskets, masks, mukluks, parkas, hats and mittens. The community wants to develop a visitor center, mini-mall, post office and clinic complex at Dahl Creek.

The main source of water for Shungnak is the Kobuk River, via a portable pump that fills a 200,000-gallon steel storage tank through 1,110' of buried arctic pipe. Groundwater wells have proven unsuccessful in Shungnak. Piped water and sewer are provided to 53 homes (those at the top of the bluff,) the clinic, school and community building. Shungnak has a 6-inch buried gravity sewage main, which drains into a small diked lake one-half mile northwest of the city. In Kobuk, a piped water and sewer system, including household plumbing, was recently completed. A 30-foot well provides water, which is treated and stored by the washeteria. The washeteria has its own septic tank. Waste is disposed of at Dahl Creek. New landfills have also been recently completed in both Shungnak and Kobuk.

CURRENT ENERGY CONDITIONS

The Alaska Village Electric Cooperative (AVEC) currently provides power to the community of Shungnak, with a 1,248-kW diesel power plant. The Kobuk Valley Electric Cooperative purchases power from AVEC over the Kobuk-Shungnak intertie. The AVEC utility generated 1,522,433 kWh total in Shungnak during fiscal year 2007 (most recent PCE report), using 109,965 gallons of diesel, to power both Kobuk and Shungnak. During the same period, AVEC sold the Kobuk Valley Electric Cooperative 573,266 kWh of electricity over the Kobuk-Shungnak intertie. The Kobuk Valley Electric Company also has its own 75-kW back-up diesel power plant. The average pre-PCE residential electric rate for fiscal year 2007 (based on monthly usage of 500 KWh) in Shungnak was 61.13 cents per kWh, while in Kobuk during the same time period it was 53.00 cents per kWh.

According to AVEC's end-of-year 2006 generation statistics, the peak demand recorded to date at the Shungnak AVEC power plant is 336 kW, with an overall average plant load in 2006 of 178 kW. The average 2006 price of diesel fuel purchased by AVEC in Shungnak was $3.34 per gallon. The average 2006 fuel-only cost of generating a kWh of electricity in Shungnak was 24.72 cents per kWh.
The primary source used for home heating for the community is home heating oil, which is shipped to Shungnak and Kobuk on the spring and fall barges.

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[54] State of Alaska Department of Community and Economic Development Community website

The current usable fuel storage capacity in Shungank by tank farm owner: AVEC (113,368 gallons); IRA Store (74,300); Northwest Arctic Schools (41,700); City (16,400); Commack Lodge (8,100); Army National Guard (6,900); Alaska Dept. of Transportation and Public Facilities (2,800).
The current usable fuel storage capacity in Kobuk by tank farm owner: City (16,900 gallons); Northwest Arctic Schools (11,700); IRA Store (8,700).

SHUNGNAK-KOBUK ENERGY OPTIONS

A preliminary screening analysis of best available energy options was undertaken for the Shungnak-Kobuk area. This included a high level review of reports, resource maps, and understanding of best available technology. Below is a list of energy options that require further analysis, followed by a discussion of each option. These options were identified through reports, resource maps, and the consultant's knowledge, but community members and other stakeholders may have additional source knowledge. As new information is brought forward, it will be incorporated into the analysis.

- *Combined Heat and Power Systems (Cogeneration)*. The preliminary screening analysis for Shungnak and Kobuk suggested waste heat recovery as a potential source of economic benefits for the community if a potential end-use for the heat is located in close proximity to the power house. According to the Alaska Rural Energy Plan, a potential use of the cogeneration heat was to keep fuel storage tanks and distribution lines warm enough to use a more economical type of diesel fuel or to provide heat to an end-user.
- *End-Use Energy Efficiency*. End-Use Energy Efficiency (including electrical lighting, refrigerator/freezers, appliances, new space heating, and new water heating) has been identified as a potential source of economic benefits for Shungnak and Kobuk. Types of interventions that could be considered for this initiative could include light bulb replacement program, upgrades to the thermal performance (insulation) of homes, the replacement of inefficient appliances, weatherization initiatives, and upgrades to the existing diesel generators. All end-use energy efficiency initiatives should be modeled/assessed in its impact on the diesel generation power and efficiency curves.
- *Wind-Diesel Hybrid Systems*. The NANA Region Wind Resource Status Report predicted for Shungnak and Kobuk a low wind resource, Class 1 or "Poor". Potentially developable wind resources are predicted for the hills about 5 miles north of Kobuk.
- *Home Heating Oil*. Home heating oil will remain as a source of heating for Shungnak and Kobuk homes and will likely remain as an option into the future. Since this is a fossil fuel, it will fluctuate with the global economics of crude oil. The potential for other home heating sources should be reviewed.
- *Electrical Intertie*. There is an existing electrical intertie between Shungnak and Kobuk. The distance between Shungnak and Ambler is about 24 miles, and an intertie could be economically feasible. Also, interties between the Shungnak-Kobuk system and any future gold mining activities in the area could also prove feasible.
- *Geothermal*. According to the Alaska Geothermal Resources Map and local knowledge, the closest known geothermal sources are at Division Hot Springs, located about 40 miles south-southwest of the Shungnak-Kobuk area. The water temperatures of the Division Hot Springs are significantly below the necessary temperature of ~80º C for Chena-type power generation, although field investigations are needed to determine if hotter fluid exists below ground.
- *Hydroelectric*. Both a 1979 study by the U.S. Department of Energy (DOE)[55] and a 1981 study commissioned by the U.S. Army Corps of Engineers[56] examined potential small hydroelectric sites

[55] Small Hydroelectric Inventory of Villages Served by Alaska Village Electric Cooperative, U.S. Dept. of Energy, Alaska Power Administration. December 1979.

[56] Regional Inventory and Reconnaissance Study for Small Hydropower Projects: Northwest Alaska. Ott Water Engineers, Inc., prepared for the U.S. Army Corps of Engineers, Alaska District. May 1981.

in the Shungnak-Kobuk area. A 2006 study conducted by Shaw Stone & Webster[57] examined potential large-scale hydroelectric sites involving dams on the Shungnak and Kogoluktuk rivers as a possible power source for a gold mine proposed in the area about 10 miles north of Kobuk. The 2006 study also included preliminary investigations of run-of-river hydroelectric potentials of the Shungnak and Kogoluktuk rivers and smaller streams in the area.

- *Dahl Creek*. The 1981 Army Corps study proposed a 140-kW hydroelectric installation on Dahl Creek to serve both Kobuk and Shungnak, at a site located about 3 miles north of Kobuk. The average annual plant factor of this site was estimated to be only 0.28, with minimal power production occurring from December through April. The environmental constraints listed were whitefish and grayling in the stream.
- *Cosmos and Camp Creeks*. The 1979 DOE study describes a power potential of over 1,200-kW (during summer flow) on a site on Cosmos Creek, roughly 7 miles north of Shungnak. Nearby Camp Creek was also identified as having power potential. The 1981 Army Corps study proposed a 144-kW installation on Cosmos Creek, with an estimated average annual plant factor of only 0.26. Like Dahl Creek, minimal power production would occur from December through April, and the environmental constraints listed were the presence of whitefish and arctic grayling in the stream.
- *Shungnak River*. The 2006 study by Stone & Webster proposed a 13 MW 'full-scale' (with a 195' high dam) or a 10.6 MW 'limited' (with a 135' high dam) hydroelectric development on the Shungnak River. In either case, the installation would produce no power from January through April. A 5.8 MW run-of-river (with no dam) hydroelectric plant was also proposed for the Shungnak River, but was judged to not be as economical as a dam-storage facility.
- *Kogoluktuk River*. The 1979 DOE study references a 1966 statewide inventory of hydropower sites conducted by the Alaska Power Administration, which proposed a 8,400-kW (8.4 MW) hydroelectric plant on the Kogoluktuk River, which a 205-foot high concrete arch dam to provide 100% stream flow regulation. However, the 1979 study also describes the possibility of a much smaller installation where the Kogoluktuk River flows through a narrow canyon about 7 miles northeast of Kobuk. The 2006 study by Stone & Webster proposed an 11.7 MW 'full-scale' (with a 175' high dam) or a 7 MW 'limited' (with a 90' high dam) hydroelectric development on the Kogoluktuk River. In either case, the installation would produce no power from January through April. A 3.2 MW run-of-river (with no dam) hydroelectric plant was also proposed for the Kogoluktuk River, but was judged to not be as economical as a dam-storage facility.
- *Solar*. While solar is not widely used in Alaska, it does remain an option for power generation and home heating. A review of solar technology should be undertaken.
- *Biomass*. The biomass map in the Renewable Energy Atlas of Alaska identifies the Shungnak-Kobuk area as "mixed forest and broadleaf". Wood from local trees is already used as a practical home heating source, and should be further investigated.

RECOMMENDED ENERGY OPTIONS FOR SHUNGNAK-KOBUK

The following recommendations are provided for the communities of Shungnak and Kobuk in order to frame energy policy for the region.

- *Coordinate a Cogeneration (Combined Heat and Power) Feasibility Study*. Due to the potential economic benefit of cogeneration (combined heat and power) systems, it is recommended to implement a feasibility study of such systems for Shungnak and Kobuk. This could be done at the

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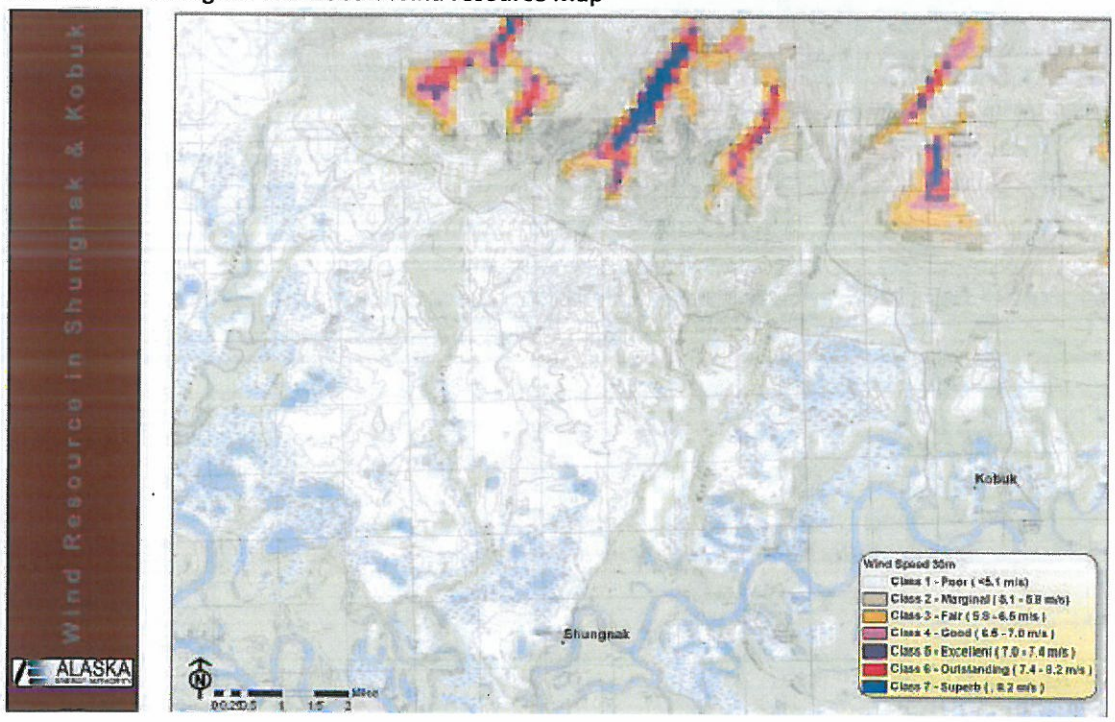
[57] Mine Power Study: Arctic Project – Ambler Mining District Alaska. Shaw Stone & Webster Management Consultants, Inc. February 2006.

time that the Bulk Fuel and Power System Upgrades are undertaken for both communities. A local woody-biomass supply may be suitable for CHP based on further study.

