

ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILES 8672

2536 SCOMM 111: DEFERRED MAINTENANCE TASK FORCE, 1997

Power Cost Equalization (PCE)

- The State of Alaska's PCE program began in 1984, with earlier versions dating back to 1980. Its purpose is to make electric rates paid by rural Alaska consumers similar to those paid by consumers in Anchorage, Fairbanks and Juneau.
- PCE is rural Alaska's share of the state's investment in electric power infrastructure. Urban communities received their share primarily in the form of hydroelectric, intertie and other projects. PCE was developed as an assistance program for rural communities where there is no economically feasible alternative to high-cost diesel generation.
- Consumers in 175 rural Alaska communities—totaling about 76,000 residents—benefit from PCE. Consumers other than state and federal facilities are eligible for PCE.
- Electric rates in more than 80 percent of PCE communities are 30 cents or more per kilowatt-hour, compared to an average of 9.7 cents in urban Alaska. Even after PCE is applied, residents of 102 communities pay more than twice urban rates.
- Consumers pay at least the first 9.7 cents per kilowatt-hour for all electricity used. PCE pays a portion of the costs greater than that amount.
- Residential and commercial users receive PCE only on usage up to 700 kilowatt-hours (kwh) per month, about the average monthly residential usage statewide. Consumers pay the full utility rate for usage greater than 700 kwh.

PCE is Vital to Basic Infrastructure in Rural Alaska

- High fuel, transportation and capital costs for rural areas result in high electricity rates. PCE helps maintain the necessary infrastructure for basic electricity and other utility and public services in rural communities. It pays a major portion of the electric bills for water and sewer systems. Without PCE, many local economies could not pay the cost of these services.
- PCE serves as a credit base, allowing electric utilities to obtain financing to improve infrastructure and lower costs.
- A precipitous end to PCE would bring economic chaos to rural Alaska. Urban businesses that serve rural areas would also suffer from lost sales in the rural market.

--continued on other side--

The Program has Significant Oversight

- The Legislature approves funding available for the program each year through the state operating budget. Funds come from the Power Cost Equalization and Rural Electric Capitalization Fund, established by the Legislature in 1993 with a capitalization of \$66.9 million.
- Using a formula, the Alaska Public Utilities Commission determines a rate of PCE assistance for each community after reviewing eligible costs. The Legislature allocated \$17 million for FY97 compared to the \$20 million that would be needed to fully fund the program under the current formula.
- Utilities provide a PCE credit to consumers on their bills and are reimbursed by the Alaska Division of Energy.

Program Funding is at Risk

- In 1993 energy legislation that appropriated funds to urban and rural areas, the Legislature indicated its intent to allocate \$17 million annually to PCE through 2013 to give utilities time to lower the cost of power in rural Alaska. However, the PCE fund was not adequately capitalized for this period. A revenue stream for the fund anticipated by the Legislature—money from repayment of state loans for the "Four Dam Pool"—has stopped as the money is being used to repair several of these hydroelectric projects. The existing PCE fund is expected to run out of money in 1999.

The PCE Program Must Be Sustained

- The rural utility members of ARECA have developed a plan to prevent rural economic disaster. Recommendations include:
 - Reducing full funding of the program from \$20 million in FY96 to \$15 million in FY99.
 - Restructuring the PCE formula to reduce demand in a way that minimizes impacts to residential and community facility consumers.
 - Appropriating enough money to assure the \$15 million funding level through the year 2013. If revenue from the Four Dam Pool is available again, an additional \$10 million will be needed annually.

This fact sheet is a publication of the Alaska Rural Electric Cooperative Association (ARECA). ARECA is the statewide trade association for electric and cooperative utilities. For more information, contact ARECA at 203 West Tudor Road, #200 Anchorage, Alaska 99502. Telephone (907) 561-6103 or Fax (907) 561-5547.

Affordable Power in Rural Alaska

ARECA RURAL ISSUES FORUM REPORT
1996

Alaska Rural Electric Cooperative Association, Inc.
703 West Tudor Road • Suite 200
Anchorage, Alaska 99503
(907) 561-6103 • Fax (907) 561-5547

Contents

1	<i>Introduction</i>
2	<i>Executive Summary</i>
6	<i>Turning on the Lights</i>
8	<i>A Brighter, Safer World</i>
12	<i>The Cost of Power</i>
16	<i>Power Cost Equalization</i>
22	<i>Rural Economies: Affordable Power and Economic Development</i>
26	<i>Urban Economies Benefit from Affordable Rural Electricity</i>
30	<i>Powerful Solutions</i>
38	<i>An Affordable Future Requires Partnerships</i>
42	<i>ARECA and the Rural Issues Forum</i>
44	<i>References</i>

ARECA Rural Issues Forum

Alaska Village Electric Cooperative
Charles Walls
General Manager
Chairman, ARECA Rural Issues Forum

Alaska Power and Telephone Company
Bob Grimm
President

City of Galena
Kelly Malamute
Electric Utility Director

City of Unalaska
David Denig-Chakroff
Director, Department of Public Utilities

Cordova Electric Cooperative
James Roberts
General Manager

Haines Light and Power
Andrew Eggen
General Manager

INN Electric Cooperative
Brent Petrie
General Manager

Kotzebue Electric Association
Brad Reeve
General Manager

Levelock Electric Cooperative
Clara Washington
General Manager

McGrath Light and Power
Carl A. Propes, Jr.
Chief Executive Officer, MTNT

Middle Kuskokwim Electric Cooperative
Gary Kessinger
General Manager

Naknek Electric Association
Meera Kohler
General Manager

Nome Joint Utility Systems
Jim Taylor
General Manager

Nushagak Electric Cooperative
Steve Bushong
General Manager

Tlingit-Haida Regional Electrical Authority
Robert Martin, Jr.
General Manager

Unalakleet Valley Electric Cooperative
Paul Ivanoff, II
General Manager

Yakutat Power
Gary Briggs
General Manager

Introduction

The availability of reliable, affordable electricity in rural Alaska is critical to the future of our communities, in both rural and urban Alaska.

The tremendous achievement of bringing electric service to Alaska's rural communities has been made possible by a strong partnership between local leaders, utilities, and the state and federal governments. A continuation of this public and private sector cooperation is essential if we are to make power more affordable.

Alaska's rural electric utilities have been successful in decreasing costs despite inflation. Real cost to the consumer has gone down dramatically in some areas. But providing power is still expensive.

There is no specific rate at which power becomes affordable. But when electricity costs four times the state and national averages, in communities with less than average income, it is clearly not affordable.

Government has been an active partner in the effort to make affordable power available in rural areas because electric service promotes economic development, improves living conditions and helps achieve public health and safety goals. Universal service benefits urban as well as rural Alaska.

Both the federal and state governments are now struggling with budget problems. Cuts in government funding for rural energy efforts could create a fiscal crisis for rural utilities and the communities they serve. Consumers that already pay high electric bills could face even higher bills.

The Power Cost Equalization (PCE) program is of particular concern, since it currently plays a major role in helping to make power affordable for rural Alaskans. Funding for PCE will disappear in just a few short years if no new money is appropriated. A precipitous end to the program could jeopardize the public and private investment made in rural infrastructure and have severe consequences for consumers.

This report explains the current status of the effort to bring affordable power to rural communities and some of the actions being taken to lower costs. It is presented to stimulate discussion about the critical issues we face. We look forward to productive dialogue with those who will work with us to assure that rural consumers have access to affordable power.

*Public and private
sector cooperation
is essential if
electric service is
to be maintained
and made
more affordable.*

Bringing electricity to rural communities required government participation.

Turning on the Lights

Electric service is relatively new in rural Alaska. Bringing electricity to rural communities required government participation as well as strong local and utility commitment. The isolation of rural communities resulted in the proliferation of small utilities that serve individual communities.

The State of Alaska has built power projects throughout the state, with most of the money spent benefitting urban areas. Rural areas received some direct investment and the Power Cost Equalization (PCE) program to promote affordable power, since they received no direct benefit from the larger power projects. Several hundred million dollars have been invested by the public and private sectors in rural electric systems.

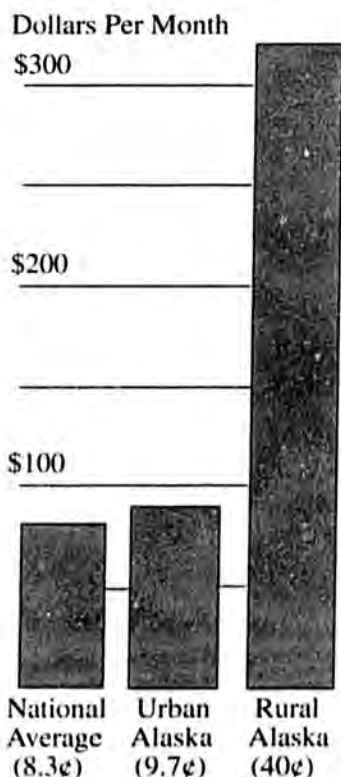
A Brighter, Safer World

Electric service has provided the basic foundation for other services and improved the standard of living in rural communities. It has become an essential part of daily life in homes, in schools, in health clinics, in local government offices, and in businesses. It supports water and sewer and telecommunications systems. Average electricity use in rural communities is about half that in urban areas because electricity is expensive.

The Cost of Power

Providing electricity in rural areas is expensive. Small populations in isolated areas must bear high capital, fuel and transportation costs. Rural utilities have few opportunities for creating economies of scale that would lower the per unit cost of providing power. They are, however, winning the battle against inflation, through constant efficiency improvements. Adjusted for inflation, operating costs per kilowatt-hour (kwh) are about one-third less than they were when the

Electricity Costs



1995 Cost per Kilowatt-Hour
(Based on National Average
822 Kilowatt-Hours Per Month)

Rates vary, but many rural Alaskans pay four times the state and national averages for the electricity they use.

Executive Summary

*Average electricity use
in rural communities
is about half that in
urban areas because
electricity is expensive.*

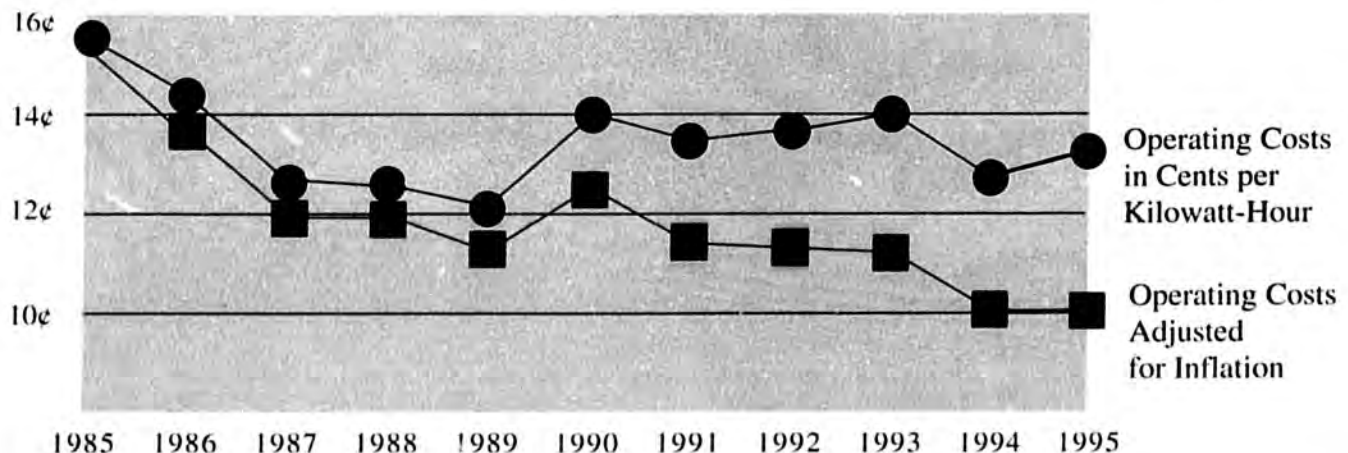
state began its PCE program. Electricity rates are still often more than four times the state and national averages in communities with below average income. Rates are 40 cents or more per kwh in about 60 percent of the communities eligible for PCE.