- *Coordinate an End-Use Energy Efficiency Study*. Shungnak stakeholders should implement a study of end-use energy efficiency, with a particular focus on how energy efficiency could impact the efficiency of the existing generation sets.
- *Research Additional Home Heating Energy Options*. While home heating oil will remain as the mainstay for home heating, additional energy source options should be reviewed. In particular, local biomass (wood) options should be studied.
- *Research Electrical Intertie with Proposed Mine*. The power needs of the polymetallic mine proposed in the area would be greater than the combined demand of Shungnak and Kobuk. Therefore, any large-scale power generation serving the mine could justify an electric intertie line between the mine and the two communities.
- *Research Local Hydroelectric Options*. Although small-scale hydropower could only provide significant power for Shungnak-Kobuk from May through November, several potential sites in the area warrant further investigation if the gold mine north of Kobuk is constructed.

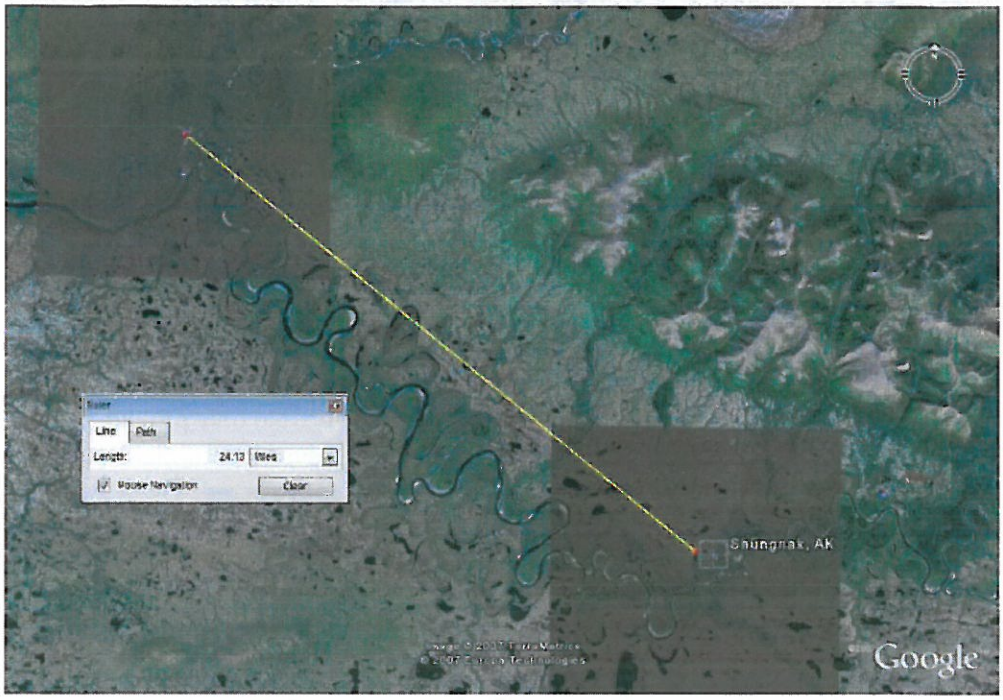
SHUNGNAK-KOBUK EXHIBITS

Exhibit K-1 – Shungnak and Kobuk Wind resource Map



Source: NANA Region Wind Resource Status Report

Exhibit K-2 – Ambler to Shungnak Tie-line Distnace Google Earth Image



Source: NANA Region Wind Resource Status Report

HYDROELECTRIC PROSPECTS OF SHUNGNAK-KOBUK AREA[58]

Table 5-8 Comparative Summary of Kogoluktuk and Shungnak Sites

	FULL DEVELOPMENT		REDUCED DEVELOPMENT	
	Kogoluktuk	Shungnak	Kogoluktuk	Shungnak
Reservoir full WL, ft	400	550	315	490
Installed capacity, MW	11.7	13	7	10.6
PH tailwater level, ft	165	200	165	200
Assumed head loss, ft	25	40	25	37
Assumed net head, ft	210	310	125	253
Drainage area, sq mi	290	200	290	200
Avg annual inflow volume, cfs-days	146,094	100,754	146,094	100,754
Avg annual flow, cfs	400	276	400	276
PH hydraulic capacity, cfs	800	600	800	600
Dam type	Concrete faced rockfill	Concrete faced rockfill	Concrete faced rockfill	Concrete faced rockfill
Dam height at max section, ft	175	195	90	135
Dam crest length, ft	3200	800	1800	750
Dam volume, cy	3,500,000	1,200,000	610,000	550,000
Power tunnel length, ft	12,600	11,700	12,600	11,700
Power tunnel diameter, ft	12	10.5	12	10.5
Bridge across reservoir, L, ft	n/a	1200	n/a	n/a
Reservoir full surface area, sq mi	32	13		
Reservoir full volume, AF	1,228,000	428,000	40,000	99,000
Time for filling of reservoir, yrs	4.2	2.1	0.1	0.5
Avg annual energy, MWH	51,500	52,400	30,600	42,700
Cost per installed kW, $/kW	13,500	6,900	11,400	5,850

Of the two sites, the Shungnak scheme appears more attractive and potentially at a cost level that might be more viable for remote Alaska.

Mainly because of the larger dam structure, the Kogoluktuk scheme appears more costly. Also, higher costs are included for the longer power tunnel as well as turbine and hydraulic equipment passing larger flow at a lower head.

[58] Source: Mine Power Study: Arctic Project – Ambler Mining District Alaska. Shaw Stone & Webster Management Consultants, Inc., 2006

Table 5-7 Comparative Summary of Run of River Hydro Sites

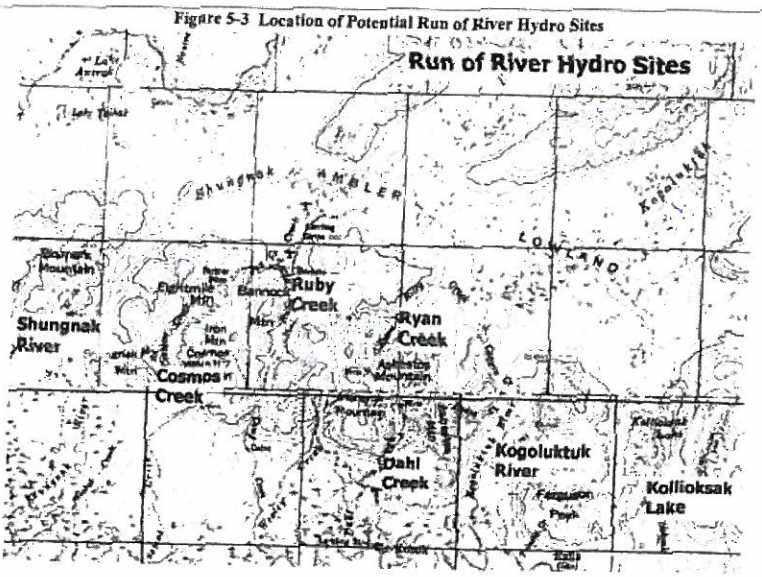
Site	Drainage area, sq mi	Installed capacity, kW	Hydraulic capacity, cfs	Estimated net head, ft	Est annual energy, MWH
Shungnak River	200	5,800	600	138	19,900
Kogoluktuk River (1)	290	3,200	800	57	12,000
Comos Creek	13	1,000	50	293	2,900
Ryan Creek (1)	12	600	45	200	1,800
Dahl Creek (1)	9	500	35	222	1,500
Kollioksak Lake (2)	10	400	40	145	1,300
Ruby Creek	5	200	20	133	500

(1) Located at Asbestos Mountain area.
(2) Powerhouse is about 15 miles from camp area.

Capital and operating costs for these installations will be much higher on a $/kW basis than for the larger hydro power applications at Shungnak and Kogoluktuk, and the costs become much more sensitive to project development and permitting costs and the risks of completion. These projects could be evaluated further if higher cost options become appropriate.

Ambler Mining District -Mine Power Study

Figure 5-3 Location of Potential Run of River Hydro Sites



Run of river developments are possible at both the Shungnak and Kogoluktuk sites. These schemes include the same power tunnel and powerhouse location as for other larger schemes discussed above. Shungnak run of river scheme has available head of 138 feet and an installed capacity of 5,800 kW. Kogoluktuk run of river scheme has available head of 57 feet and an installed capacity of 3,200 kW.

Run of river installations on smaller side drainages in the area were also evaluated. These schemes include an intake and pressure pipe delivering water to a downstream powerhouse to develop available head. Sites on Cosmos Creek, Ryan Creek, Dahl Creek, Kollioksak Lake, and Ruby Creek were considered. The available output from each of these schemes is very limited (1 MW or less) because each of these drainage areas is small (about 10 to 12 square miles) and correspondingly available streamflow is very limited.

Initial parameters of potential run of river schemes are comparatively summarized below in Table 5-7.

Table K-1 – Division Hot Springs

Temp.	Flow (LPM)	TDS	SiO_2 geothermometer	Giggenbach geothermometer
68°C / 154°F	820	-	-	-
56°C / 133°F	2070	-	-	-

GEOTHERMAL PROSPECTS OF DIVISION HOT SPRINGS[59]

Several hot springs comprise the Division Hot Springs, also called Shungnak Hot Springs or Selawik Hot Springs. They are approximately 40 miles from the Kobuk-Shungnak area and approximately 60 miles from Ambler. They are located on the north side of the Purcell Mountains, inside the Selawik National Wildlife Refuge. The lower springs are slightly cooler than the upper springs, so the source of the thermal water is probably topographically high. Like Hawk and South Hot Springs, the Division Hot Springs issue from within the Cretaceous-age, anomalously radioactive Wheeler Creek Pluton (Miller and Johnson, 1978; see description of Wheeler Creek Pluton above). Division Hot Springs are some of the hottest springs in the NANA region, but they are still significantly below the necessary temperature of ~80 ºC for Chena-type power generation. At this time, there are no geothermometer predictions of hotter fluid at depth – but is due to a lack of data. The flow rate of the upper spring is extremely high relative to other CAHSB Hot Springs, which would reduce the amount of pumping required for production. Hence, based on resource factors alone, these springs should be prospective for development; however their location inside of a National Wildlife Refuge could complicate development plans.

[59] Source: NANA Geothermal Assessment Project (GAP) Draft Literature Review

Appendix L
Financial Analysis of Selected Energy Proposals

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BENEFIT-COST RATIOS

B/C ratios calculated using the RETScreen software[60], which defines the benefit/cost (B/C) ratio as the ratio of net benefits to costs of the project. Net benefits represent the present value of annual reserves (or savings) less annual costs, while the cost is defined as the project equity. Other energy options for the region (solar, hydroelectric, electrical interties) have not yet been analyzed with the RETScreen software.

WIND ENERGY FINANCIAL ANALYSIS: DEERING, BUCKLAND, AND NOORVIK

Based on the assumptions listed below, a pre-feasibility financial analysis of a small wind farm installation for the communities of Deering, Buckland and Noorvik was conducted using the software program RETScreen. The results of this analysis are shown in Table L-1 below. Assumptions for wind turbine installations are:

Characteristics

Wind turbines used are 100-kW Northwind100 machines with a 30 m hub-height
Two turbines installed in Deering (200-kW total wind capacity)
Three turbines installed in Buckland and Noorvik (300-kW total wind capacity)

Installation cost assumptions (for all three communities)

Feasibility, development and engineering costs	$300,000
Wind turbines	$250,000/turbine
Substation	$150,000
Installation labor costs	$150,000
Foundation	$200,000
Misc./contingencies	$338,000 to $524,000
Transmission line cost	$350,000/mile
Annual operations and maintenance (O&M) costs	$ 22,000
Drive train replacement	$ 30,000 every 10 years
Blade replacement	$ 80,000 every 15 years

Financial assumptions

Electricity avoided cost (compared to diesel)	$0.20/kWh
Annual electricity cost escalation rate	10%
Inflation rate	2.5%
Discount rate	7%
Project life	25 years

Table L-1: Financial analysis of wind farm installation for Deering, Buckland, and Noorvik

	Deering	Buckland	Noorvik
Average annual wind speed	7.2 m/s	6.8 m/s	5.5 m/s
Wind plant capacity factor	29.1%	25.9%	15.7%
Total installed wind capacity	200-kW	300-kW	300-kW
Annual wind energy generated	510 MWh	682 MWh	413 MWh
Total generated in FY2006[61]	662 MWh	1498 MWh	1951 MWh
Transmission line length	1.5 miles	5 miles	1 mile
Transmission line cost	$525,000	$1,750,000	$350,000
Total installation cost	$2,152,700	$3,823,875	$2,237,675

[60] RetScreen software is used to at the pre-feasibility or feasibility stage to evaluate the financial performance of energy.
[61] Statistical Report of the Power Cost Equalization (PCE) Program, Fiscal Year 2006, Alaska Energy Authority

Benefit-cost (B-C) ratio	1.54	1.20	1.17

Geothermal

Based the assumptions listed below, a pre-feasibility financial analysis of a 400-kW geothermal power plant at Granite Mountain Hot Springs, and points closer to Buckland, was conducted using the software program RETScreen. The economic model is based on the 400-kW Chena Hot Springs geothermal power plant near Fairbanks, which at the end of 2006 had a total installation cost of about $2,000,000. This figure included the cost of the geothermal power generation equipment, as well as the feasibility study, development and engineering costs.

Assuming three-fold increase in cost of developing an unknown resource in a remote area as compared to Chena Hot Springs, the total installation cost of a 400-kW geothermal power plant at Granite Mountain Hot Springs is estimated to be $6,000,000. This figure includes the cost of the power plant as well as feasibility, development and engineering costs, but does not include the cost of a transmission line to Buckland, or a substation connecting to the City of Buckland's electrical distribution system.

According to the FY2006 PCE report, City of Buckland's 650-kW capacity diesel power plant generates about 1500 MWh annually. Assuming this level of power demand does not increase, a 400-kW geothermal power plant with an annual electricity production of 1507 MWh of electricity would serve Buckland's needs at an annual capacity factor of 43%.

With a benefit-cost (B-C) ratio of only 0.46, as calculated by the RETScreen software, a geothermal power plant located at Granite Mountain Hot Springs appears to be an un-economic source of electricity for Buckland. The majority of the project's cost is the 40-mile long a transmission line needed to connect the site at Granite Mountain Hot Springs to the community of Buckland. The length of the transmission line is chief reason why the project would not be economical, although the project's economic feasibility could be improved somewhat if Buckland's annual electricity demand increased significantly compared to 1500 MWh (the 2006 level). According to the RETScreen financial analysis, if the Granite Mountain Hot Springs geothermal power plant produced 3189 MWh of electricity annually (increasing the plant's capacity factor to 91%), the B-C ratio would increase to 1.00. The economics of a geothermal project at Granite Mountain Hot Springs may also improve if communities in addition to Buckland connected to the system, but due to the great distances of electric transmission lines needed this is not likely.

However, if a previously unknown sub-surface geothermal energy resource is discovered a much closer distance to Buckland, the economics improve significantly (all other costs remaining the same), as can be seen below in Table L-2. At a distance of 9 miles, RETScreen calculates a B/C ratio of 1.00.

Table L-2 - B/C Ratio of 400-kW Chena-Type Geothermal Power Plant for Buckland

Transmission Line Length	Transmission Line Cost	Total Installation Cost	B/C Ratio
40 miles	$14,000,000	$22,937,585	0.46
30	10,500,000	18,972,085	0.56
20	7,000,000	15,006,585	0.71
15	5,250,000	13,023,835	0.82
10	3,500,000	11.041,085	0.96
5	1,750,000	9,058,335	1.18

Assumptions for Granite Mountain Hot Springs/Buckland geothermal plant are:

Characteristics

400-kW power generation plant (Chena-type)
Annual electricity generated: 1507 MWh (43% capacity factor)

Installation cost assumptions (based on Chena Hot Springs geothermal plant)

Feasibility, development and engineering costs	$2,000,000
Geothermal power plant (400 kW)	4,000,000
Transmission line (per mile)	350,000
Substation	200,000
Contingencies	10% of installation cost
Interest during construction	6% over 12 months
Spare parts	15,000
Transportation	240,000

Financial assumptions

Electricity avoided cost (compared to diesel)	$0.20/kWh
Annual electricity cost escalation rate	10%
Inflation rate	2.5%
Discount rate	7%
Project life	25 years
Annual operations and maintenance (O&M) costs:	$110,000

GEOTHERMAL ELECTRICITY FINANCIAL ANALYSIS FOR KOTZEBUE

It is not known if a geothermal energy resource exists in Kotzebue or nearby, or if a resource did exist, that it would be hot enough for the generation of electricity. However, if a geothermal resource of sufficient temperature is discovered by exploration drilling in Kotzebue, it would be an energy source worth investigating.

Based on the assumptions listed below, a pre-feasibility financial analysis of a *hypothetical* 1200-kW geothermal power plant in or near Kotzebue was conducted using the software program RETScreen. In 2007, Kotzebue Electric Association generates about 21,807 MWh annually from diesel and 1,064 MWh from wind. Assuming that Kotzebue's electric power demand does not increase, a 1200-kW base-load geothermal power plant with an annual electricity production of 10,092 MWh of electricity (or an annual capacity factor of 96%) could provide slightly less than half of Kotzebue's electricity needs. It must be emphasized that this hypothetical scenario only takes into account electricity production and not utilization of the geothermal for district heating applications as part of a combined heat-and-power, or co-generation, facility.

The economic model is based on the 400-kW Chena Hot Springs geothermal power plant near Fairbanks, which at the end of 2006 had a total installation cost of about $2,000,000, or $5000 per kW of capacity. This figure included the cost of the geothermal power generation equipment, as well as the feasibility study, development and engineering costs. Assuming a 13% annual increase in construction costs between 2006 and 2008, and a construction cost increase factor of 1.27 (comparing the NW Arctic Borough and the Railbelt), the installation cost of a 400-kW "Chena-clone" geothermal power plant in Kotzebue would be $8000 per kW of capacity. This figure includes the cost of the power plant as well as feasibility, development and engineering costs, but does not include the cost of a transmission line or other electrical infrastructure. A Kotzebue geothermal power plant with a capacity of 1200-kW, significantly greater than 400-kW, is assumed to have an overall installation cost of $6000 per kW of capacity due to economy of

scale. So a 1200-kW geothermal power plant in Kotzebue has an assumed installation cost of $7,200,000. This figure does not include development costs, which would include an estimated $5 million for exploratory drilling.

With a benefit-cost (B-C) ratio of 3.26, as calculated by the RETScreen software, a hypothetical 1200-kW geothermal power plant located in Kotzebue appears to be a very economic source of electricity for the community. However, such figures are highly speculative since this model assumes an unknown geothermal resource, as high-quality as Chena Hot Springs, exists underground very close to Kotzebue. Further, geophysical exploration is needed to determine what, if any, geothermal resource exists in the Kotzebue area. Assumptions for Kotzebue geothermal plant are:

Characteristics

1200-kW power generation plant (Chena-type)
Annual electricity generated: 10,092 MWh (96% capacity factor)

Installation cost assumptions (based on Chena Hot Springs geothermal plant)

Feasibility, development and engineering costs	$5,000,000
Geothermal power plant (1200 kW)	7,200,000
Transmission line (2 miles)	700,000
Substation	200,000
Misc./contingencies	2,325,795
Approximate Total Installation Cost	$15,425,795 ($12,854.83 per kW)

Financial Assumptions

Electricity avoided cost (compared to diesel)	$0.15/kWh
Annual electricity cost escalation rate	10%
Inflation rate	2.5%
Discount rate	7%
Project life	25 years
Annual operations and maintenance (O&M) costs	$330,000
Benefit-Cost (B/C Ratio)	3.26

Biomass

Wood-fired heating is a very cost-effective option for many communities in rural Alaska. Assuming a wood-to-heat energy conversion efficiency of 75%, 1 cord of wood (assumed heating value: 8,890 BTU/lb.) will replace 80 gallons of #2 heating oil. A cord of wood has a volume of 128 cubic feet. Table L-3 below, compares the price of heat (per million BTU) of wood and heating oil.

Table L-3: Cost per Million BTU by Heat Source

Fuel Oil #2 (110,400 net BTU/gal)		Wood (8,833,500 net BTU/cord)	
Price per gallon	$ per million BTU	Price per cord	$ per million BTU
5.50	49.82	200	22.64
7.00	63.41	250	28.30
8.50	76.99	300	33.96

Biomass-fired Power Generation and Combined Heat and Power

The PureCycle200 can provide up to 200 kW of electrical power from a low temperature heat source (200º F or less) using the Organic Rankine Cycle (ORC). Manufactured by United Technologies Corporation (UTC) since 2004, the PureCycle 200 power generation module was originally designed to operate using industrial waste heat. However, the system has proven viable for generating electricity from other low-temperature

heat sources. For example, two PureCycle 200 units were installed in 2006 as part of Alaska's first geothermal power plant at Chena Hot Springs, which has a maximum water temperature of only 165º F. The PureCycle 200 system is mostly comprised of components and hardware from Carrier Refrigeration (also a division of UTC), and employs a 'working fluid' (R134a) commonly used in air conditioning equipment. For biomass electricity production with a PureCycle 200 unit, water is first heated by burning wood. The hot water enters the evaporator to heat the system working fluid until it is vaporized. This hot, vaporized working fluid then enters the PureCycle power module where it drives a turbine to produce electrical power. After passing through the turbine, the vapor cycles through a condenser to be cooled and re-liquefied. The liquid working fluid is then sent through a pump back in to the evaporator.

Aside from ORC, other technology options for small-scale, wood-fired, combined heat and power (CHP), as identified in the paper "Renewable Power in Rural Alaska: Improved Opportunities for Economic Deployment" (2008), by Peter M. Crimp, Steve Colt and Mark A. Foster are:

- Gasifier-fed reciprocating engine generators
- Conventional Rankine cycle fed by steam from a woodchip-fed pile burner
- Fluidized bed combustor

The 2008 paper modeled the economics of wood-biomass CHP in rural Alaska, using the fluidized bed combustor technology as the "pessimistic" scenario and ORC as the "optimistic" scenario. The "optimistic" scenario also assumes a wood cost of $\$21/m^3$ ($50/cord) and a higher heating value of 7.98 GJ/m^3 (18 MMBtu/cord), and that the CHP system has an overall efficiency of 35% of converting wood fuel into useful energy (both electricity and heat). The results for the upper Kobuk River communities of Ambler and Shungnak, indicating positive economics for biomass CHP under an "optimistic" scenario, can be seen in Table L-4 below:

Table L-4 – Biomass CHP System Cost and Benefit/Cost Ratio[62]

	Pessimistic				Mid-Case				Optimistic			
		Diesel Price				Diesel Price				Diesel Price		
Location	Installed Cost (1000$)	Low	Medium	High	Installed Cost (1000$)	Low	Medium	High	Installed Cost (1000$)	Low	Medium	High
		B/C Ratio				B/C Ratio				B/C Ratio		
Ambler	2,750	(1.95)	(1.67)	(1.42)	2,292	(0.22)	0.23	0.63	1,834	2.36	3.07	3.70
Shungnak	2,886	(2.00)	(1.42)	(0.65)	2,405	(0.12)	0.81	2.07	1,924	2.68	4.16	6.14

[62] Source: Renewable Power in Rural Alaska: Improved Opportunities for Economic Deployment (2008, Crimp, et al.