Power Cost Equalization

The State of Alaska's PCE program is currently a critical link in making electricity affordable for rural residents. PCE pays part of the cost of a limited amount of electricity usage. It is applied to just one-third of the power sold in rural Alaska each year; consumers pay for the other two-thirds at full rates. Residential consumers and community facility accounts receive most of the benefit from PCE. In 1994, PCE paid 64 percent of the cost of electricity for municipal water and sewer systems in communities served by the Alaska Village Electric Cooperative (AVEC).

Operating Costs for Utilities Receiving PCE, 1985 to 1995 (does not include fuel costs)

Rural utilities are winning the battle against inflation. Through efficiency improvements and other means, PCE utilities have reduced operating costs by about one-third since 1985.



***Long-term
solutions
usually take
years to
develop.***

Even with PCE, rural residents typically pay rates twice what urban Alaskans pay for electricity. In FY95, residents of 102 communities paid more than 20 cents per kwh for the electricity they used, after receiving PCE. PCE provides a stable revenue source that assists utilities in their effort to seek financing for building electrical infrastructure and making efficiency and service improvements. Loss of PCE would retard the effort to develop affordable power in rural areas and could mean the loss of service in some areas.

Rural and Urban Economies

Affordable power encourages economic development and job creation. Most of Alaska's wealth is based on resource extraction from rural areas. Urban areas that are service centers for these activities benefit from rural infrastructure that facilitates commerce. Electricity helps to support transportation, sanitation, and other infrastructure. Rural residents have more to spend both locally and in urban areas if they are able to spend less on electricity. Utilities themselves are important businesses in rural communities and purchase specialized equipment and services from urban Alaska businesses.

Powerful Solutions

The specific solutions to the problem of providing affordable power must consider local circumstances. Long-term solutions usually take years to develop. There are three effective strategies that utilities pursue: improving economies of scale, increasing generation and operational efficiencies, and developing new technologies.

Examples of actions being taken include consolidation of and cooperation among rural utilities, improvement of load factors by matching capacity with load needs, development of a new fuel efficient electricity generator from a diesel truck engine, and development of hydroelectric and wind generation. While conservation programs may help individual consumers reduce costs, large-scale programs could undercut efforts to improve economies of scale and, in general, would not be as effective as other methods in reducing costs to utilities and their customers as a whole.

An Affordable Future

Rural Alaska will not achieve affordable power unless businesses, government, utilities and consumers strengthen their partnership efforts. Continuation of the PCE program, while long-term solutions are implemented, is of critical importance. Economic development efforts and support for utility initiatives to improve efficiencies and explore new technologies will help to ensure affordable power for the future. Utilities will continue to explore avenues of cooperation with others in this effort.

Electricity Use in Rural and Urban Alaska

Rural Alaskans use electricity conservatively because it is expensive. Average usage varies between communities and in different seasons. Overall, an average of 326 kilowatt-hours (kwh) used per residential and commercial customer were eligible for PCE credit in 1995.

How 326 kwh might be used in a village home:

*Refrigerator (1,000 watt, 14 cu ft. frostless)	100
*Freezer (1,000 watt, 15 cu ft. frostless)	100
Coffee Maker	15
Toaster	3
Hair Dryer	2
Clock	2
Television	20
VCR	4
*Indoor Lighting	60
Outdoor Lighting	20
TOTAL	326

Urban homes typically have a number of other appliances that may or may not be present in rural homes. Below are examples of the estimated range of usage for additional appliances that might be in an Anchorage home:**

Electric Range(Stove)	30-60
Dishwasher	20-50
Slow Cooker	3-12
Garbage Disposal	2-5
Vacuum Cleaner	4-6
Sewing Machine	1-4
Car Engine Heater	30-150
Heat Tape or Deicer Cable	10-150
Stereo	1-5
Video Games	1-4
Computer	2-35
Washing Machine	4-12
Clothes Dryer	50-150
Water Heater	150-550

* Actual kwh used depends on appliance efficiency and use patterns. A highly efficient refrigerator or freezer opened rarely might draw 40 kwh per month while an older, less efficient model opened often could draw 200 or more kwh per month. The lighting example is based on four 100-watt bulbs on for five hours per day, though the same kwh would be used by fewer lights on for a longer period or more lights of lower wattage used for the same period.

** From *Sometimes The House That Costs More, Costs Less*,
a publication of Chugach Electric Association, based in Anchorage.

Together and through their utilities, government and consumers have made a tremendous investment in the rural electrification effort. That could be jeopardized if power does not remain affordable.

Electric service is relatively new in most of Alaska's smaller communities. The effort to electrify villages began in earnest about 30 years ago and continues to a lesser extent today. Nearly all of Alaska's communities now have electricity. This tremendous achievement was made possible by partnership between the public and private sectors.

The first major electrification effort began after a 1966 report by the federal Rural Electrification Administration (REA) noted that 206 villages were without central station service. Federal officials worked with rural leaders to form the Alaska Village Electric Cooperative (AVEC) in 1968. AVEC used low-interest loans from the REA and local volunteer construction labor in a creative effort that helped make service feasible. Still, economics forced the co-op to limit its efforts to communities that had at least 150 residents. By 1972, AVEC had electrified 48 villages. It is now the largest utility serving rural Alaska. The consumer-owned co-op has made capital investments of more than \$54 million in generation and distribution systems serving 50 villages. Alaska Power and Telephone (AP&T), an employee-owned company, has also worked to bring power to rural communities. Today, it serves 21 communities throughout Alaska.

There are a few other utilities that serve a number of communities, and utilities in rural regional centers typically serve more than 1,000 consumers. But these larger utilities are the exception. Sixty of the 103 utilities participating in the PCE program serve individual communities with fewer than 100 consumers. Most of these small utilities are municipal, Native corporation, or tribal utilities. Some

Turning On the Lights

*Many rural communities
received central electric service
for the first time within
the last 30 years.*

communities installed generation, and some built lines to distribute power purchased from the local school district, cannery, or other business. Many of these systems were initially funded by a state grant or loan.

In the 1970s and 1980s, the State of Alaska provided grants and loans and arranged bonding and other third-party financing to develop power projects throughout Alaska. The goal was to turn part of the state's new oil wealth into lasting energy infrastructure. Through the Alaska Power Authority (later called the Alaska Energy Authority), the state spent a total of about \$907 million on this effort, mostly to develop transmission and hydroelectric projects in urban areas. The Anchorage-Fairbanks Intertie and state-owned hydroelectric projects at Swan, Tyee, Terror, and Bradley Lakes and at Solomon Gulch were among these projects. In addition to direct expenditures, the state provided loans or facilitated bond financing for these and other projects.

After evaluating the situation in rural Alaska in the early 1980s, state officials concluded there was no viable alternative to diesel generation in most rural communities. Since then the state has spent about \$173 million in direct development or upgrade of rural electric systems. It also began a power cost assistance program for rural residents to balance assistance provided to urban Alaskans through development of large power projects. The program later became the Power Cost Equalization (PCE) program.

Together, government and consumers — through their utilities — have made a tremendous investment in rural electrification.

*AVEC used
low-interest
federal loans
and local
volunteer labor
to help make
service feasible.*

Healy Lake: Ushering in the Future

Healy Lake village residents will never forget 1994. It's the year Alaska Power and Telephone (AP&T), with assistance from the Alaska Division of Energy (DOE), installed a 64 kw diesel powered generator system and a telephone network to serve the 30-resident village near Delta Junction. The work required an investment of \$300,000.



"Power and communication are two basic things you need in a community. It means jobs."

—Pappy Kirsteatter

Mike Fifer (left), Ray Fifer (center), and John Harvey survey equipment as construction of the electric system begins at Healy Lake.

How important is the arrival of power and telephones to a village previously connected to the outside world only by boat or airplane?

"Our people have been carbon-dated to 11,000 years of occupancy in this area," says Fred Kirsteatter of the Healy Lake Tribal Council. "When you look at it that way, and we're just now getting electricity, it's a big deal."

"Healy Lake is one of the last villages of its size in Alaska to obtain a generator system," says Ray Fifer, Tribal Administrator. Obtaining power is the first step in the village plan that within a few years includes new homes, a washeteria, school, clinic, community center and a commercial fishery. Whitefish are plentiful in Healy Lake, and the power system can support commercial freezers needed to start the fishery.

"Power and communication are the two basic things you need in a community," says Paul "Pappy" Kirsteatter, Tribal Chief and a 51-year resident of Healy Lake. "It means jobs."

How does it feel to finally have electric power service?

"To have street lights, yard lights, running water and communications?" Fifer says. "It's culture shock. It's great."

This story has been excerpted and condensed from an AP&T article.

A Brighter, Safer World

Electricity in Rural Alaska

Electricity has improved the lives of rural Alaskans. It has created brighter, safer communities and become an essential element of daily life. There are other factors besides electricity necessary to achieve a higher standard of living, strong economic development and good educational opportunities. But universal electric service has been and remains a basic instrument in achieving these goals.

Electricity use in rural communities has been increasing but is still used very conservatively because of its high cost. Residential consumers of the Alaska Village Electric Cooperative now use an average 335 kilowatt-hours (kwh) per month, compared to 144 kwh in 1969. Usage varies according to the season. For instance, average residential use by AVEC consumers was 269 kwh in June of 1994 and 415 kwh in December of that year.

Growing populations are another major factor increasing electricity use. In Unalakleet, consumption per residential consumer in 1994 (495 kwh per month) was about the same as it was in 1989 (499 kwh per month). But the total amount of residential electricity sold in Unalakleet increased 13 percent due to an increase in the number of consumers. Statistics on the Power Cost Equalization (PCE) program published by the State of Alaska also demonstrate this trend. The population in communities eligible for PCE increased by more than 7,000 between 1990 and 1995, with a corresponding 11 percent increase in the number of residential and commercial consumers.

Economic growth, school activity, and development of water and sewer systems and other community facilities account for much of the growth in electrical usage. Average electricity use by AVEC's commercial customers, now 1,620 kwh per month, has increased about 22 percent since 1990. The amount of all PCE eligible electricity sold to community facilities in Alaska increased by 47 percent between 1990 and 1995.

Electric usage will continue to increase with modernization and as new technologies and utility efficiencies help to lower the cost of power. The light bulb replaced kerosene lamps when electricity came to rural communities. In the future, electricity may displace fuels now being used for other things, such as propane stoves in village homes. Rural Alaskans are finding computers and other electrically operated equipment more and more important in their lives, as are people all over the world. This trend increases the importance of having reliable, affordable electricity in rural Alaska.

- *Home and business lighting*
- *Street lighting*
- *Televisions*
- *Computers*
- *Refrigerators and freezers to safely store subsistence foods*
- *Commercial freezers in village stores*
- *Vehicle preheaters for cars, snowmobiles, airplanes and four-wheelers*
- *Power for ignition and fans for energy-efficient home heating systems*
- *Power for telecommunications and electronic equipment delivering educational programs to rural students*
- *Pumps for water and sewer systems*
- *Laundry facilities*
- *Airport runway lighting*

Electricity has created safer communities with strong potential for economic growth.

The Power of a Kilowatt-Hour

Electricity makes life easier because even one kilowatt-hour does a tremendous amount of work, compared to human labor. One kilowatt-hour is the energy used to light one 100-watt light bulb for 10 hours.

Also consider:

A person shoveling a foot of snow off a driveway 10 feet wide does about 23 foot-pounds of work per shovel-ful. That person would have to clear a driveway two miles long to generate energy equal to one kwh.

A person working steadily with a hand pump for one hour can pump 4,000 gallons of water out of a 25-foot well. An electric powered pump, using one kilowatt-hour (about 1 1/3 horsepower), would pump 10,000 gallons out of the same well.

(Source: Mataruska Electric Association)

Electricity Brightens the Winter World in Ambler

It's forty-five degrees below zero. "Not too bad," quips Scott Whalin as he sips morning coffee at the Kobuk River Lodge. He'll be out in that cold soon, working to fix the local telephone system. At the elementary school, principal Steve Cathers supervises efforts to thaw frozen water pipes.

Telephones and running water are basic services, but they rely on something even more basic — electricity. A battery backup system would keep the telephones operating for just eight hours if the electricity failed. The water and sewer system would freeze quickly in this weather without electricity to power circulation pumps.

Ambler is about 138 miles northwest of Kotzebue. Established in 1958, its population has grown in the last 25 years from a few families to 345 people. As it grew, so did the need for services.



Ambler in winter.

Cooperative Effort Brought Electricity

In 1976, Ambler leaders worked with the Alaska Village Electric Cooperative (AVEC) to bring central station service to their community. Like other cooperatives, AVEC is a democratic, non-profit organization. Everyone who buys electricity is a member and eligible to participate in the election of the co-op's leaders.

Helena Jones, 45, of Ambler is one of AVEC's seven directors. Her parents, Tommy and Clara Lee, were among those who established the village. Like others in Ambler, her mother remembers the bright lights that came with electric service. "It was too dark," she said of life with kerosene lamps.

Telephones and running water are basic services, but they rely on something even more basic — electricity.

On one evening in the village, Helena fixes spaghetti with caribou meat and caribou sausage and then sits down to watch national championship figure skating on television with two of her children. Her son Craig, 18, plays a computer game. Another son is in a basketball game under the lights of the school gymnasium. Helena's husband, Scott, is on the telephone coordinating business of the local air taxi operation, for which he works as a pilot and aircraft mechanic.

Helena, who is also on the Northwest Arctic School District board, says she believes one of the most important benefits of electricity is that it allows village children to learn computer skills that will prepare them for future employment.

Cathers says schools use electricity in many ways. "If we didn't have electricity, schools would cease to function as they do," he said. The journalism class uses computers to write stories; spanish language classes are brought in via satellite.

But it was the children's health, not their learning, that made the principal anxious to get water flowing when the pipes froze. "With hepatitis going around, we're particularly concerned about having hot water for washing," he said.

One of the community's health aides, Julia Cleveland, says just about everything in the local clinic runs on electricity — from the lights, to the sterilizer, to the radios and telephones that allow her to communicate with doctors at the hospital in Kotzebue.

Ron Randall heats both his home and his small store, where he sells a variety of items from snowmachine parts to soda, with fuel-efficient heaters that must have electricity to operate. That's an indication of the trust people have that electricity's going to be there when they need it, trust that led elder Art Douglas to replace his propane stove with an electric one. "It's more reliable," he explained. Propane lines freeze in the calm and crisp cold that grips Ambler these winter days.

The importance of electricity to the community is summed up succinctly by the city administrator, Carol Cleveland: "We couldn't do without it," she said.

This story is an excerpted and edited version of a longer story that appeared in *Ruralite* magazine in March 1993.



Scott Whalin, a journeyman lineman with the area telephone company, relaxes at the Kobuk River Lodge.

Our rural communities are isolated from one another and utilities are not able to spread the cost of providing electric service over a large consumer base.

There are three main factors contributing to the high cost of power in rural Alaska: the large capital costs involved in installing systems, high fuel costs, and high transportation costs. These are all exacerbated by the lack of economies of scale. Rural utilities have relatively few opportunities, compared with urban utilities, to lower the per unit cost of electricity by spreading fixed costs over a large consumer base, or by getting cost breaks for buying large amounts of materials.

Nevertheless, rural utilities have successfully reduced costs. Real operating costs of utilities participating in the Power Cost Equalization (PCE) program are about one-third less than they were when the program began. Rates paid by Alaska Village Electric Cooperative (AVEC) consumers are 65 percent less in constant (inflation-adjusted) dollars than they were in 1978.

Producing and distributing electricity in rural Alaska remains expensive. In order to cover costs, utilities must often charge rates that are far higher than those paid by urban Alaskans or by most people in other states. Residential customers in Alaska's largest cities — Anchorage, Fairbanks and Juneau — pay an average of about 9.7 cents per kilowatt-hour (kwh). Nationwide, the average is about 8.3 cents per kwh.

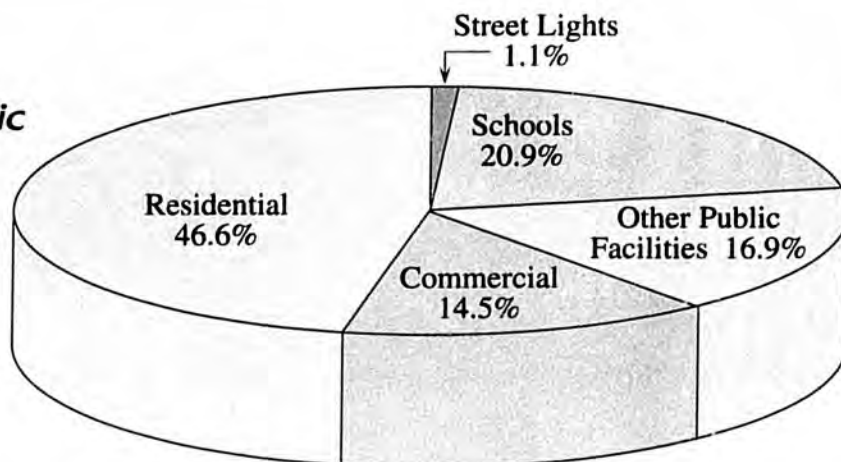
In rural Alaska, residential electricity costs between 15.0 cents per kwh (Anaktavuk Pass) and \$1.00 per kwh (Telida). Residents in more than 80 percent of PCE communities face rates of 30 or more cents per kwh and about 60 percent pay more than 40 cents per kwh. The wide variation in rates reflects differences in the factors that influence costs.

The fact that average household income is generally lower in rural communities where the cost of power is high means that rural residents pay a higher percentage of income for using the same amount of electricity as other consumers. Eight out of eleven rural census areas had lower median household incomes than the statewide average (\$41,408) in 1992. For the Wade-Hampton area on the Yukon-Kuskokwim Delta, median household income was just \$20,586. Overall, 21.4 percent of rural Alaskans lived in poverty, compared with nine percent of all Alaska residents.

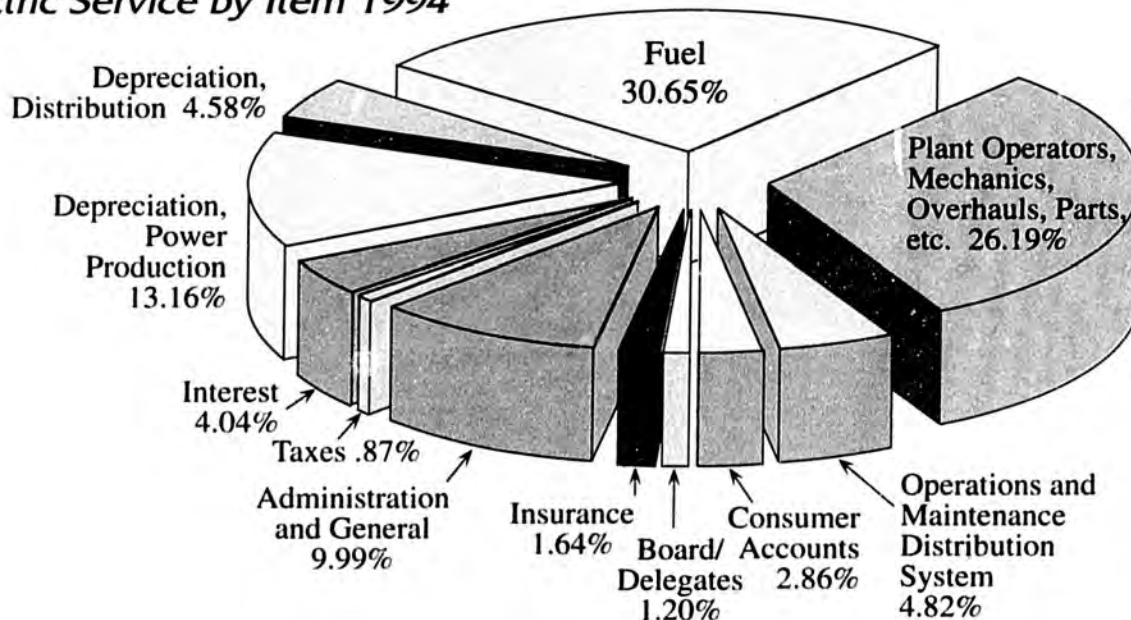
Nationally, residential consumers use 822 kwh per month and spend \$821 on electricity each year. The annual electric bill is about 2.7 percent of median household income (\$30,786) in the U.S. A consumer living in a household with median income on the Yukon-Kuskokwim Delta paying 40 cents per kwh would spend \$3,945 per year to use the same amount of electricity. That's 19 percent of household income. Half of households in the area have incomes below the median; they would pay an even larger percentage of their income to use that amount of electricity.

The Cost of Power

**Alaska Village Electric Cooperative (AVEC)
Source of Electric Revenue 1994**



AVEC Total Cost of Electric Service by Item 1994



The reality is that, in part because of the high cost of power, most households in rural Alaska use less than half the state (682 kwh) and national averages. State statistical reports indicate each residential and commercial consumer used an average of 326 PCE-eligible kwh per month in FY95. At 40 cents per kwh that would cost the example household \$1,565 per year, or about 7.6 percent of household income.

Rural residents also pay high rates for other types of energy they use, such as fuel oil for heating and gasoline for vehicles. The combined effect is that a much higher percentage of income is spent on energy than in other places.

Rural residents generally pay a higher percentage of income for the same amount of electricity as urban residents.

Factors Contributing to the High Cost of Electricity in Rural Alaska

Capital Costs

Among the most significant factors is the high capital investment cost to serve a small number of people. Capital costs for AVEC, measured as depreciation and interest on loans taken out to install equipment, represent about one-fifth of the annual cost of providing electricity.

Fuel Costs

The vast majority of rural communities rely on diesel generation, and the cost of generation fluctuates with changes in the price of fuel. In 1994, fuel costs were about one-third of AVEC's costs of providing electricity. The largest rural utilities, which pay the lowest diesel prices, still pay five times per Btu (unit of energy) what urban utilities in Alaska pay for natural gas.

Transportation Costs

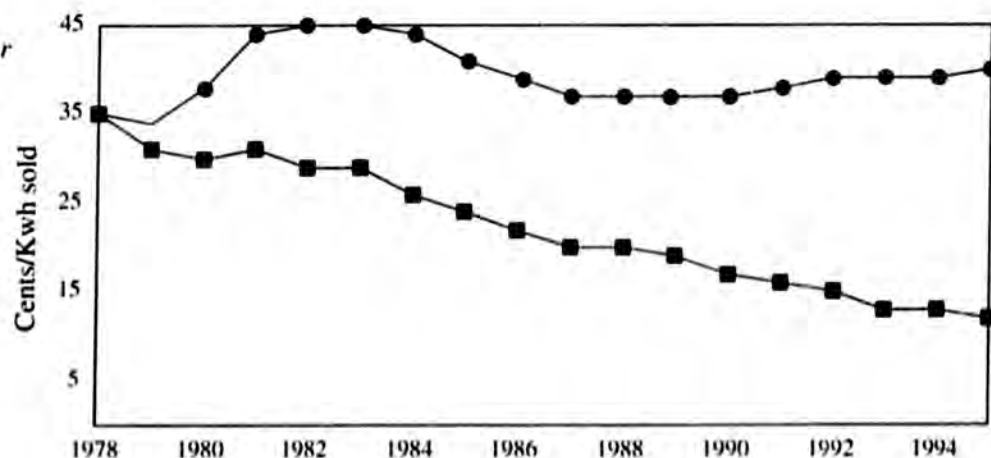
Fuel, equipment, most supplies and some labor must all be flown or barged in to most rural communities. Thus transportation costs significantly increase the cost of materials and supplies needed to produce electricity.

AVEC Average Revenue Per Kwh Sold

AVEC has reduced the real cost of power to consumers.