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Appendix M
Potential Funding Sources for SEP

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Table M-1 - Potential Funding Sources for SEP

Agency	Contact	Description
Alaska Energy Authority	**Peter Crimp** Project Manager P: 907-771-3039 E: pcrimp@aidea.org	Alternative Energy and Energy Efficiency programs, Power Project Load Fund, Bulk Fuel Upgrade Program, Power System Upgrade Program, community technical assistance and training programs.
U.S. Department of Energy, Golden Field Office (National Renewable Energy Laboratory)	Lizana Pierce Tribal Energy Program , Project Manager E: lizana.piece@go.doe.gov	In addition to the Tribal Energy Program, DOE funding may also be available through the Geothermal Technology Program, and the Wind and Hydropower Technologies Program.
Denali Commission	Kathy Prentki Energy Program Manager E: kprentki@denali.gov	For FY2008, funding for the Denali Commission's energy program is $10 million for legacy bulk fuel and power upgrades (from the statewide deficiency lists), up to $9 million for renewable energy projects, about $4 million from the TAPL funds which can only be spent on bulk fuel, and an undetermined amount from USDA Rural Utility Service high energy cost grant funds.
U.S. Department of Agriculture- Rural Utilities Service	**Eric A. Marchegiani, P.E.** USDA Rural Development-Electrical PO Box 771876 Eagle River, AK 99577 P: (907) 688-8732 / F: 1-888-655-3357 E: Eric.Marchegiani@wdc.usda.gov	The High Energy Cost Grant Program provides financial assistance for the improvement of energy generation, transmission, and distribution facilities serving eligible rural communities with home energy costs that are over 275 percent of the national average.
Alaska Housing Finance Corporation	Scott Waterman Energy Specialist I Phone: (907) 330-8195	Alaska Housing Finance Corporation offers a variety of nationally recognized, award winning & innovative energy programs to serve the needs of Alaskans. The Research and Rural Development Department (R2D2) is the Alaska State Energy Office. It is the primary recipient of federal funds for Renewable Energy and Energy Efficiency to Alaska. R2D2 provides funding to weatherization service providers; the Alaska Energy Authority for geothermal, wind and other renewable energy projects; and energy-efficiency programs for schools and community buildings.
RurAL CAP	Mark Lyman Weatherization Program Manager P: 907-865-7375 E: mlyman@ruralcap.com	In addition to the home weatherization program, RurAL CAP also offers a VISTA energy program and education about energy conservation.
Alaska Department of Transportation and Public Facilities	Donna Gardino Northern Area Planner Northwest Arctic Borough P: (907) 451-2375 E: donna.gardino@alaska.gov	Statewide Transportation Improvements Program (STIP) and Needs List, which could include new roads connecting communities in the NW Arctic Borough.
U.S. Department of Housing and Urban Development	Colleen Bickford Alaska Office Director P: (907) 677-9800 E: AK_Webmanager@hud.gov	A Community Development Block Grant could be used by the Northwest Arctic Borough, and the Indian Community Development Block Grant (ICDBG) for Tribal Entities, for energy efficiency and weatherization programs.
Corporate Giving	N/A	ConocoPhillips, BP, Alyeska Pipeline, Federal Express are all major corporations with a strong Alaskan presence that could be considered for a capital campaign. NANA Regional Corporation, as the regional corporation, is another entity. Tech Cominco, due to its close proximity is another viable option. On the national level, several large technology firms not previously involved with energy projects, most notably Google, are starting to invest large amounts in renewable energy ventures. Funding a renewable energy project in rural Alaska community affected by climate change could be a noteworthy 'showcase' for such a company.

Regional Goals and Objectives

The cost of living in our villages is one of the highest in the state. Our residents are struggling to pay for heat and the utilities for their homes and most of them do not have cash paying jobs. These struggles are reflected in the many needs listed in the village development plans (Tabs 3 – 8) and in the Northwest Arctic Strategic Energy Plan (Tabs 9 & 10).

The Northwest Arctic Borough's Economic Development Commission also serve as our region's Comprehensive Economic Development Strategy Committee. It is made up of mostly private sector representatives, all nine of which are dedicated leaders from many different economic facets of our region. Our Strategy Committee members include: two private business owners; a representative from the Red Dog Mine (one of the largest zinc mines in the world); the manager of our regional Wells Fargo Bank; a representative of our ANCSA regional profit corporation, NANA; the director of our regional University of Alaska Fairbanks campus; the mayor of one of our communities with its own electric utility; a representative of our borough government; and an experienced tribal administrator. Seven of these nine were raised in our regional villages.

This CEDS is focused upon the services and goals we believe that we can provide and accomplish. Our CEDS Committee members recognize the need to be supportive of and to monitor the many other economic challenges and opportunities that leaders in our region continue to contend with such as: the safe development of the Ambler Mining District and haul road; developing oil spill response & recovery plans for OCS oil exploration and development; NANA within-region natural gas development; the development of a deep water port at Cape Blossom near Kotzebue; insuring the future of the Red Dog Mine and its access to future ore deposits; working to secure for the borough residents a fair share of state mining tax revenues and haul road revenues; developing an 11-14 grade Magnet School; advocating to bring fast internet broadband speeds to our residents; the continued development of basic public safety (officers, fire response, search & rescue, emergency response, and ice roads); developing environmentally safe village land fill, sewage treatment processes and clean water programs; maintaining and replacing our aging fuel storage farms, as well as many other major projects that impact our region's economy.

While supporting our leaders as they take on these and many other large and often slow developing challenges, the Strategy Committee has approved four economic development strategies that more immediately can affect the residents of our region:

A) a Village Jobs Strategy;
B) the Sulainich Art Center (and sales);
C) a region wide alternative energy and resource program; and
D) a small business development program.

The remainder of this Regional Goals and Objectives section of our CEDS describes these four regional economic development strategies approved by our CEDS Committee.

A) Village Jobs Strategy

This Village Jobs Strategy was developed by our regional Strategy Committee after studying the background of the economic development situation of our region that included data on our economy, population, geography, workforce development, employment, transportation, resources, and other pertinent information. This background document, our "Regional Challenges and Advantages," is located at the front of this CEDS document at Tab 2. There are many issues within this document that our Committee members focused upon and a synopsis of four of these concerns are listed on the following two pages.

Based upon these concepts the CEDS Committee established four priorities: 1) to encourage more development in our NAB villages; 2) to protect our traditional subsistence way of life; 3) to better prepare our villages for challenging changes; and 4) to implement strategies that will have long lasting positive results.

The CEDS Committee felt that of all four of our CEDS strategies their Village Jobs Strategy of increasing jobs in and develop the self-sustainability of our villages, has the greatest potential.

Most of our Strategy Committee members have strong ties to our remote villages. Throughout the spring and summer of 2012 the Commissioners have been helping to introduce this Village Jobs Strategy to our village councils. In the fall of 2012 the Commissioners hired a coordinator and they are working with the village councils to develop their self-sustaining Village Jobs Strategy ideas. After the two page of selected economic concepts (from our Regional Advantages and Challenges"), are a projected timeline, the proposed Performance Measures (metrics of success), and a copy of the resolution documenting the rational for approving this strategy.

This Jobs Strategy will encourage village councils to consider industries that not only target their natural resources, but the abilities and interests of their unemployed, in order to develop industries that will help the village meet more of their own essential needs.

"Regional Advantages and Challenges – Northwest Arctic Region"

Selected economic concepts
from the 2012-2017 NAB Comprehensive Economic Development Strategy background section.

I. The Iñupiaq have thrived on this land for over 10,000 years.
   A. These are the aboriginal lands of the Iñupiat
   B. 76% of these lands are controlled by the Federal Government which enforces the ANILCA rural subsistence priority. An additional 10% are owned by NANA & KIC and another 1% will be owned by the Borough. Therefore, at least 87% of this region should promote subsistence priority.

II. The price of oil products is going to continue to rise[1].
   A. Rising oil prices will affect us in at least 6 ways:
      1- Gasoline/Diesel for vehicles (4x4, skidoos, trucks, cars, heavy equipment, etc.)
      2- Fuel for airplane travel – ticket prices will rise past what we can pay.
      3- Cargo (all imported and exported goods) costs will rise past what we can pay
      4- Home heating – 90% of our homes are heated with fuel oil
      5- Electricity – our generators require diesel fuel
      6- Water & Sewer – requires electricity for lift stations, pumps, and heat trace

   B. Oil costs increases are especially tough on our region
      Ralph Andersen, representing the Alaska Federation of Natives, in his 2008 testimony to the US Senate Committee on Indian Affairs, quoted data from the University of Alaska ISER: rural communities are paying about 41% of their annual incomes on home energy use, compared to about 4% in Anchorage.
      According to the 2009 McDowell Group study (pg 10), of the Geographic Cost Differentials for all the major communities in rural Alaska, "Kotzebue's 161 index number was the highest…" Kotzebue is the most expensive hub in all rural Alaska. All of the other communities within the NWA region have average retail costs much higher than Kotzebue!

III. More people are migrating out of the Northwest Arctic region than moving into it.
   A. In the 1970's and 1980's we had more people moving into our region than moved out of it. In the 1990's and the first decade of 2000, we had more people migrate out[2]
   B. The population of our region has remained relatively stable at about 7,500 because we have the highest birthrate in the entire state.

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[1] Crude oil is a non-renewable resource. Oil companies have not been able to increase their oil refinery rates. World oil deposits are more difficult to locate and to develop. As the oil company ad says, "the easy oil is gone…"

China, with a population of over 1.3 Billion people (4 times the 311M pop. of the US) has one of the fastest growing economies in the world. With their skilled and inexpensive workforce industry can produce thousands of dollars of goods from the chemicals and the energy of just one barrel of oil. Their huge consumption of oil is increasing. India's economy is also growing. In the next ten years India (at 1.2B) is expected to be larger than China.

Oil prices will rise because oil is a limited non-renewable resource and because world industrial giants 7 to 8 times the size of America need the oil to fuel their economies and will be happy to pay the increasing costs.

[2] Alaska Economic Trends, April 2012. Alaska's Highly Migratory Population. Vol 32, No. 4. Pg 10. Net migration 2000-2010: -1,098; Natural increase (births vs. deaths): 1,413

IV. State and Federal Governments will continue to have less funding to share with our villages.
   A. The state depends mostly upon the sale of crude oil traveling down the Trans Alaska Pipeline for our state revenue. The amount of crude oil has been declining since 1977. We are down to 30% of the volume we pumped in 1977. The crude oil will run out. Our state government will not have enough money to fund all the state programs we enjoy now or have enjoyed in the past.
   B. The Federal government is over a Trillion (1000 Billion) dollars in debt… latest I've heard was 4.5 Trillion (Summer of 2012, via CNN). The Federal government is looking for ways to cut the budget and to cut services and to provide less services.
   C. If we thought the State and Federal governments were not as supportive as they could have been in the past, we may be experiencing more disapointment.
   D. Politically, Rural Alaska has less and less political "clout" to keep getting what we need, even if there was enough government budget.
      a. We have lost Reggie Joule (with his 16 yrs of seniority) in the legislature. The Executive (governor) and Legislative powers continue to work against Rural Alaska and continues to be politically hostile to rural regions[3].
      b. We no longer have Ted Stevens. Our Senators and Don Young have had to fight very hard for Alaska. ("By Pass Mail" subsidy)

Our dependency upon oil has made life very difficult for our residents. We should not be surprised if even less help comes from the state or the feds.

In this modern world we should be able to find something that will help our villager to use our local resources and become at least a little more independent from the trends of outside. Especially for our villages to be more independent for the essentials: water, food, shelter and clothing.

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[3] Rural vs. Urban. In the Fall of 2012 the Ballot Initiative to provide coastal zone management opportunities were defeated mostly by the population in the urban majority and the excessive funds donated by big businesses. This is just part of a long history within this state. We've had to fight many years to keep our Power Cost Equalization program. The state refuses to recognize the subsistence priority of Alaskan Natives, nor of Rural residents and the Feds have had to take over the management of game on federal lands in Alaska. The State budgeted over a million dollars to fight the subsistence fishing rights of Elder Katie John on the Venetie Indian Reservaton all the way through the US Supreme Court. Urban politicians (Tom Fink) have sponsored legislation that would allow government funds to be spent on "English Only" government documents. More subtle moves have been along school funding pathways… shifts in the funding formula, averaging the state wide bilingual costs into the average funding for all students, eliminating large funding opportunities for the rural areas (they matched it with a large increase in student funding so that the rural areas would be held harmless, but very large increases in urban funding were experienced.). There have been reductions in city council funding that have hurt our small cities.

Northwest Arctic Borough
Economic Development Commission
Village Jobs Strategy DRAFT Timeline

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September 2012

Three Ares of Development

Jobs

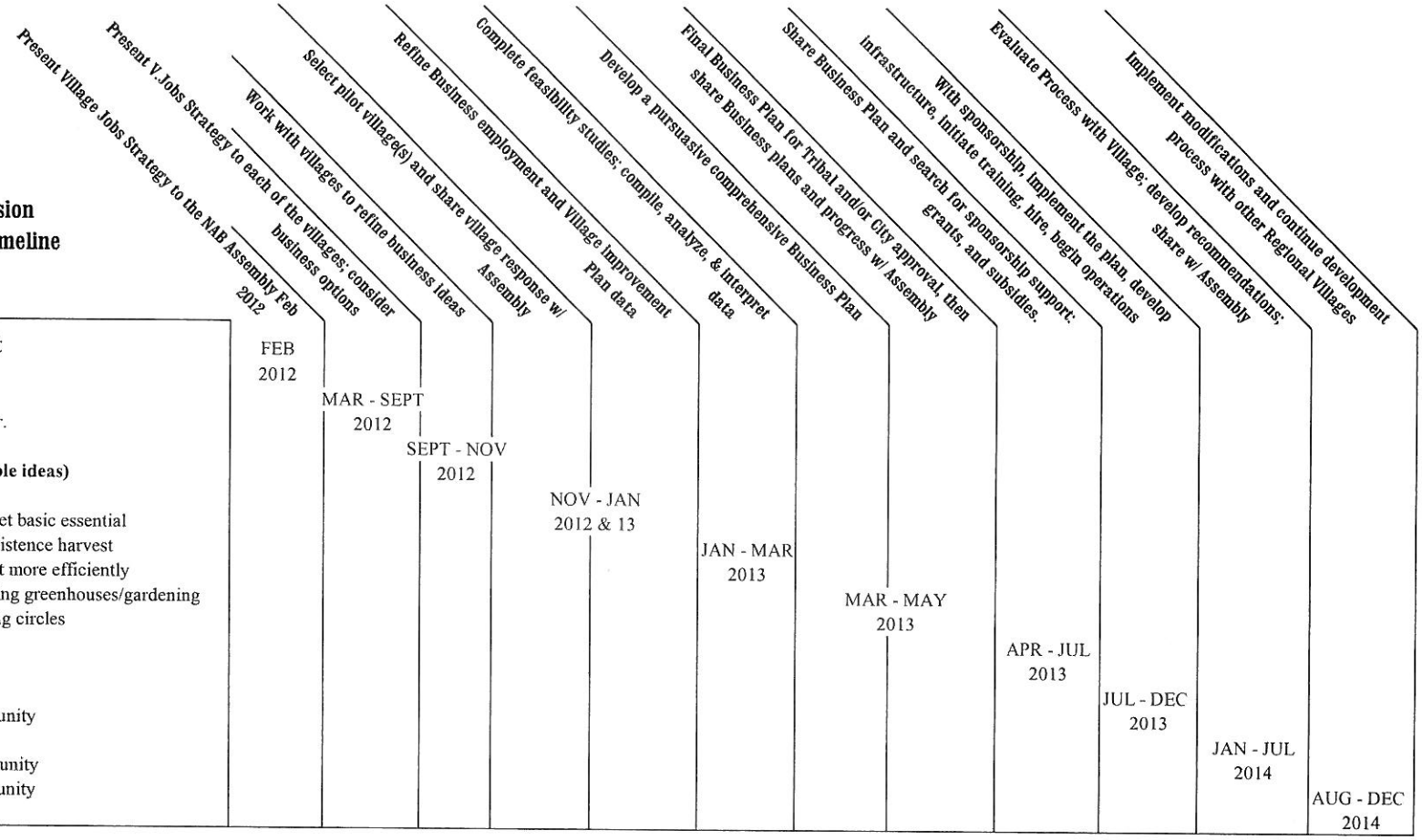
* Increase Jobs
* Jobs that many unemployed qualify for.

Village Security/Sustainability (possible ideas)

* Reduction of expensive imports
* utilize local resources especially to meet basic essential
* Increase the utilize the traditional subsistence harvest
* preserve & process subsistence harvest more efficiently
* Increase local food production, including greenhouses/gardening
* Increase traditional clothing and sewing circles

Community

* Those w/ job skills & experience:
    * what will improve your community
    * from their perspective
* Those who no longer live in the community
    * what will improve your community
    * from their perspective



Goal # Caring for our Communities

GOAL ED-5	To Increase Jobs in and Develop the self-sustainability of our Villages
DIVISION or DEPARTMENT	Economic Development Department
BENEFIT	Provides employment, reduces expensive imports, and allows the village to utilize more of its own resources

Action Steps	Measures	Beginning/ Ending Date	Annual Cost	Personnel Responsible
1. Inform Assembly and all Village Councils about the Borough's Village Job Strategy	Trip reports and status reports	February 2012 – Sept. 2012	$4K in travel costs	Dept Director or Coordinator
2. Hire Village Jobs Strategy Coordinator	Job Description, Advertisements, and VJS Coordinator hired	July 1 – August 2012	$120K	Dept. Dir & Commission
3. Help Councils develop their best Jobs & resource business strategy. 4. Econ. Dev. Commission to employ criteria to select one or two pilot strategies.	Pilot strategies and village(s) announcement.	Sept. 2012 - Nov. 2012	$4K for EDC Mtg	Dept. Dir. or Coordinator
5. Work with Village(s) to plan & develop more of the details of their VJS Business Plan. Collect data, complete feasibility studies, compile, analyze and interpret data with village representatives.	First complete draft of VJS Business Plan will be compiled.	Nov. 2012 - Mar. 2013	$1.5 K in trvl $5-7K in Con-sultant	VJS Coordinator
6. Share first complete draft of VJS Business Plan with village, Commission, Assembly. Work with Village(s) to polish and develop a persuasive business Plan	Persuasive Business plan is polished along with presentation and advertising materials (power point, flyers, photos, etc.)	Mar. 2013 - May 2013	$1.5K Trvl	VJS Coordinator and Dept Director
7. Search for potential sponsors and possible grant sources. Set up appointments and pitch the value of sponsorship and the VJS.	Trip and VJS status reports to Commission and to Assembly	April 2013 To July 2013	$4K Trvl	VJS Coordinator

Action Steps	Measures	Beginning/ Ending Date	Annual Cost	Personnel Responsible
8. With Sponsor support, implement the VJS (develop infrastructure, initiate hiring, training & begin operations)	Infrastructure in place, village jobs created and filled, operations have begun	July 2013 To Dec 2013	$4K Trvl	VJS Coordinator & Dept Director
9. Evaluate VJS Process & Timeline, institute changes and share with Commission & Assembly	Evaluation of pilot VJS(s) completed and shared with Commission and Assembly	January 2014 to July 2014	$4K Consul-tant	VJS Coordinator & Dept Director
10. Continue modified VJS process with the next village(s) until all of the good village VJS have been implemented.	Village Comprehensive Development Plans include their VJS and note progress/status.	August 2014 to Dec 2014		VJS Coordinator & Dept Director

NORTHWEST ARCTIC BOROUGH
ECONOMIC DEVELOPMENT COMMISSION
RESOLUTION 12-01

A RESOLUTION APPROVING
THE 2012 JOBS STRATEGY FOR THE
NORTHWEST ARCTIC BOROUGH
ECONOMIC DEVELOPMENT DEPARTMENT

WHEREAS, the Northwest Arctic Borough Assembly established the Northwest Arctic Borough Economic Development Commission (Commission) in 2002 "...in order to identify resources available, and to establish and implement strategies and plans to enable the residents of the borough to improve their economic condition." (NAB Code 11.06.005), and

WHEREAS, the State of Alaska recognizes our Commission as their Alaska Regional Development Organization (ARDOR) Board for our region, which "... is responsible, at a minimum, for...providing services designed to encourage economic development to the local villages" (3 AAC 57.080) and that "...shall develop and implement a regional economic development strategy... with other local, state, federal, and private development agencies and organizations" (3 AAC 57.090; and

WHEREAS, this land (of the NW Arctic region) has sustained the Iñupiat continuously for over 10,000 years and is able to continue to sustain the Iñupiat; and

WHEREAS, this strategy is designed to strengthen our villages, thus our hub and the entire region; and

WHEREAS, it is within our villages that nature's seasonal abundance is most pervasive and where most of our current and future traditional Iñupiaq language and culture bearers were/will be forged/raised; and

WHEREAS, the Commission has developed a strategy that establishes a village-driven process for economic development that the villages will ensure to be consistent with the traditional culture and values of the people of their community; and

WHEREAS, the Commission has developed a strategy that will provide an opportunity for our villages to better prepare for possible cuts in government funding and services and increasing costs for transportation, heating, utilities, goods and services; and

WHEREAS, the Commission has developed a strategy that will provide an opportunity for our villages to increase employment amongst the unemployed, draws on individual talents, and focuses on what people can do for themselves;

NOW THEREFORE BE IT RESOLVED that the Commission approves the 2012 Jobs Strategy for the Northwest Arctic Borough Economic Development Department.

PASSED AND ADOPTED THIS __ DAY OF _____ 2012.

_____

Delores Barr, Chair

B) Sulainich Art Center (Sulainich)

In 2000 several of our regional organizations came together to help create Sulainich – Iñupiaq meaning "a place where things are made." Sulainich has two major goals: 1) Provides an economic opportunity for regional artists; and 2) to secure the future ability of Sulainich to continue to provide an economic opportunity for regional artists. A revolving art purchasing fund was established with contributions from Maniilaq Association, NANA Regional Corporation (NANA), the Northwest Arctic Borough (NAB), and the Rasmussen Foundation. Over the past 10 years, Sulainich has recycled this fund to purchase nearly 2 million dollars' worth of art from our regional artists.

Originally, the Sulainich Program was operated out of the NAB Economic Development Director's office, first located in the Armory, and then within the current NAB building. In 2006, with a HUD grant through UAF Chukchi Campus, a Rasmussen Foundation grant, funds from the Borough, and hundreds of hours of volunteer time, Sulainich was able to renovate their present building which has been leased from NANA for $1. Half of the building is used as an Art Gallery where regional art is displayed and sold, and the other half of the building is an artists' work area. The Sulainich Art Center is in an ideal location: close to the airport and across the street from the US Park Service Heritage Center and Museum.

Sulainich is a non- profit 501(c)3 organization established for the advancement of culture, arts and the artists of the Northwest Arctic. Sulainich has an established set of 501(c)3 By-Laws and Board of Directors.

It provides a viable marketplace to sell regional artists' crafts and art, and provides a comfortable well ventilated carving and sewing environment for artists.

Sulainich is managed by two NAB staff members: a half-time Administrator and a full-time Manager.

Sulainich has been pursuing a number of strategies in order to accomplish these goals: a) working closely with the Sulainich Board of Directors on revising and updating policies and strategies; b) purchasing, installing and finally utilizing a credit card machine (Oct 2010); c) purchasing, installing, and finally using inventory software and labels to more efficiently manage the inventory (February 2011); d) developing and launching a Sulainich website (as of October 2012 – this project is still being worked on); e) offering art workshops and sewing classes; and finally f) developing an accounting and reporting system.

On the following pages are our measurable goals and time table for Sulainich.