In 1978, the Alaska Village Electric Cooperative sold electricity for about 35¢ per kwh. The rate was 40¢ per kwh in 1995 — but only 12¢ per kwh in 1978 dollars.

- Actual cost
- Costs adjusted for inflation using the Consumer Price Index



Naknek: Reducing Costs with Economies of Scale

Spreading relatively fixed high capital, operations, and maintenance costs over a larger sales base helps to improve the economies of scale for utilities, lowering the per kilowatt-hour cost of power production. The recent experience of Naknek Electric Association (NEA) provides a good example of how this process can help utilities reduce costs to both consumers and the state's Power Cost Equalization (PCE) program.

The area NEA serves in southwestern Alaska has experienced good growth in the last few years. The number of retail kilowatt-hours (kwh) sold increased 22 percent between 1989 and 1994. NEA used more fuel to generate that electricity; fuel costs rose 21 percent. Even though capital investments of \$2.2 million were made during that period, total nonfuel costs rose less than 12 percent. Utility costs increased slower than the growth in electric sales.

NEA's general manager, Meera Kohler, says improved economies of scale through increased sales has been a significant part of making it possible for the consumer-owned co-op to reduce rates by almost 10 percent. In 1995, NEA charged an average 21.73 cents per retail kwh, compared to 22.32 cents in 1989. A further rate reduction to 19.3 cents went into effect in January 1996. This rate reduction is more impressive when you consider rates would normally increase due to inflation in the general economy.

The utility's success in reducing the cost of providing power is also reducing costs to the PCE program. In 1989, the state provided 9.84 cents per eligible kwh used by an NEA consumer. By 1995 that had dropped to 7.24 cents per kwh. About 1.6 cents of the drop was attributable to increased efficiency and increased economies of scale experienced by the utility.*

Naknek consumers use approximately four million eligible kwh each year. That means the state is now saving \$64,000 annually in PCE expenses in this one area alone. The number of eligible kilowatt-hours has increased due to additional eligible consumers, but net PCE costs to the state were still \$47,000 less in FY95 than they would have been without the improved efficiency and economies of scale.

* Naknek also improved fuel efficiency by replacing its three oldest generators with more efficient engines. In 1989, NEA sold 12.76 kwh per gallon. In 1994, it sold 13.67 kwh per gallon. The State of Alaska contributed \$170,000 to the \$900,000 efficiency effort.



*NEA's general manager,
Meera Kohler, in the
co-op's diesel electric plant.*

The PCE program was developed to give rural residents a share in the use of oil revenue to promote affordable power.

The State of Alaska's Power Cost Equalization (PCE) program currently plays a critical role in making power more affordable in rural Alaska. The program pays a portion of consumers' bills for a limited amount of electricity. Only about one-third of the electricity sold in eligible communities qualifies for PCE; the other two-thirds is paid for at the full rate charged by the electric utility.

The PCE program works by providing reimbursement to utilities for credits applied to consumer bills for up to 700 kilowatt-hours (kwh) of electricity used each month. The credits are calculated using PCE rates established by the Alaska Public Utilities Commission (APUC) for each individual utility.

Before setting the PCE rate, the APUC reviews a utility's reported costs and determines which are reasonable costs of providing power. The APUC can and does disallow costs it deems excessive or inappropriate. This review ensures that the state's money is spent only on necessary costs. Items such as depreciation on equipment provided to the utility through state grants are not allowed. Any costs above 52.5 cents per kwh are also excluded from the calculation.

After determining reasonable eligible costs, the state applies a formula derived from statutes and regulations to determine the PCE credit rate for each community. Consumers are required to pay the first 9.5 cents of cost for each kwh used before receiving any assistance. This is about the average cost of power in Anchorage, Fairbanks, and Juneau. The PCE credit covers 95 percent of the additional cost of power.* In FY95, the PCE rate ranged from a low of 2.1 cents per kwh in Skagway to a high of 34.7 cents per kwh in Manley and five villages along the Kuskokwim River.

"Equalizing" Power Costs

State assistance to rural consumers began in 1980. Earlier programs were replaced with the PCE program in 1984. The stated purpose of the PCE program was to "equalize" the cost of power between rural and urban communities, bringing consumer costs in communities dependent upon diesel generation close to the average cost of power in Anchorage, Fairbanks, and Juneau.

It does not accomplish this goal. Most rural residents still pay more than twice as much for the electricity they use than do urban

Only 1/3 of the electricity sold in rural communities qualifies for PCE assistance.

* In recent years, full funding has not always been available for the PCE program, so consumers have seen a percentage reduction in the amount of their credit.

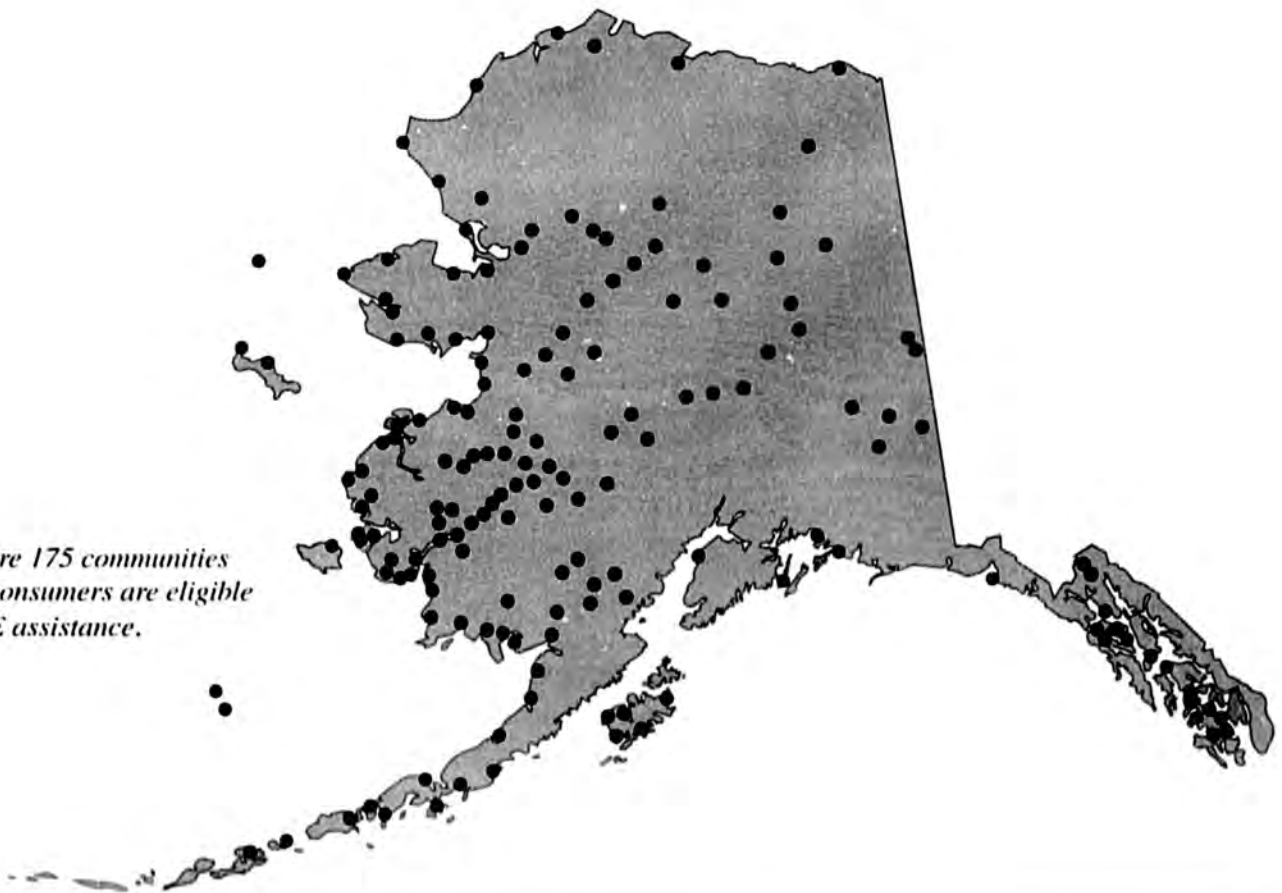
Power Cost Equalization

After PCE, many rural residents still pay more than twice as much as urban Alaskans for the electricity they use.

Alaskans, even after getting PCE. The effective rate paid by consumers — assuming that all kwh were eligible for assistance — ranged in FY95 from 9.5 cents per kwh in villages served by North Slope Borough Power & Light to 73.4 cents per kwh in Telida. Residents of 102 communities paid 20 cents or more per kwh for their electricity, even after getting PCE.

At 20 cents per kwh, consumers living on the Yukon-Kuskokwim Delta who use the average amount of electricity for PCE consumers (326 kwh) and have median household income for the area, would pay a higher percentage of income (3.8 percent) after getting PCE for the electricity they use than the average national consumer pays for more than twice as much electricity.

There are 175 communities where consumers are eligible for PCE assistance.



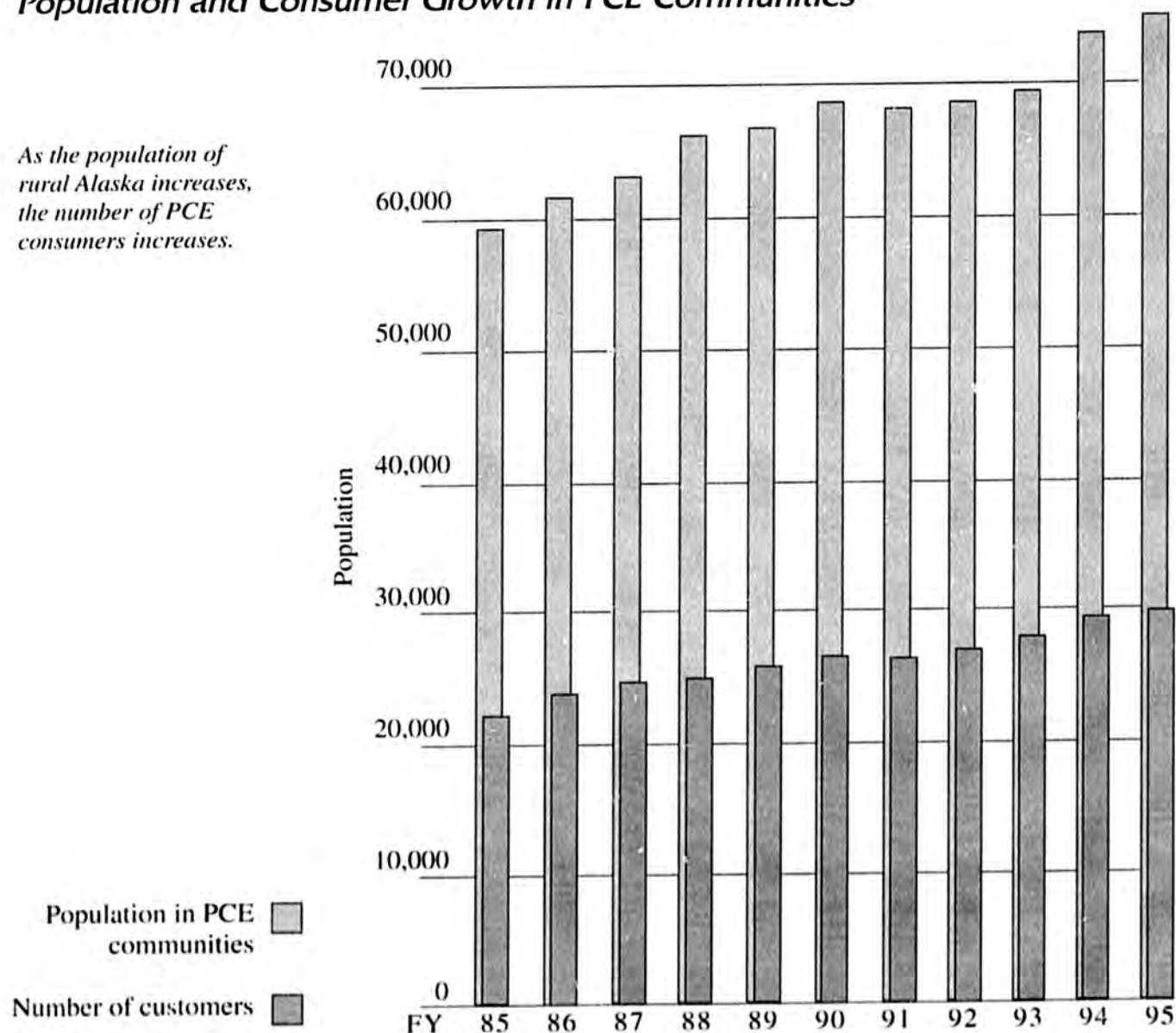
Who Gets PCE?