Goal # Caring for our Communities

GOAL ED3	To showcase and expand the sales of regional artist
DEPARTMENT	Economic Development Department
BENEFIT	Provides an economic opportunity for regional artists

Action Steps	Measures	Beginning/ End Date	Annual Cost	Personnel Responsible
1. Increase gross annual sales	Gross annual sales receipts reported quarterly (July, October, January, April) in report to Assembly and compare these sales with the same period last year.	July 1st to June 30th.		KF, VO
2. Increase the quality of art being made by: a. providing safe, well lite, well ventilated, quality work space. b. Sponsor an Art Symposium c. Sponsor 3 training workshop in surrounding villages.	Report progress quarterly via Assembly packet a. furnace enclosed; ventilation unit installed; numbers of artist utilizing Sulainich space. b. Art Symposium organized and held c. report submitted describing each workshop (no. of participants, village held, now many days & hours, focus of training, etc.) who have used the Sulainich work space.	July 1st to June 30th.	$10.5K for vent & safety $10K travel & supplies	KF, VO
3. Increase the number of good quality regional artists that Sulainich is able to serve.	Report number of different artists Sulainich has served; and the number of different villages, they are from.	Quarterly July 1st to June 30th		KF, VO
4. Develop, maintain and utilize the web to sell quality regional art	a. Develop website b. Launch website c. Advertise website d. Utilize website for sales e. Maintain website	a. June 2012 b. July 2012 c. Aug. 2012 d. Aug. 2012 e. on going	$4K contract $1K supplies	KF, VO

Goal # Caring for our Communities

GOAL ED4	To increase the Sulaiŋich Centers ability to be more self-sustaining.
DEPARTMENT	Economic Development Department
BENEFIT	To secure the future ability of Sulaiŋich to continue to provide an economic opportunity for regional artists

Action Steps	Measures	Beginning/ End Date	Annual Cost	Personnel Responsible
1. Increase retail price mark-ups 2. Reduce supply expenses	a. Report to Assembly: gross sales and of these sales how much was paid to artists and the supply costs; use these figures to generate an average price mark-up. b. Report strategies employed to reduce supply costs (bulk orders, new suppliers, etc.)	Quarterly rept July through April		KF, VO
3. Reduce energy costs and increase energy efficiency. Maintain and continue to develop our main showcase: the Sulaiŋich Art Center a. Install efficient & reliable heating system b. Install arctic entryway c. Install LED lites & Solar array d. Winterize back door & insulate floor	Energy efficiency increased will be increased. 15% less electricity usage, annually 8% less fuel oil used annually	a. July 2012 b. July 2012 c. Sept. 2012 d. Sept 2012	a. 2.6K b. $5K c. $3K d. $6.4K	KV, Borough facilities staff including IM & AM

C) Alternative Energy and Resources Program

As was explained in the "Challenges and Advantages" section of this CEDS (Tab 2), in this part of the remote Arctic, there are no roads. Since the rivers are only ice free for a maximum of 3 months a year, most everything must be flown out to our villages. The most inexpensive way for a village to get its fuel is via bulk barge delivery purchase which can only happen during the short ice free summer months. In the Summer of 2008 the price of a barrel of crude oil recorded a record jump in costs for heating & diesel electric generator fuel. The Northwest Arctic Leadership Team (NWALT) sponsored a Northwest Arctic Energy Summit of regional village and community leaders in late July 2008. One of the results of this three day gathering was the formation of the Northwest Arctic Energy Steering Committee. Its purpose was to facilitate communication and coordinate energy cost reduction efforts. This Committee is made up of representatives from all of our regional villages and major regional organizations.

The Steering Committee has been scheduled to meet quarterly, however members do communicate via committee email as new developments and opportunities present themselves.

In 2010, with the support of the Steering Committee and funding from NWALT, all available regional data pertaining to alternate Energy Sources were collected and incorporated into the Northwest Arctic Strategic Energy Plan (SEP). This plan is found behind Tabs 9 and 10 of this CEDS document. It describes the potential energy resources surrounding each of our region's communities. The next step in the development of this plan is for the communities to meet, pool all of their information pertaining to their energy resources, establish priorities, and to develop their own individual Community Energy Plan. In 2012 the Alaska Energy Authority has approved a Borough grant to facilitate these meetings. Four of our villages are establishing a schedule to develop their plans. All 11 village plans should be underway by the beginning of FY 2013.

The Borough's energy team, other organizations within the region and throughout the state are continuously searching for and evaluating potential alternative energy options, alternate ways for transportation, more efficient means of storage, and they also continue to promote a sustainable model of living on local resources. Below are a list of continuing efforts sponsored and/or supported by the Borough and regional partners:

- NANA's WH-Pacific, has been hired through a grant written by the borough for $10M to construct wind generators in 3 regional communities. We believe that these wind generator projects will be sustainable models for our other communities.
- The borough is working on a new grant proposal that will promote a Waste-heat incinerator for each of the communities. A more efficient waste disposal system will begin with the separation of trash before it goes to the land fill, thus reducing the annual load on our land-fills.
- The Energy Coordinator continues to monitor and participate in the SWER (Single Wire Electric Return) Committee as they investigate the possibility of using the Earth as a common ground to reduce the cost of electrically networking rural communities and to reduce electrical costs.
- With a grant the borough has received, TED (The Energy Detective) meters have been installed in all the households in 10 regional communities. The Resource Conservation Manager has been recruiting and training local techs so that they can meet with households to better train them to utilize the meters.

Goal # Caring for our People, our Communities, our Environment and our Organization

GOAL ED2	A. Improve energy conservation
DIVISION or DEPARTMENT	Economic Development Department
BENEFIT	Promote a sustainable model of living on local energy resources

Action Steps	Measures	Beginning/ Ending Date	Annual Cost	Personnel Responsible
1. Increase residents' awareness and understanding of energy conservation through meetings.	Document meetings and discussions in the Assembly Report and/or collect agenda and minutes.	On going	$10K	IM, AM
2. Increase residents' awareness and understanding of energy conservation through meetings events (like contests)	Document the results of events in the Monthly Assembly Report and/or collect minutes/notes.	On going	$10k	AM
3. The NAB buildings will model energy conservation strategies. a. LED lighting, b. Solar PV array, c. Windtronics turbine d. energy measures, e. benchmarks	Document strategies implemented and dates a. Lighting in buildings will be replaced b. 10KW PV Array in operation c. Windturbine in operation d. Emails to all staff of strategies & feedback e. Maintain records of energy consumption for annual consumption comparisons (kilowatts, fuel oil, propane, etc.)	On going 5/12 – 12/12 Needs funding 7/2012 1/12 – 12/12 On going	 $20K $75K 0 $10K $20K	IM,AM IM IM,AM IM,AM AM AM
4. Research and benchmark the electrical consumption of the NAB buildings and the community water and sewer buildings.	Document strategies implemented and dates Maintain records of energy consumption for annual consumption comparisons (kilowatts). NAB buildings will reduce annual electrical consumption by 20%.	On going	$10K	AM
5. Continue distributing and installing TED (The Energy Detective) Meters, and team with the "Energy Wise" program of RurAL CAP and NANA to increase energy and electrical use awareness.	Document progress (# of households and villages) in Assembly Reports. Calculate Energy savings.	April 2012 to April 2013	$50K	AM

Goal # Caring for our People, our Communities, and our Organization

GOAL	B. Help residents, organizations and communities to adopt less expensive alternative energy resources.
DIVISION or DEPARTMENT	Economic Development Department
BENEFIT	Promote a sustainable model of living on local energy resources

Action Steps	Measures	Beginning/ End Date	Annual Cost	Personnel Responsible
Increase residents, organizations, and community awareness and understanding of alternative energy options, through Reports, public meetings, regular communication w/ Steering Committee members and at NW Arctic Steering Committee Meetings.	Include Reports, document public mtgs, Steering Committee Mtgs, and discussions in the Assembly Report and/or collect agenda and minutes.	On Going	$ 20K	IM
Research and benchmark the electrical consumption of the NAB buildings and the community water and sewer buildings.	Document strategies implemented and dates Maintain records of energy consumption for annual consumption comparisons (kilowatts). NAB buildings will reduce annual electrical consumption by 20%.	On Going	$ 10K	AM
Research and stay informed of latest energy developments, and results of Arctic and polar tests.	Information documented, dated, collected, shared via reports to Assembly and email. Documents of conferences and meetings attended.	On Going	$ 10K	IM
NAB will model the use of alternative energy by using wind generators and solar PV arrays.	Document energy consumption and document implementation of systems.	On Going	$ 10K	IM, AM
Help residents, organizations, and communities to harness local alternative energy resources (wind, solar, hydro, coal), by helping with grant applications, documentation of energy use, etc.	Document support, implementation of alternative systems, and changes in energy consumption in the Assembly Reports. Document data: energy consumption benchmarks	On Going	$ 20K	IM, AM
Facilitate and monitor progress regarding boro's $10M grant to construct wind-diesel generators for Deering, Buckland & Noorvik..	Document progress in the Assembly Reports. Document energy savings when project is operational	2009-2018	$ 25K	IM
Working on a new grant proposal to promote a waste-heat incinerator for each community. This will require separation of trash, but will increase land fill life	Document progress in the Assembly Reports. Document benefits when project is operational Energy savings will be measured & documented.	On Going	Funding needed	IM
Has written & received grant funding for a Solar PV for supplementing the electric power for water & sewer lines for all regional communities.	Document progress in the Assembly Reports. Document energy savings when project is operational Energy savings will be measured & documented.	Aug 2011- Aug 2014	$ 500K Total proj. time	IM, AM

Has written grant proposal through the ETF fund, for testing a new type of Windturbine (Renewedgy) at KEA's test site Collaborated with KEA & Manufacturer	Testing the turbine for Arctic conditions for 1 year and if certified transport to one of the Villages.	Aug 2012-May 2013	$ 350K Total Proj.	IM

Goal # Caring for our People, and our Communities

GOAL	C. Develop the Northwest Arctic Regional Strategic Energy Plan (including individual Village plans)
DIVISION or DEPARTMENT	Economic Development Department
BENEFIT	Promote a sustainable model of living on local energy resources

Action Steps	Measures	Beginning/ End Date	Annual Cost	Personnel Responsible
Support the development of individual village energy plans, by meeting with all village stakeholders, in their villages and coordinating these meetings with NWA Steering Committee members. These village meetings will focus on increasing the understanding of their Village Plan and will discuss the importance of continuing to develop and update their Plan. (requires staff & Committee member travel)	Document meetings with reports to the Assembly, collecting minutes and Agenda, and by documenting changes to individual village energy plans.	On going	$40K Funding needed	IM
Continue to develop and update the NW Arctic Regional Strategic Energy Plan, by meeting with all stakeholders and with regular communication w/ Steering Committee members and at NW Arctic Steering Committee Meetings, to increase the understanding of their Plan and to discuss the continuing developments and updates to the Plan. (requires Steering Committee travel & funding to host meetings)	Document meetings with reports to the Assembly, collecting minutes and agenda, and by documenting changes to the NW Arctic Reg. Strategic Energy Plan.	On going	$60K Funding needed	IM
Promote an Energy path for our student body, by collaboration with the NWAB Schools, Teck-Center and Chuchi College	Energy Curriculum developed and in place for the students	On going	$10K	AM

To adopt the use of Alternative Energy (resources, strategies, equipment, habits, tools, methods, ways, procedures, means, measures, ?!

D) Small Business Program

As documented in "Challenges and Advantages" section (Tab 2), we have a high number of unemployed residents, especially out in our villages. One of the ways to reduce this high unemployment and to provide more services for our residents is to support the establishment and development of small businesses develop within the Northwest Arctic Borough

Toward this end the NAB Small Business Program has been developed. Residents can call or email the program administrator for help and advice. Grants, not to exceed $1500, are available. Applicants must submit an application and a sustainable business plan. The Small Business Administrator will provide coaching, training and reference material for applicants so that residents can develop a more sustainable small business plan, maintain records, prepare taxes, access resources (local, statewide, nationally, and via the web), apply for proper licensing, and research market and regulations.

Residents who apply for and receive a grant are required to produce and to turn in basic quarterly reports pertaining to the status of their enterprise.

On the following pages are the proposed Performance Measures (metrics of success), for this goal.

Goal # Caring for our Communities

GOAL ED1	To support the establishment and development of small businesses develop within the Northwest Arctic Borough
DIVISION or DEPARTMENT	Economic Development Department
BENEFIT	This will keep more money circulating within the region more and will create more job opportunities for residents

Action Steps	Measures	Beginning/ Ending Date	Annual Cost	Personnel Responsible
1. Help small business entrepreneurs with technical assistance on understanding and completing a. planning, b. market research, c. regulations d. business plan development, e. sharing business strategies, f. internet/web based marketing g. coaching, training, encouragement h. tax preparation i. forms j. sm. business program quarterly reports k. licensing l. record keeping strategies m. funding support.	In each fiscal year, the number of successful businesses (51%) supported will out-number the unsuccessful businesses helped[1] (# successful vs. # of unsuccessful) The number of residents employed through businesses supported by small business grants, will be greater than the number of grants. (# residents employed vs. # of SmBusProg Grants) The amount of non-borough funds invested will be greater than the total borough investment in SmBusProg Grants. (Amt of borough funding vs. outside of borough funding) The amount of "out of region" funds brought in by the Program-supported-businesses will be greater from one year to the next. (out of region funds from this year vs. out of region funds from last year) Borough residents from all eleven villages will receive small business support. (number of different villages served in each year)	July 1 to June 30th	$25.5K	KF

[1] Successful business: entrepreneur is able to continue in business enterprise into the next fiscal year; or the failure of the business provides the entrepreneur with at least one reported strategic insight that the Sm.Bus. Administrator believes will increase the chances of success in the future.

Action Steps	Measures	Beginning/ Ending Date	Annual Cost	Personnel Responsible
2. Produce a progress report quarterly for the Assembly, addressing the following questions and data points:	Did we fund more successful (than unsuccessful) businesses? # of successful business grants # of unsuccessful business grants How many more residents were employed than grants awarded? # of residents employed # of SmBus Grants awarded For each dollar of borough funds, how many "non-borough" dollars were invested in our borough's SmBusProg Businesses? Amount of Borough Grant funds awarded Amount of non-Borough funds invested into businesses For each dollar of borough funds, how many "out of region" dollars were generated by our borough's SmBusProg Businesses? Amount of "out of region" funds generated by the businesses Of our eleven villages, how many were served by grants?	Quarterly Report at first assembly meeting in October; January; April; and July.		KF

Appendix A

Included in this Appendix are a list of goals created by the Commissioners as a result of a brainstorming and refining process. Our region's 2004 CEDS had a similar list of goals. The Commission focused on developing these goals for over 14 months of meetings and numerous emails.

The list is quite comprehensive but in the Summer of 2011, the Commission decided that a different strategy was needed. It was at this time that they developed the Village Jobs Strategy (See Tab 10 – Regional Goals) which allows the region to better support the village council goals.

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Northwest Arctic Borough Economic Development Commission

Draft Goals and Strategies (June 2011 Draft)

This list of G&S is a direct result of the NAB Economic Development Commission meeting on May 31 and June 1, 2011. This list reflects the recommendations and comments of the Scoring Matrix teams. The color coding was added before the Commission Meeting in order to facilitate the Scoring Matrix forms.

Goal #1: Create New Jobs

Objective 1.A - Startup Assistance: Seek funding to expand existing Borough programs to provide startup assistance.

- ***Strategy A-1:*** Assist individuals who request help in starting up a business, including writing business plans, obtaining licenses, managing finances, and finding other sources for information and assistance.
- ***Strategy A-2:*** Support regional businesses to more successfully compete in AFN's Alaska Marketplace Program. (the 2012 AFN Mrktplc Competion was announced last week)
- ***Strategy A-3:*** Expand the NWAB businesses grant program and develop resources to help new business obtain grants and loans.

Objective 1.B - Local Employment: Increase local employment opportunities including full-time and seasonal jobs.

- ***Strategy B-1:*** Investigate the development of local businesses that process fish and/or game for local use and export (e.g., local fish for school meal programs, or packing and shipping fish and game harvested by visitors and/or the production of byproducts such as fish fertilizer, pet food and fish oil).
- ***Strategy B-2:*** Investigate opportunities to develop niche markets outside of the region for fish *within the state.*
- ***Strategy B-3:*** Investigate the development of a tannery in the region to develop an export market for wildlife skins.
- ***Strategy B-4:*** Investigate the feasibility of bulk orders for "mom and pop" stores to reduce costs of inventory.
- ***Strategy B-5:*** Investigate small business models that have been successful in other areas of rural Alaska, determine why former businesses in region were not successful, and investigate what new businesses might be viable.

Objective 1.C - Artists Program: Increase the number of skilled artists in the region to meet the expanding markets for art.

- ***Strategy C-1:*** Continue efforts to ~~improve Sulianich, the NWAB-sponsored artist outlet, including upgrades to the building~~ empower artists throughout the region, including increasing Sulainich affectiveness and marketing art through the internet.
- ***Strategy C-2:*** Seek funding for and sponsor workshops for area artists led by highly skilled artists.
- ***Strategy C-3:*** Develop opportunities to make tools and supplies accessible for artists.

- ***Strategy C-4:*** ~~Investigate the possibility of holding~~ Conduct an art symposium in conjunction with the Arctic Economic Summit, as end result of tools/workshop (regionwide) Strategies 1 – 3.

Objective 1.D - Tourism Development: Expand tourism business opportunities without adversely impacting local lifestyles.

- ***Strategy D-1:*** Contact leaders and community members to determine their interest, concerns, ideas, and support for tourism in their area.
- ***Strategy D-2:*** Complete an analysis of current tourism activities, a list of attractions and a market analysis for tourism in the region, including an analysis of why past tourism enterprises failed. (NANA).
- ***Strategy D-3:*** Investigate the possibility of creating a NWAB tourism coordinator position to research successful tourism programs in other areas of rural Alaska, develop a marketing program and assist local tourism businesses.
- ***Strategy D-4:*** Encourage establishment of local tourism-related businesses (such as B&B/lodging, guiding, transporting, wildlife viewing, traditional tours, canoeing, rafting, and hiking).
- ***Strategy D-5:*** Investigate the feasibility providing specialize training (e.g., 6-pack captain's course).
- ***Strategy D-6:*** Look into the possibility of creating a ~~regional~~ local association in each village and provide training for tourism marketing and booking tours for individual businesses.
- ***Strategy D-7:*** Investigate how the NWAB could take advantage of statewide cruise ship taxes to fund tourism infrastructure.

Objective 1.E - Mining: Increase local benefits and employment from mining industry.

- ***Strategy E-1:*** Continue NWAB sponsorship of mining conferences in the region.
- ***Strategy E-2:*** Work with NANA, Teck and educational institutions to increase the number of residents working at Red Dog Mine by increasing communication regarding what's there and what our people need to do.
- ***Strategy E-3:*** Investigate opportunities to assist local miners (e.g. developing grant programs and technical assistance from geologists, research information, understanding terminology, develop a network – ties for better communication throughout the mining process, on going technical assistance, and interpretation of state and federal laws).
- ***Strategy E-4:*** Work with mining companies and regional organizations to determine opportunities for establishing local businesses or local contractors to support mining industry (e.g., annual maintenance of claims, provision of supplies, fuel delivery, camp support, transportation, and environmental studies).
- ***Strategy E-5:*** Continue borough and village capacity to participate in environmental reviews and permit reviews.

Objective 1.F - Information Technology: Expand opportunities for business development by improving information technology in the region.

- ***Strategy F-1:*** Support local IT services ~~Work with businesses (especially for tours and art) to expand opportunities~~ to sell goods and services over the internet.

- ***Strategy F-2:*** Continue efforts to support broadband ~~and fiber optic networks throughout~~ development to increase broadband speeds in the region.
- ***Strategy F-3:*** Train potential local entrepreneurs to develop professional quality multi-media production skills to support local marketing efforts.
- ***Strategy F-4:*** Promote development of a public place in each village for residents to use computers.

Goal #2 Increase Self Sufficiency

Objective 2.A - Energy Issues: Reduce costs of energy, increase energy efficiency and expand use of alternative energy.

- ***Strategy A-1:*** Continue developing the NWAB program to reduce costs of energy and promote alternative energy (e.g., wind, solar, natural gas/propane/ammonia, coal, and wood).
- ***Strategy A-2:*** Investigate strategies for reducing the cost of fuel oil in villages including bulk fuel purchases, more efficient equipment, and alternative means of transporting fuel.
- ***Strategy A-3:*** Continue support for weatherization of buildings and work with organizations such as RurAL Cap and the Cold Climate Housing Research Center to investigate strategies for new technologies.
- ***Strategy A-4:*** Seek (grant) funding to establish ~~an NWAB~~ local village sustainability coordinator.
- ***Strategy A-5:*** Promote changing the eleven village Energy Steering Committee to an officially Borough recognized commission.

Objective 2.B - Self Sufficiency: Increase the self sufficiency of borough villages.

- ***Strategy B-1:*** Identify what imported goods and services could be provided locally.
- ***Strategy B-2:*** Promote local food production through development of greenhouses and gardening.
- ***Strategy B-3:*** Promote use of locally produced traditional clothing.
- ***Strategy B-4:*** Investigate ways to promote more use of gathered fish, game and berries.
- ***Strategy B-5:Water Rights: make sure that each village's drinking water rights are established and preserved (through the AK Dept of Natural Resources).***

Objective 2.C – Social Issues: Promote healthy communities, Iñupiaq culture and values, and consider social impacts of economic development.

- ***Strategy C-1:*** Promote subsistence skills and recognize the importance of subsistence as the region's first economy (e.g., multi-media productions documenting subsistence practices).
- ***Strategy C-2:*** Support Iñupiat language and knowledge of Iñupiaq ways.
- ***Strategy C-3:*** Support relevant and successful programs that reduce alcohol and substance abuse; improve parenting skills; and promote emotional, spiritual and physical health.
- ***Strategy C-4:*** ~~Look into ways to provide ID cards to residents without requiring them to travel outside of the villages.~~ Make access to ID & ADL (AK. Drivers Licenses) in villages easier; coordinate access to birth certificates for ID cards & ADL.
- ***Strategy C-5:*** Include a step in the planning and permitting processes to analyze how development can be promoted while minimizing conflicts with culture and health.
- ***Strategy C-6: Support Subsistence Clubs/education programs for youth and young adults with mentors, borough commission, and/or steering committee.***

- ***Strategy C-7: Encourage organizations within Kotzebue to relocate jobs out to the villages.***

Objective 2.D – Planning and Land Use: Promote economic development through planning and land use techniques.

- ***Strategy D-1:*** Encourage village residents to strengthen economic development strategies in their comprehensive plans and assist with implementation (also provide facilitation with drafting).
- ***Strategy D-2:*** Support the completion of borough land selections, survey conveyed lands and develop land use plans with consideration of revenue-generating alternatives. Need to convey better to the villages what land is there to select, convey and develop. Also assist the villages in doing this at the local level.
- ***Strategy D-3:*** Support the completion of village (14)(c)(3) land conveyances to increase local ownership. Provide assistance after conveyances to help make best use of land.
- ***Strategy D-4:*** Support efforts to provide training and support to tribal and city administrators and others, including grant writing.
- ***Strategy D-5: Each village needs a planner and grant writer to empower village self-determination.***

Objective 2.E - Transportation: Reduce transportation costs and investigate other options for transporting people and goods.

- ***Strategy E-1:*** Look into ways to expand transportation options and reduce costs of airfares, including encouraging more air service companies to serve Kotzebue.
- ***Strategy E-2:*** Investigate feasibility of a surface link to the Alaska road system and support the development of new transportation corridors within the region (e.g., Noatak to Red Dog, expansion of winter routes). Look at current projects and what research is being done.
- ***Strategy E-3:*** Investigate ways to reduce freight costs and encourage the development of sustainable options (e.g., ferries, small barges, ice roads, snow machine sled convoys, dirigibles, direct flights to villages from Anchorage, eliminating "middlemen", and expansion of runways to accommodate a variety of aircraft).
- ***Strategy E-4:*** Promote development of a deepwater port at Cape Blossom with road to Kotzebue. Investigate impacts of these items at North Slope areas (e.g. Prudhoe – as far as any changes in costs and impacts to subsistence.)

Objective 2.F – Diversification of Borough Funding: Continue the borough's ability to fund education and to provide other services to communities and residents by diversifying funding sources and practicing fiscal responsibility.

- ***Strategy F-1:*** Evaluate the pros and cons of new taxes (e.g., alcohol, tobacco, airport, soda pop, hunting guides, transporters, and severance).
- ***Strategy F-2:*** Continue efforts to share AIDEA income from Red Dog haul (Delong Mountain) road.
- ***Strategy F-3:*** Support the efforts to increase the amount of payment in lieu of taxes (PILT) for Red Dog Mine.
- ***StrategyF-4: Investigate the application of a system/process to buy & sell subsistence credits (like Carbon Credits are assessed).***

GOAL #3: Prepare Residents to Fill Existing Job Opportunities

Objective 3.A - Education and Training: Increase the number of residents qualified for local professional, vocational and service jobs by improving opportunities for education and training.

- ***Strategy A-1:*** Partner with communities and others to determine local training needs and what jobs are needed to improve the local economy.
- ***Strategy A-2:*** Encourage local partnerships with K-12 education, regional scholarship programs, and training institutions such as AVTEC, Chukchi College, Tech Center, and Workforce Development Consortium.
- ***Strategy A-3:*** Seek funding for workshops and mentorships in villages, including possible training on how to write a business plan, manage finances, complete business reports, and find other training and education opportunities.
- ***Strategy A-4:*** Work with the school district and communities to increase the number of high school and college graduates (support the improvement of the quality of education by encouraging volunteers, providing speakers, resources, internships ~~apprenticeships~~ & mentorship opportunities, and scholarships.)