In 1993, the Alaska Legislature eliminated state and federal offices from eligibility for PCE. All other residential and commercial consumers are eligible. In addition, the accounts that pay for community facilities — such as street lights, water and sewer systems, and civic buildings — are eligible for PCE but are subject to different limits. PCE for such facilities is limited to a community-wide total of 70 kwh per resident per month. The program average in FY95 was just 29 eligible kwh per capita used each month.

There are far more residential than commercial consumers in rural Alaska, so the program primarily benefits households. The 700 kwh cap on eligible kwh limits the program's value to businesses, but PCE is important for many small businesses. Schools are among the largest commercial customers and get PCE, but most of the electricity used for education is paid for at the full rate.

Population and Consumer Growth in PCE Communities

As the population of rural Alaska increases, the number of PCE consumers increases.



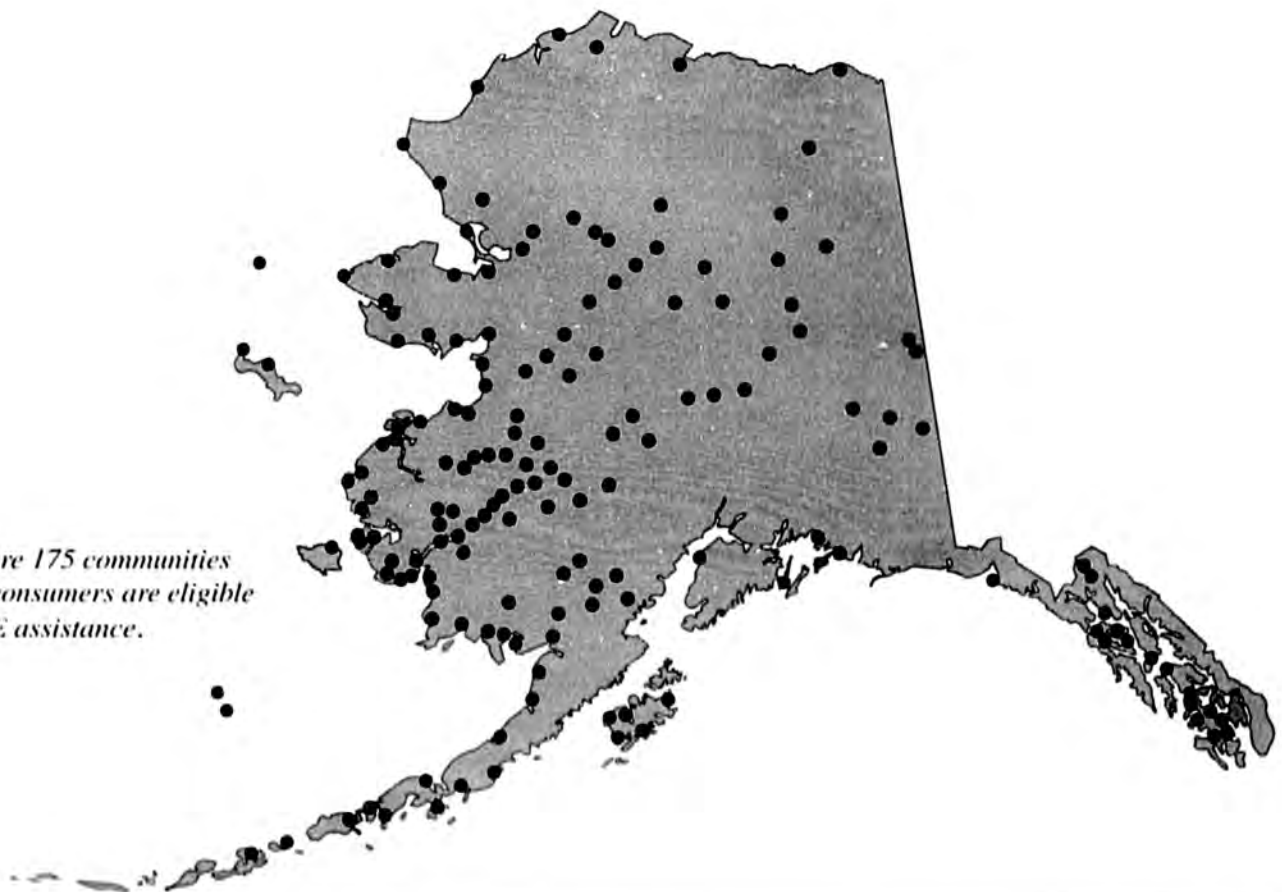
Power Cost Equalization

After PCE, many rural residents still pay more than twice as much as urban Alaskans for the electricity they use.

Alaskans, even after getting PCE. The effective rate paid by consumers — assuming that all kwh were eligible for assistance — ranged in FY95 from 9.5 cents per kwh in villages served by North Slope Borough Power & Light to 73.4 cents per kwh in Telida. Residents of 102 communities paid 20 cents or more per kwh for their electricity, even after getting PCE.

At 20 cents per kwh, consumers living on the Yukon-Kuskokwim Delta who use the average amount of electricity for PCE consumers (326 kwh) and have median household income for the area, would pay a higher percentage of income (3.8 percent) after getting PCE for the electricity they use than the average national consumer pays for more than twice as much electricity.

There are 175 communities where consumers are eligible for PCE assistance.

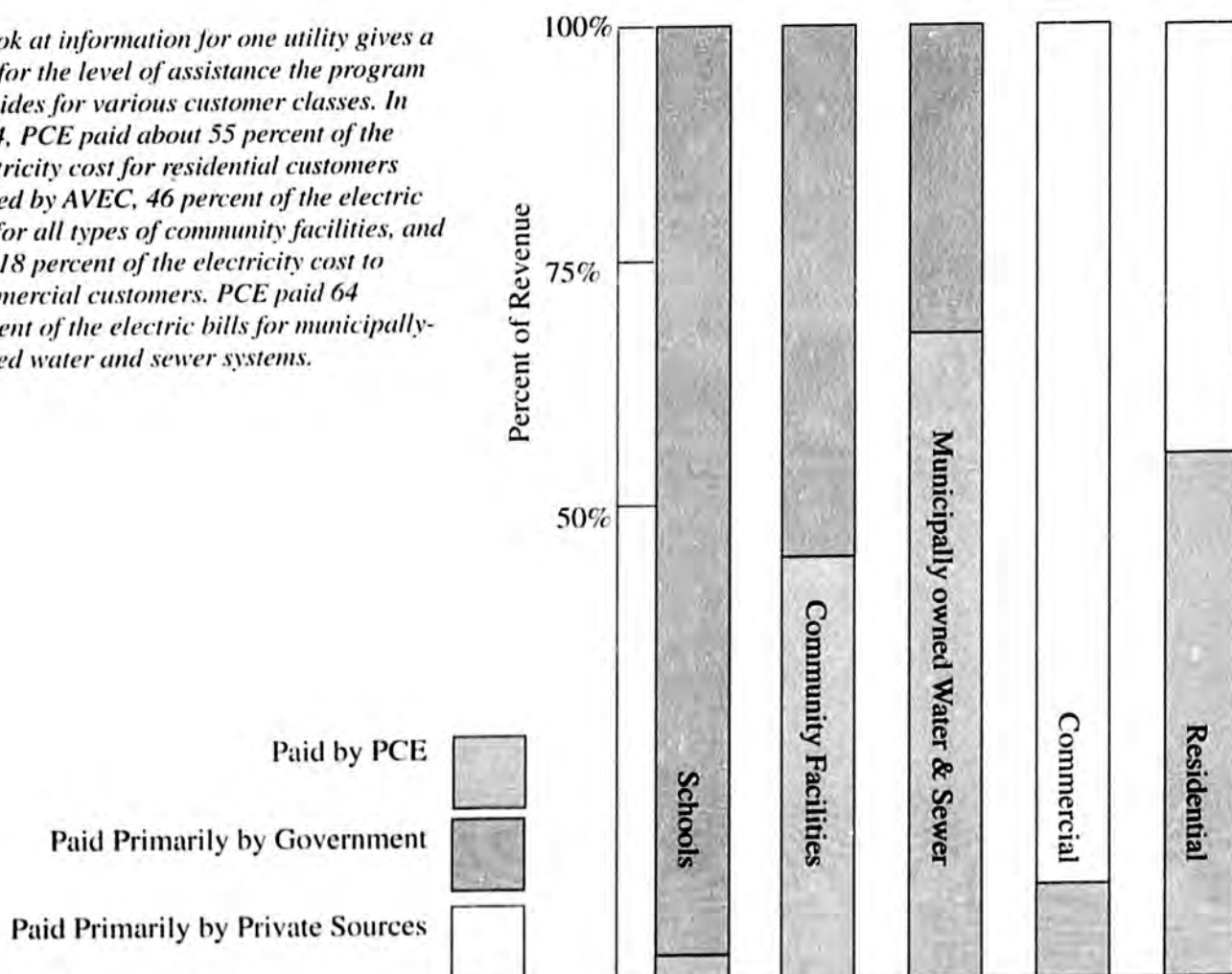


What has PCE Cost the State of Alaska?

The program's annual cost has been between \$17 and \$20 million. Budgets are estimated each year based on anticipated need and the existing formula for PCE credit. The state has spent a total of about \$240 million assisting rural residents with electric bills since 1980. The cost of the PCE program has risen since it began in 1984, but the eligible kwh usage and cost per consumer have remained relatively stable. In FY 95, an average of \$637 in PCE was paid to 29,021 rural consumers, an almost identical benefit to that received by eligible consumers in 1985 (\$636). However, the cost of living increased about 30 percent in that time, so the actual benefit in constant dollars has decreased over time. The relative stability of program cost, despite inflation and increasing population, reflects efforts by utilities and the state to increase the efficiency of utility operations.

Source of Revenue by Customer Class, AVEC 1994

A look at information for one utility gives a feel for the level of assistance the program provides for various customer classes. In 1994, PCE paid about 55 percent of the electricity cost for residential customers served by AVEC, 46 percent of the electric bill for all types of community facilities, and just 18 percent of the electricity cost to commercial customers. PCE paid 64 percent of the electric bills for municipally-owned water and sewer systems.



Required minimum living standards cannot be sustained without adequate and affordable electric service.

Benefits of PCE

- ***Makes Electricity Affordable for Rural Residential Customers***

The average annual PCE assistance to residential consumers in FY95 was \$637. The amount varies from community to community and consumer to consumer, depending on electric rates and usage.

- ***Provides Reliable Revenue to Rural Utilities to Sustain Electric Systems***

The state's PCE program assists rural utilities in obtaining financing for capital improvements from lenders because the utilities can show that they have a stable revenue stream.

- ***Supports Public Health and Safety, Education and Economic Development Goals***

PCE underwrites a substantial portion of the electricity cost for community facilities, such as water and sewer systems and street lights. PCE contributed 64 percent of the cost of electricity to run municipal water and sewer systems in communities served by AVEC in 1994, about \$358,000. PCE paid 65 percent of the cost of lighting street lights in those communities.

Although businesses mostly pay the full cost of power because PCE credit is limited to 700 kwh per month, they still benefit from the program. Average use by AVEC's 343 commercial customers was 1628 kwh per month in 1994. PCE paid for about 18 percent of commercial bills, compared to 55 percent of residential billings. The \$440,000 received by commercial consumers was about one-tenth the amount received by residential consumers. But the average annual amount received per commercial consumer was higher than per residential consumer (\$1,281 compared to \$954), because of the higher average usage.

The Future of the PCE Program

The Alaska Legislature established the Power Cost Equalization and Rural Electric Capitalization Fund in 1993 to pay for PCE. It put in statute an intent to fund the program at \$17 million annually through 2013. The fund was not adequately capitalized, however, and money for PCE will run out in a few years unless more is appropriated. Even if the legislature follows through on its funding intent, benefit levels will significantly decrease due to inflation and population growth.

What Will Happen if PCE is Eliminated?

If PCE is eliminated or if the fund is allowed to run dry, consumers will react to the loss of assistance according to their ability to pay the increased cost of electric service. The larger towns, where electric rates are relatively low and household incomes are relatively high, would see less impact from the loss of PCE. The severe impact would be in smaller villages where residents have less money. Many households would be forced to do without electricity, perhaps resorting to kerosene lamps, with wood stoves or gravity feed pot burner oil stoves replacing systems that now require electrical ignition for space heating. This would simply bring back conditions that helped spur the rural electrification effort.

Community infrastructure would be threatened by the same problem of finding money to pay the higher electric bills. With no tax base and reduced government funding, the use of community facilities, including water and sewer systems, would not be affordable in many villages. The costs to local government would increase dramatically. For instance, the cost to the Bristol Bay Borough of running the water and sewer system and other community facilities in communities served by Naknek Electric Association would increase by about \$86,000 per year.

In a worst-case scenario, some communities could lose electric service because consumers would not be able to pay enough of the cost of maintaining the system to sustain their local utility. It is hard to tell how many communities would be in jeopardy of this extreme result. Utilities with high power costs serving small populations in low-income areas would be most vulnerable.

The gains in living standards over the past 30 years in rural Alaska would be lost if electricity were to again become unaffordable. Hundreds of millions of dollars of infrastructure investments made by the government and private entities would be abandoned.

The social costs would be enormous. Most likely, the government would ultimately be forced to start over on solving the costly problem of meeting minimum living standards in village Alaska. The required minimum living standards cannot be sustained without adequate and affordable electric service.

***The amount of
PCE assistance
per consumer
has stayed
stable;
if inflation
is considered,
the value has
gone down
since 1985.***

Affordable power can help to stimulate economic development that, in turn, helps to reduce the cost of electricity.

Rural businesses of all types require reliable, affordable electricity:

Fish processing plants

Ice-making plants in fishing communities

Hide tanning facilities

Support facilities for fishing fleets

Mineral extraction and processing

Tourist-based food service and housing

Timber harvesting and processing

Commercial laundromats

Grocery stores

Lowering the cost of power will improve the viability of rural businesses.

Rural Economies: Affordable Power and Economic Development

Economic development and affordable power are synergistic in the effort to grow healthy economies in Alaska's smaller communities. Affordable power stimulates economic development; economic development brings increased electricity use that can create the economies of scale that reduce the overall cost of electricity.

This reality applies in both urban and rural Alaska; a recent example is development of the Fort Knox gold mine near Fairbanks. The availability of affordable power was important to developers of the mine. The local electric cooperative, Golden Valley Electric Association, expects electricity sales to the mine will allow it to reduce residential rates.

Nome Joint Utilities System is hoping potential mining activity at Rock Creek will help do the same thing for its consumers. But providing affordable power at a competitive price is necessary to get the load. Mining companies and other major businesses in rural areas will choose to generate their own power when it is cheaper to do so. Local residents lose the potential benefit from increased economies of scale when this occurs. They could also lose jobs if a mine developer chooses to ship material out for milling, rather than milling locally, because power costs are too high.

Rural businesses of all types require reliable, affordable electricity. Electric service has facilitated development of local stores and other businesses, which use it for lighting, computer accounting, inventory and billing, refrigeration, power tools, and a multitude of other tasks. High electricity costs are passed on to consumers in the higher cost of goods and services in rural areas. Lowering the cost of power will improve the viability of rural businesses.

The more residents spend on electricity, the less they have to spend at local businesses. Affordable electricity increases the money available to support the local economy.

The utilities themselves are often among the largest local businesses. Rural utilities provide jobs and spend millions of dollars each year in rural Alaska. For example, AVEC plant operators and laborers on utility projects earned nearly \$1.9 million in 1994. That money helped fuel the local economy of the villages served by AVEC.

Kake: Cooperative Economic Development is Revitalizing the Village Economy

The synergy of economic development and affordable power is clear in the cooperative effort to resurrect the traditional fisheries economy in Kake, a community of about 800 people on Kupreanof Island in Southeast Alaska.

In 1992, tribal corporation leaders began a major effort to improve use of a cold storage fish processing facility. The facility, leased to others, had been used sporadically since construction in the late 1970s. "Affordable power is real important to the bottom line, particularly when you're getting started," said Gordon Jackson, president of Kake Tribal Corporation (KTC).

Steve Andison (left) and Marvin Kadake pose in front of the Gunnuck Creek Hatchery.



Tlingit-Haida Regional Electrical Authority (T-HREA) wanted to support the development effort and generally was looking for ways to bring self-generating commercial electricity users into the utility system to help lower the per unit cost of providing power.

The State of Alaska helped fund a line extension to Kake Cold Storage (KCS), owned by KTC. T-HREA financed the initial cost of installing service equipment. The utility also offered KTC a new commercial interruptible rate that gives a substantial price break for large power users who have their own backup generation.

Regular commercial users pay \$50 per month in a basic charge, plus 29 cents per kilowatt-hour (kwh), and \$10 for each kilowatt of the peak demand used during the month. Customers on the interruptible rate pay \$160 per month plus a decreasing charge from 16.6 to 14.0 cents per kwh as energy use increases.

It was a win-win situation. KTC got a good deal on power costs and did not have to replace aging generators. It was also able to achieve its economic development goal. "Because of all of us working cooperatively together, we have a real active waterfront (now)," Jackson said.

T-HREA got what is now the largest commercial customer on its utility system, which serves six separate communities in southeast Alaska. The utility's general manager, Bob Martin, said revenue from the cold storage is about equal to the cost of serving the facility, but other consumers benefit because the large load stabilizes the utility's cost per kilowatt-hour of providing electricity.

"We believe that we have benefited in two ways — by spreading fixed costs over a larger base and then by having jobs available," Martin said. When people have jobs they can afford to use electricity and pay their power bills. Kake Cold Storage employs up to 60 to 80 people, depending on the season, processing black cod, salmon and other seafood.

The City of Kake is also participating in the effort to rejuvenate the fisheries economy. It created a nonprofit entity that refurbished and runs a hatchery at Gunnuck Creek. The hatchery began 21 years ago as a high school project with just a couple of 55 gallon drums fitted with egg trays. The recent \$3 million upgrade increased its capacity from 20 million to 65 million incubated fry.

The president of the hatchery nonprofit corporation's board of directors, Marvin Kadake, is proud that it now provides jobs as well as education. About 15 are employed in summer, many college students from the community. "They come home and they have a job," he said.

"With upgrade of the facility, power costs are becoming more important," said Steve Anderson, general manager of the hatchery. The hatchery pays the regular commercial rate. Only four percent of the electricity it used in January 1996 was eligible for Power Cost Equalization (PCE). The effort to keep costs down is never ending. "We're trying to cut every corner," Anderson said. "We're driving a 1964 Ford."

Most of the hatchery salmon will be chum salmon, which will be sold to another KTC subsidiary, Health Sea, for making salmon har and sausage. KTC received a state marketing loan that helped it sell the products to the Williams-Sonoma gourmet food catalog. The value-added processing is expected to bring another 12 to 15 year-round jobs to the community.

"The city has really vested its financial future in that cannery project. We have to break through to the other side and succeed," Anderson said. Finding ways to continue reducing power costs is one of many efforts.

Kadake is in a unique position to understand that concern, as he is also the manager of the local T-HREA utility plant. One option being evaluated is construction of an intertie to connect Kake to Petersburg and the power available through the state's Tyee Lake hydroelectric project. "If we can keep the power costs down, that can keep our (hatchery) operations cost down. That equals profit to the community," he said. "I know (T-HREA) is trying to do that."



Workers process black cod at the Kake cold storage facility.

The reality is that most equipment, supplies, professional services and specialized labor skills are purchased from urban areas of the state.

Urban Alaska businesses are affected by the health of the rural economy:

Air taxis to remote villages

Banks with rural branches

Air freight companies

Fuel Suppliers

Direct mail shopping services

Dog mushing suppliers

Generally, what is good for rural Alaska is good for urban Alaska.

Urban Economies Benefit from Affordable Rural Electricity

The economic health of urban communities in Alaska depends upon industries that extract resources from rural areas. Oil production on the North Slope is one obvious example. Salmon harvested in Bristol Bay are flown from Dillingham and King Salmon to urban processing plants. Thousands of urban dwellers earn seasonal income by fishing and working in rural communities. This trend is true on many smaller levels in different industries throughout Alaska.

Electric systems and other basic infrastructure in rural Alaska facilitate urban economic activity related to rural areas. Lowering the cost of power in rural Alaska helps to decrease costs for urban businesses when they work in rural Alaska.

Urban Alaska also directly and indirectly benefits from dollars spent in rural Alaska by government, by business, and by local residents. The reality is that most equipment, supplies, professional services, and specialized labor skills are purchased from urban areas of the state.

This is true for utilities as well as other rural businesses. Naknek Electric Association's 1995 budget included about \$1.79 million in purchases benefitting other areas of the state, mostly Anchorage. Naknek's purchases outside the community include such things as fuel, lube oil, materials, consultants, vehicles, and generation supplies.

In Tok, the local electric utility purchases all of its fuel from a refinery in North Pole, thereby participating in the economy of the North Star Borough.

There have been few studies of where rural residents spend their dollars, but in one survey of households in Levelock, more than a quarter of the households named Anchorage as their main location for shopping for groceries, clothes, home appliances and furniture, professional services, snow machines, and gifts.

Rural Alaskans come to urban areas for medical and other services, on business and to shop. In a 1993 survey, the Anchorage Convention and Visitors Bureau found that rural visitors to Anchorage tended to stay longer in hotels and spend more than visitors from nonrural parts of the state, spending an average of \$711 each trip. The Municipality of Anchorage has estimated that the Alaska Federation of Natives annual convention alone is worth about \$2.5 million to the city's businesses.

Businesses in urban Alaska are affected by the health of the rural economy. In general, it is true that what is good for rural Alaska is good for urban Alaska.

Frontier Expeditors: An Urban Business Supplying the Bush

Diapers, four-wheelers, jeans, and other essential items for rural households are piled high in the south Anchorage warehouse of Frontier Expeditors. The company, a subsidiary of Alaska Commercial Company (AC), supplies 35 AC stores and 150 village stores in rural Alaska. It ships more than \$100 million in goods each year.

It is the largest of a number of highly competitive companies providing this sort of service to rural communities. Frontier's general manager, Justin Bell, said approximately 80 people work at its office, warehouse, and meat processing plant in Anchorage. The business is one of the more visible signs of the fact that most things headed for rural Alaska come through Anchorage or Fairbanks. Urban Alaska gets part of the rural economic pie.

Bell has lived in Dillingham and other rural communities. His father worked for the old Northern Commercial Company, a precursor of AC. He said he's concerned about the cost of power because it affects not only the bottom line of the companies he works for, but also the well-being of rural communities. Lowering power costs, as a part of keeping all costs down, is an important goal. "It means we can better the standard of living in the communities we serve out there," Bell said.

As an urban-based supply business, Frontier Expeditors doesn't have much of a rural power bill. High electricity cost is, however, one of the disadvantages village stores have in trying to compete with large mail-order chain stores. The high cost of power contributes to high prices to customers, particularly for perishable items that require refrigeration.