Appendix B

Included in this Appendix are four documents relating to the Village Jobs Strategy described in Regional Goals & Objectives (Tab 11). The first document is a description of the Village Jobs Strategy created by our Strategy Committee and Borough Economic Development Commission. The second is a Timeline for implementing the first pilot stage of this Strategy. The third document are the Performance Measures for this Strategy. The last document is the Commission's Resolution 12-01, documenting the rational for creating the Village Jobs Strategy.

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Comprehensive Economic Development Strategy
Village Jobs Strategy
Northwest Arctic Borough
Economic Development Commission

Commission Approved February 2012

Commissioners:
Delores Barr, Chair (NANA, Kiana)
Roy Barr, Vice Chair (Small Business Co-owner, Noorvik)
Pauline Harvey (UAF Chukchi Campus, Kotzebue)
Roberta Jackson (Small Business Owner, Kobuk)
Tim Gavin (Mayor, City of Buckland Power Company)
Lincoln Saito (NAB, Kotzebue)
Chris Shockley (Wells Fargo Bank, Kotzebue)
Colleen Swan (Kivalina)
Verna Westlake (Teck Cominco, Alaska)

The Northwest Arctic Borough (NAB) Economic Development Commission (Commission) is charged with updating the comprehensive economic development strategy for the Northwest Arctic region.

After studying data relating to the region's opportunities and challenges, the Commission agreed on four priorities: 1) Encourage more development in the NAB villages; 2) protect subsistence; 3) prepare for challenging changes; and 4) develop a plan to produce long-lasting positive results.

The Commission drafted this strategy to increase the number of employed residents in the ten villages within the region. By strengthening our villages, Kotzebue, as the regional hub, will continue to remain economically strong.

Each village will have an opportunity to review the strategy and adapt it to respond to local conditions. One or two communities will be selected to develop pilot programs to implement the strategy. The NAB will assist the communities in completing a study that will provide information for use in developing a sound business plan for an economic development venture.[1] The NAB will work with the communities to seek sponsors to help subsidize and support the venture. Once the pilot projects are completed, the strategy will be implemented in other interested communities.

The study will involve interviews with local residents that address four major areas. 1) What kinds of jobs are unemployed village residents qualified and willing to apply for?[2] 2) What possible village improvements or conditions would increase the number of employed residents? [3] 3) How much interest is there in projects that will make their community more secure, self-sustaining and

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[1] For example, a community may wish to create sustainable business ventures such as a community tannery, greenhouse, mechanic shop, day care facility, water bottling plant, fish processing plan, sewing center, lodging, or other community economic development endeavor.

[2] Willing to apply for – willing to interview for, compete for, take a written test for, a drug test for, and get training (for how long?: a day, week, month, semester, year; thorough distance delivery, etc.) for.

[3] Increase employed residents – some residents with good employment skills eventually consider looking outside the village for employment. Improvements within the village might be made that may reduce the number of employed residents who consider migrating out of their village. To identify possible improvements, we propose interviewing at least two groups: A) Employed residents - what improvements would keep you from considering leaving (less often)?; and B) Former residents who left the village and are working - what improvements might encourage you to re-settle in your villages?. Possible third group -high school students - when you finish school are you hoping to stay in town or leave and why?).

better orientated to meet future challenges? 4) What obstacles or challenges must be overcome to increase the number of local jobs?

Future challenges include likely cutbacks in government services and the rising costs of fuel, transportation, utilities, food and other commodities. There are some industries/projects that could make our villages more secure, self-sustaining and healthier places to live in the face of these challenges. During the interviews, unemployed residents could be asked what sustainable projects they are willing to work on, and which, if any of these projects might make their community better places to live.

The Commission proposed the following steps be taken to implement the strategy.

- Present Job Strategy part of the strategic plan to the NAB Assembly.
- Share plan with all village leaders in a public meeting; modify plan to better fit each village, and seek their support.
- The Commission will select one or two villages based on interest and readiness to pilot this process.
- With the Tribal and/or city entity, develop and/approve interview questions, and a list of residents to interview.
- Complete the interviews; with the Tribe and/or city, compile, analyze, and interpret data to develop recommendations.
- Use their recommendations, work with the Tribe's and/or city to develop a Business Plan (business concept, regulations, market assessment & research, organizational & financial plan – including start-up costs).
- Present their Business Plan for formal Tribal and/or city approval.
- Share their Business Plan in a search for sponsorship/financial support, grants and subsidies.
- With sponsorship support, implement the plan, develop infrastructure, initiate hiring, training, and begin operations.
- Evaluate this process with the Tribe and/or city and develop recommendations. Share this evaluation and recommendations with the NAB Assembly.
- If successful, implement modifications and repeat this process with other NAB villages.

Through the above process, the Tribe and/or City will sort out data to develop recommendations and a business plan to increase jobs within their communities.

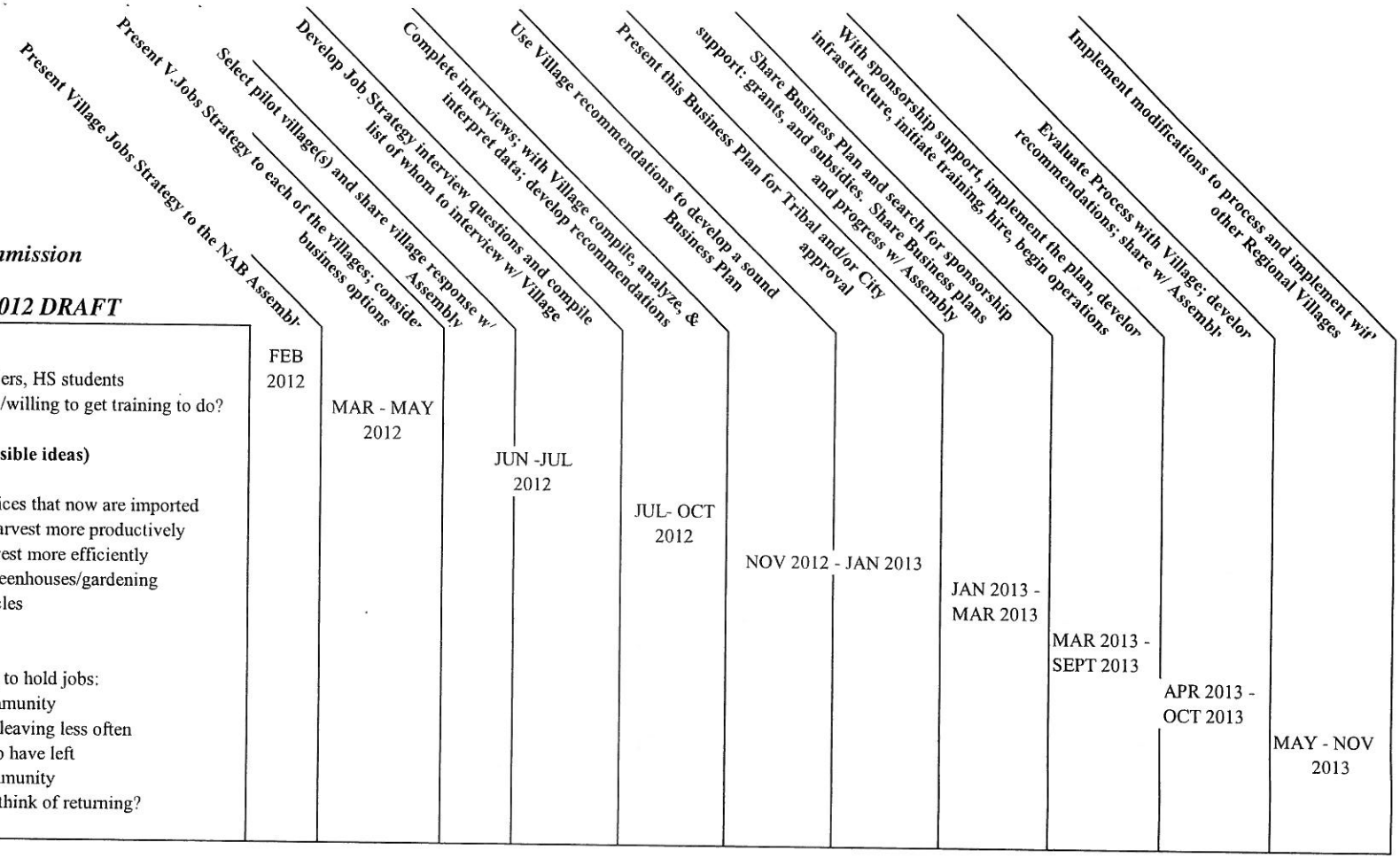
In summary, the NAB Economic Development Commission has developed a regional economic development strategy that villages can use to increase employment and better prepare to meet future challenges. It is a plan that village tribes can modify and control.

Northwest Arctic Borough
Economic Development Commission
Village Jobs Strategy
Three Areas of Study- Feb 2012 DRAFT

Jobs
* for unemployed, unpaid care providers, HS students
* What do you want/are you qualifed/willing to get training to do?

Village Security/Sustainability (possible ideas)
* Alternative energy options
* locally produce better goods & services that now are imported
* Utilize the traditional subsistence harvest more productively
* preserve & process subsistence harvest more efficiently
* Local food production, including greenhouses/gardening
* Traditional clothing and sewing circles

Community
* Those w/ job skills & proven ability to hold jobs:
    * what will improve your community
    * and keep you fr thinking of leaving less often
* Those w/ work skills & abilities who have left
    * what will improve your community
    * and might encourage you to think of returning?



Performance Measures & Metrics - Village Job Strategy

Toward the end of the Village Jobs Strategy Timeline (third step from the end) it states:

"With sponsorship support, implement the plan, develop infrastructure, initiate training, hire, begin operations"

The next step reads: "Evaluate Process with Village; develop recommendations; share with Assembly"

It is during this report to the Assembly that we will be able to have compiled the following types of preliminary Performance Measures:
:

1) how many jobs were created;
2) Sponsorship and village Investments (both monetary and in kind);
3) total number of people with jobs retained (before and after);
4) Amount of private sector investment and public sector investment in this business;
5) any reported changes in the village's economic environment.

NORTHWEST ARCTIC BOROUGH
ECONOMIC DEVELOPMENT COMMISSION
RESOLUTION 12-01

A RESOLUTION APPROVING
THE 2012 COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY
FOR THE NORTHWEST ARCTIC BOROUGH
ECONOMIC DEVELOPMENT DEPARTMENT

WHEREAS, the Northwest Arctic Borough Assembly established the Northwest Arctic Borough Economic Development Commission (Commission) in 2002 "…in order to identify resources available, and to establish and implement strategies and plans to enable the residents of the borough to improve their economic condition." (NAB Code 11.06.005), and

WHEREAS, the State of Alaska recognizes our Commission as their Alaska Regional Development Organization (ARDOR) Board for our region, which "… is responsible, at a minimum, for…providing services designed to encourage economic development to the local villages" (3 AAC 57.080) and that "…shall develop and implement a regional economic development strategy... with other local, state, federal, and private development agencies and organizations" (3 AAC 57.090); and

WHEREAS, the NW Arctic region has sustained the Iñupiat continuously for over 10,000 years and is able to continue to sustain the Iñupiat; and

WHEREAS, this strategy is designed to strengthen our villages, thus our hub and the entire region; and

WHEREAS, it is within our villages that nature's seasonal abundance is most pervasive and where most of our current and future traditional Iñupiaq language and culture bearers were/will be forged/raised; and

WHEREAS, the Commission has developed a strategy that establishes a village-driven process for economic development that the villages will ensure to be consistent with the traditional culture and values of the people of their community; and

WHEREAS, the Commission has developed a strategy that will provide an opportunity for our villages to better prepare for possible cuts in government funding and services and increasing costs for transportation, heating, utilities, goods and services; and

WHEREAS, the Commission has developed a strategy that will provide an opportunity for our villages to increase employment amongst the unemployed, draws on individual talents, and focuses on what people can do for themselves;

NOW THEREFORE BE IT RESOLVED that the Commission approves the 2012 Comprehensive Economic Development Strategy for the Northwest Arctic Borough Economic Development Department.

PASSED AND ADOPTED THIS __ DAY OF _____ 2012.

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Delores Barr, Chair