***Most things
headed for
rural Alaska
come through
Anchorage
or Fairbanks.***

***Urban Alaska
gets part of the
rural economic pie.***

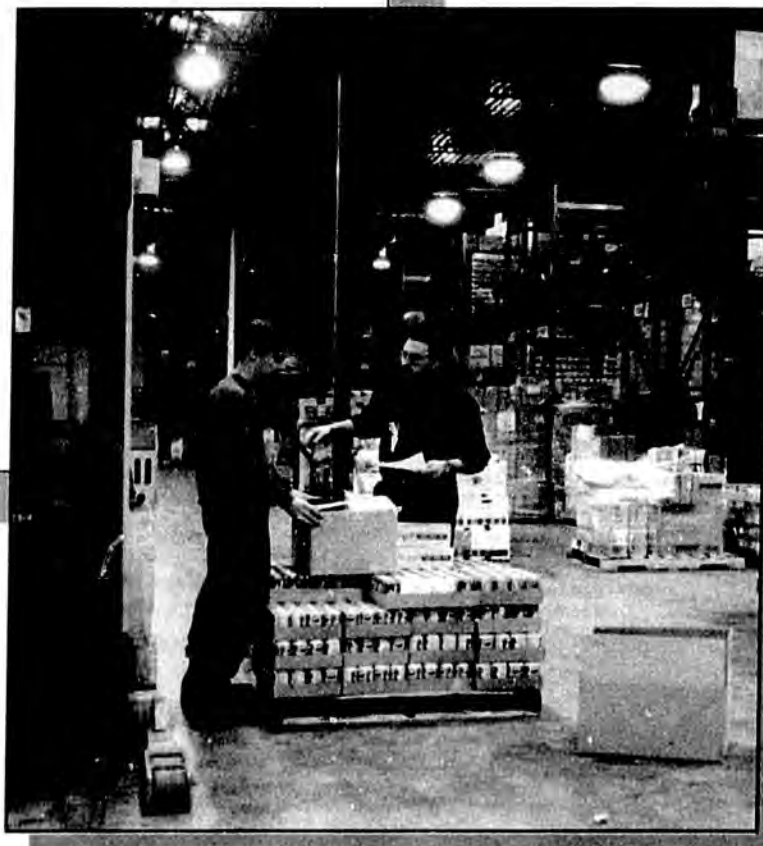
Since the large AC stores in regional centers use so much electricity, Bell said that low-cost power is important to them. But they don't get much help from the PCE program, since such a small percentage of the electricity used is eligible for PCE. "PCE is far more important to the small villages than it is to Bethel or Kotzebue," he said.

Though actual usage varies tremendously, a typical village store might use about 1,500 kwh per month, according to Georgia Shaw, manager of member services for the Alaska Village Electric Cooperative. With that usage, a store would qualify for the maximum PCE assistance on 700 kwh per month, receiving \$180 per month or \$2,160 per year. More than half of the bill would be paid at a rate four times the cost of electricity in Anchorage.

The loss of PCE assistance to stores would hurt village residents by increasing prices, and the loss of PCE to residents would hurt stores by decreasing the amount of goods residents purchase. "Whatever amount that is (that PCE is reduced) it's going to lower what they can spend on consumables," Bell said. "Obviously, we're going to feel the impact of that."

On the bright side, success in lowering the cost of power could reap significant benefits to local rural economies, and allow stores to better serve their customers through offering more perishable items, Bell said.

Justin Bell (right) reviews an order with warehouse worker Brian Femimore.



*Solutions are mostly long-term, _____
taking years to implement.*

Specific solutions to the problems of providing affordable power in any particular area must consider local circumstances. Solutions that work well in one area may not be effective in another. But there are some good strategies that can be applied in most communities.

Utilities have found that improving economies of scale, increasing generation and operational efficiencies, and developing new technologies are some of the most effective strategies. Conservation and demand-side management efforts may work well in some communities, but because they also hinder efforts to improve economies of scale, they may be less effective than other methods.

Quick results may be possible in some communities, but most long-term solutions will take years to develop and implement.

Improving Economies of Scale

As noted earlier, the lack of economies of scale is an important factor in the high cost of power in rural Alaska. Identified ways to improve these economies of scale include expanded sales through economic growth, consolidation of utilities, and interconnection of systems.

Economic Growth

Utilities have little control over economic growth, but government policies and decisions of businesses regarding development in rural Alaska have a strong impact on the affordability of power in rural Alaska. It is important that utilities be included in economic development efforts to ensure adequate planning for solid growth.

Consolidation of Utilities

There are more utilities in Alaska than in Washington, Oregon, Idaho, and Montana combined, most of them serving very few consumers. The State of Alaska has provided technical assistance as well as PCE to many of the smallest utilities.

Consolidation of utilities or development of other methods to share resources (such as joint operating and maintenance agreements) could help to reduce costs, particularly for small, stand-alone systems with limited technical or financial capabilities. By joining together to share resources or merging with another utility, the costs of administration, accounting, engineering, insurance, financing, and other

*Consolidating
or sharing
resources could
help reduce
utilities' costs,
particularly for
small, stand-
alone systems.*

Powerful Solutions

Improving economies of scale, increasing efficiency and developing new technology are three effective approaches.

important operational costs can be spread over a larger sales base, increasing economies of scale.

Existing systems such as Alaska Village Electric Cooperative, Tlingit-Haida Regional Electrical Authority, Alaska Power & Telephone Company (AP&T), Iliamna-Newhalen-Nondalton Electric Cooperative, Middle Kuskokwim Electric Cooperative, Naknek Electric Association, and North Slope Borough Power & Light are testament to the viability of regional rural utilities.

AP&T has brought nine village systems into its operation since 1990: Bettles, Evansville, Mentasta Lake, Coffman Cove, Eagle, Eagle Village, Alatna, Allakaket and Northway. AVEC began serving Brevig Mission in 1994. Also in 1994, Tlingit-Haida Regional Electrical Authority added service to the Chilkat Valley near Haines to improve its economies of scale.

Increasing Generation and Operational Efficiencies

Utilities in Alaska are constantly working to increase generation and operational efficiencies. Since fuel is a substantial percentage of the cost of producing power, a number of these efforts have focused on reducing fuel cost and using fuel more efficiently.

Altogether, about 28 million gallons of diesel fuel are used each year to produce the electricity consumed in rural communities. A decrease of a few cents per gallon in price, or an increase of a few kilowatt-hours per gallon in generation efficiency, quickly adds up to a lot of savings.

Since 1985, the fuel efficiency (kwh sold per gallon of fuel used) of PCE utilities has increased from 10.6 kwh per gallon to 12.9 kwh per gallon. This 22 percent increase in efficiency has been achieved through a combination of increased generation efficiencies, decreased line losses, and improved metering. Without these efficiencies, the cost of producing the kilowatt-hours PCE utilities sold in 1995, using 1995 fuel costs, would have been about \$3.4 million (about 12 percent).

Bulk Fuel Purchasing

Purchasing fuel in bulk and in cooperation with other utilities has yielded dramatic savings in fuel costs for many utilities. Bulk fuel storage, however, can be expensive and involves more complex management in order to ensure that facilities meet regulatory and environmental requirements.

Improving Load Factors

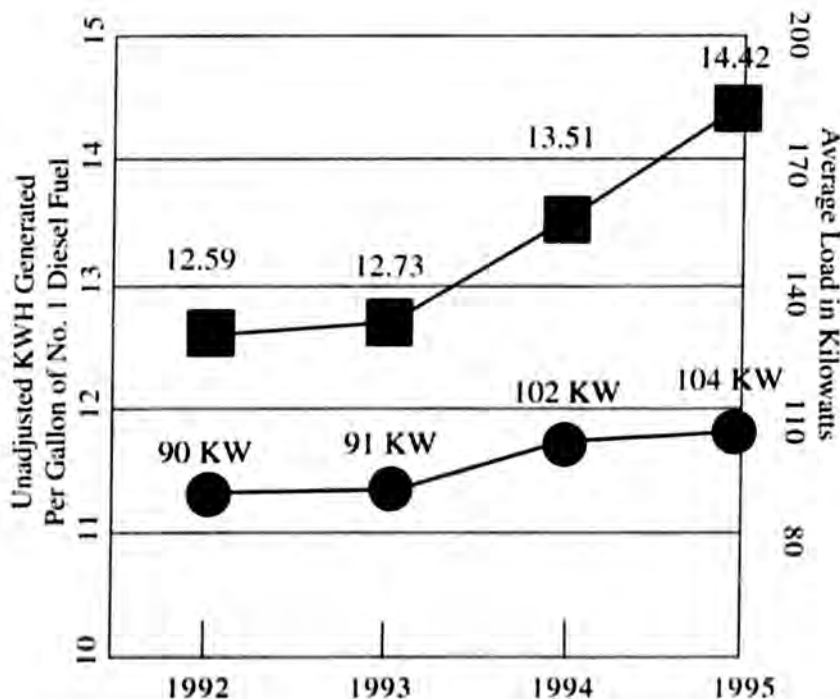
Matching the type and capacity of diesel generator systems with electrical load needs in villages helps to improve the fuel efficiency of generation. Replacement of incorrectly sized generator sets in small communities has improved the fuel efficiency of PCE utilities and has reduced costs.

Decreasing Line Losses

Utilities work to decrease line losses by installing more efficient and properly sized transformers. As in other efforts to increase efficiency, the gains to be achieved must be weighed against the higher cost of the equipment. Line losses can also be reduced by matching the type of conductors (electric lines) used with the load and distance being carried, similar to matching generator size to load. Recalibrating and replacing meters contributes substantially to reducing apparent line loss.

Improving Engine Efficiency

Increasing sales in a system can allow use of a larger engine that produces energy more efficiently. Larger engines often have efficiencies in the range of 14 to 16 kwh per gallon that are not



Increasing Efficiency of Generation in New Stuyahok

In New Stuyahok, installation of a fuel-efficient engine led to a 13% overall gain in generating efficiency from 1993 to 1995.

*Efficient energy use requires
steady growth of level loads.*

*This achieves the
highest benefit
from capital
investments on
equipment.*

possible with smaller engines. Increasing the potential sales base could make alternatives to diesel generation more attractive by providing a large enough market for electricity to justify a large capital investment. This is sometimes the case with hydropower projects.

Intertie Infrastructure Development

Where feasible, electrical interties are being pursued to share existing or future power generation among neighboring communities. Rural intertie prospects include one connecting Klawock, Thorne Bay, and Kasaan; one between Metlakatla and Ketchikan; one tying communities in the Iliamna Lake area into the INN Electric Cooperative system; one connecting Skagway, Haines and the Chilkat Valley; and one between Kake and Petersburg. Government funding is needed to match local resources.

Developing New Technologies

Alaska's rural utilities are working to develop renewable and other local energy sources to supplement or replace existing diesel generation and to reduce production costs. Hydroelectric, wind, clean-coal, coal-bed methane, geothermal, and fuel cell generation are all being considered.

The Black Bear Hydro project, located on Prince of Wales Island, is one of the most recent success stories. Run by a subsidiary of AP&T, the project is expected to lower the real cost of power by stabilizing the cost of energy to communities on the island.

Development of local resources often involves testing and development of new technologies. Kotzebue Electric Association has participated in wind profile studies and recently received grants to assist it in developing wind generation demonstration projects, which the utility hopes will decrease production costs. Naknek Electric Association is scheduled to be a test utility for a demonstration fuel cell project in 1999. Fuel cells are a new technology for producing electricity efficiently from fossil fuels using direct chemical reaction.

Good progress is also being made by applying innovation to existing systems. AVEC worked with Alaska Diesel Detroit to retrofit a fuel-efficient engine originally developed for heavy trucks to make it usable as an efficient electricity generator for small communities. Operational data on some of the first of these units installed show increased efficiencies ranging from nine percent to 13 percent. In New Stuyahok, 14.42 kwh are produced per gallon now compared with 12.73 kwh in 1993.

Efficient Use of Electric Energy in Rural Alaska

While efficient use of energy is an important social goal, utilities find that using conservation as a tool to decrease costs is less effective than actions that increase the efficiency of generation and distribution of electric energy.

Rural utilities encourage the efficient and effective use of electricity by providing information to their consumers and by working with developers to discourage uses that are not cost effective or that will impose a high demand during peak times. But the reality is that there is limited opportunity for using conservation and demand-side management to reduce overall costs in rural Alaska.

The high cost of electricity in rural Alaska already forces most residential consumers to use it frugally. Commercially, electricity is used for high priority loads such as lighting, pumping, and refrigeration.

There are undoubtedly some communities where demand-side management and conservation efforts could be effective in the effort to reduce costs, particularly when conservation eliminates or postpones the need for additional capital investment. But in some communities, a major conservation effort aimed at reducing costs could backfire.

Because of the very high fixed costs associated with generating and delivering power in rural areas, reducing the number of kilowatt-hours sold may simply result in increasing the cost per kilowatt-hour. Consumers may find themselves paying the same amount — or more — for less electricity.

Rural utilities occasionally witness inappropriate uses of electric energy, usually where it is used to produce heat in communities that rely on diesel generation. The conversion losses make it senseless to generate electricity with oil and then turn it back into heat. A prime example is using an electric water heater instead of an oil-fired water heater.

Utilities discourage such uses when they are discovered. For instance, architects and program officials sometimes favor the low initial cost of electric water heaters for housing projects, without considering the high operating cost for these appliances. Utilities frequently see electric clothes dryers specified for village washeterias and all-electric kitchens specified for village schools.

Most of these errors are eventually corrected before construction. One of the reasons there is little opportunity for major conservation efforts is that alternative fuels and technologies are already being used in rural Alaska. There are no water heater conversion rebate programs because there are very few electric water heaters.

Because of very high fixed costs, reducing the number of kilowatt-hours sold may result in increasing the cost per kilowatt-hour.

Conservation Cost Complexities

Reducing electricity use in communities served by diesel generation would reduce fuel costs. These savings could be substantial. However, they may not be able to offset the corollary effect of having to spread fixed costs over a smaller sales base.

A hypothetical example is a medium-sized village utility that sells 1,860,000 kwh annually. Fuel costs are \$226,854; nonfuel costs are \$505,028. Assuming that conservation reduces consumption (sales) by 20 percent, fuel used for generation would fall by up to 20 percent. This presumes the utility is able to maintain its current fuel efficiency even with the reduced engine load.

Nonfuel costs, however, are unlikely to change much. Because these costs are being spread over a smaller sales base, the utility's total costs per kwh would rise from 39.3 cents to 46.1 cents (a 17.3 percent increase). The average residential consumer's electric usage would drop from 379 kwh to 303 (20 percent), but the utility's total cost per consumer would drop only \$9.27 (from \$148.95 to \$139.68), just six percent. Similarly, any savings to the Power Cost Equalization (PCE) program would be minimal, as the PCE rate would increase with the increase in the cost per kilowatt-hour of providing service.

If it is possible to pass all of these savings on directly to the consumer, an average residential consumer who reduced consumption by 20 percent would save about \$10 per month or \$120 per year on their bill; the savings would only be about six percent, instead of 20 percent. Similarly, there would be savings to the PCE program, but it would be much smaller than the percentage of reduction in electricity usage or in fuel cost.

If achieving the reduction in electricity use requires purchasing new energy efficient appliances or other conservation investment, the savings would be less and may take several years to recover. If a \$1,000 new refrigerator achieved the 20 percent reduction in use (76 kwh) in this example, it would take more than eight years for the consumer to recoup the cost of that investment through energy cost savings.

Consumers unable to buy an energy efficient refrigerator or with no other means of effectively cutting their electricity use would end up paying even more for their electricity because of the higher rate per kilowatt-hour.

If the utility provided rebates or spent money promoting conservation, the minimal savings achieved would be even less. These sorts of interrelationships are one reason the rural utility industry focuses on efforts that provide a greater return in cost reduction, such as increasing sales and increasing efficiency of operation.

There is little opportunity for conservation without eliminating some basic uses of electricity.

Brevig Mission Benefits From Joining Co-op

The new electric system in Brevig Mission is an example of what can be done for rural communities when people work together. That's what Charlie Walls, general manager of the Alaska Village Electric Cooperative (AVEC), told residents and government officials gathered in the community's city hall January 20, 1994. "This is a success story that everyone here had a part in," he said.

Brevig Mission, a community of 198 people living on the coast of Port Clarence, 70 miles northwest of Nome, recently became the 50th community to join AVEC, a private nonprofit utility owned by its member-consumers. During the open house, local residents got tours of the upgraded power plant, which reflected some of the half million dollars in capital improvements that have been made to the system in the past year.

Among the improvements was installation of a new energy efficient generator developed by AVEC and Alaska Detroit-Diesel Allison that gets about twice the amount of electricity from the same amount of fuel as the old generator. Other improvements included a waste oil filtration system that burns the oil and eliminates a disposal problem, and a new distribution line to a section of the community that had been plagued with power outages.

The city used to get electricity from the school district, and keeping the power on when school was out in summer was difficult. Outages caused many problems, including the loss of subsistence foods. "The food is all kept in the freezer – everything had to be thrown out," said the mayor, Elmer Olanna. With the co-op in charge, there will be year-round power. "This AVEC's pretty good with everybody," Olanna said.



Students tour the power plant during AVEC's open house in Brevig Mission.

***We want to see other villages
stabilize their systems."***

—Tim Towarak

The local school principal, Monica Dickens, said she's glad it won't be her responsibility to deal with emergency situations, such as the time she saw lots of smoke billowing from the power plant. "I didn't know what to do," she said. With the help of the school's plant operator, the situation was brought under control.

Bering Strait School District (BSSD) and City of Brevig Mission officials turned to AVEC for help in upgrading the electric system and providing professional utility management. "We're happy that Brevig Mission is part of the AVEC operation and we want to see other villages stabilize their (power) systems too," said Tim Towarak, a BSSD official who helped negotiate the change-over.

Local, state, federal, and co-op resources were combined to upgrade Brevig Mission's power system. The school district and city donated existing equipment, the State of Alaska provided a \$50,000 grant, and AVEC invested \$450,000 with the expectation the federal government would provide a below-market low-interest loan to finance half of that amount.

The effort to qualify Brevig Mission for the federal loan program led to legislation this past fall that could benefit dozens of communities in Alaska. The legislation clarifies that eligible Rural Electrification (REA)* borrowers may use loans to make improvements in communities that already have central station service. AVEC is one of many REA borrowers in Alaska. Most are electric cooperatives.

Walls said that this change provides a new opportunity for Alaska to leverage federal funds to make capital improvements that communities might normally ask the State of Alaska to fund. But, he said, taking advantage of this opportunity requires the state to continue its commitment to solving rural energy problems through its capital investment and Power Cost Equalization (PCE) programs. Federal officials demand that a utility show it will be able to repay a loan. The PCE program, which assists rural consumers in paying their high cost of power, provides some assurance that the utility will have adequate revenue, said Walls.

This story is an excerpted and edited version of a longer story that appeared in the March 1994 issue of *Ruralite* magazine.

* The Rural Electrification Administration is now the Rural Utilities Service.

Rural Alaska will not achieve affordable power unless business, government, utilities and consumers continue to work together.

The effort to see that affordable power is available to Alaska's rural residents has always been a partnership effort. In the early days, local businesses shared electricity they generated with their communities so residents could have electricity. Federal and state agencies have been intimately involved in the effort to develop power systems to serve rural residents.

Rural Alaska will not achieve affordable power unless business, government, utilities — and consumers — continue and strengthen their partnership efforts. Business and government have been and will continue to be significant beneficiaries of reductions in the cost of power, since they pay the largest bills in rural areas.

Business Partnerships

Alaska's businesses can best help the effort in two ways. First, those doing business in rural Alaska can talk with their utility about energy needs and future development plans, working together to identify cost savings that may be possible.

Business also has a strong role to play in promoting rural economic development. Working with utilities in planning for energy needs and to develop economies in a way that yields solid steady growth with consistent energy demands will help to ensure steady progress toward affordable power in rural areas.

Consumer Partnerships

Consumers should stay informed about political changes that may affect them and their ability to access reliable and affordable power. Utilities will continue to help consumers learn about the efficient and wise use of electrical energy, and consumers must act to achieve this in their daily lives.

Government Partnerships

It would be penny-wise and pound-foolish for government to pull out of its long-standing partnership in the effort to achieve affordable power. It still has a critical role to play. Government can be an effective partner in these efforts:

PCE: By following through on the Alaska Legislature's intent to fund the PCE program annually at \$17 million through 2013, the State of Alaska will provide a basic revenue flow to sustain the

An Affordable Future Requires Partnerships

*The Legislature's commitment
to the PCE program will
sustain existing infrastructure
and allow utilities to create
more affordable options.*

existing rural infrastructure and allow utilities to create more affordable options — while continuing to make electricity more affordable for individual rural consumers.

Development Coordination: Rural electric utilities should be consulted when housing, water and sewer, economic development, and other projects that may require electricity are being considered for rural communities. Working together, we can help to identify ways to get the most efficient use of increased electricity usage in our communities.

Infrastructure Development: Government participation through funding and technical assistance will help to speed development of new technologies that can help to reduce the cost of power. Support for the development of intertie systems and other capital improvements will help to improve economies of scale.

Financing: In addition to direct financing of some projects, government can effectively assist the effort to bring affordable power to rural communities by continuing low-interest loan programs that ensure access to the money necessary to maintain and upgrade electric systems.

We all have a shared interest in seeing that rural residents have adequate, safe, and affordable power. If we work together, we will eventually achieve this goal and decrease or eliminate the need for direct government assistance.

There are potentially many areas of cooperation between utilities, business, and government that are yet to be explored. We look forward to working with government and business leaders and the consumers we serve in developing effective strategies to achieve and maintain affordable power in rural Alaska.

Kotzebue: Winds of the Future

Kotzebue Electric Association's (KEA) effort to develop wind power provides a good example of both the challenges facing rural utilities in developing alternatives to diesel generation, and the exciting potential of new technologies to help solve the affordable power puzzle in rural Alaska. It also shows the need for strong public-private sector partnerships in seeking solutions.

The consumer-owned co-op, which serves the rural regional center of Kotzebue, began researching opportunities for wind generation four years ago. First, it needed a good understanding of what the resource could provide and worked with researchers to chart wind patterns in the community. The results were promising.

"We have a wind regime that is stronger in the winter when we have our highest loads, which means that we can utilize wind for peaking generation," said Brad Reeve, KEA's general manager. That means use of wind power to supplement diesel generation can reduce the fuel costs of the diesel system and may eliminate the need for some standby capacity.

The next challenge was to find a turbine supplier. "There were none that wanted to work in the Arctic," said Reeve. "They don't know how their equipment will operate in severe cold, so they don't want to take the risk." Eventually, KEA worked out agreements with two companies, Northern Power Systems (NPS) and Atlantic Orient Company (AOC), that will design and install turbines.

In an initial test phase, AOC will supply three, 80 kilowatt (kw) turbines. The hope is that these can eventually be used in smaller villages when the wind project is complete. KEA is also a partner with

NPS to test a 100 kw turbine being developed for the Antarctic, which will be installed in Kotzebue in 1996. KEA is receiving technical assistance on the project from the U.S. Department of Energy's National Renewable Energy Laboratory (NREL).

Though there is a pressing need to explore alternative generation options, KEA also has a responsibility to be careful in how it spends its consumer-owners' money. So it sought financing



Kotzebue in winter.

partners. Grants from state and federal agencies will pay most of the estimated \$1.5 million cost of the project. So far the federal government is funding most of the project, with \$640,000 in grant funds, while the State of Alaska (\$282,000) and the co-op (\$250,000) are contributing similar shares.

Reeve said it's necessary, and fair, to spread the risk, because the ability of the wind turbines to effectively help lower costs has yet to be proven and the project could benefit others besides KEA consumers. "There aren't many machines in the Arctic, so we won't know until we have some operating costs on it exactly what the cost-benefits are going to be," Reeve said. "If we make it successful here then it's going to help out a lot of other coastal communities."

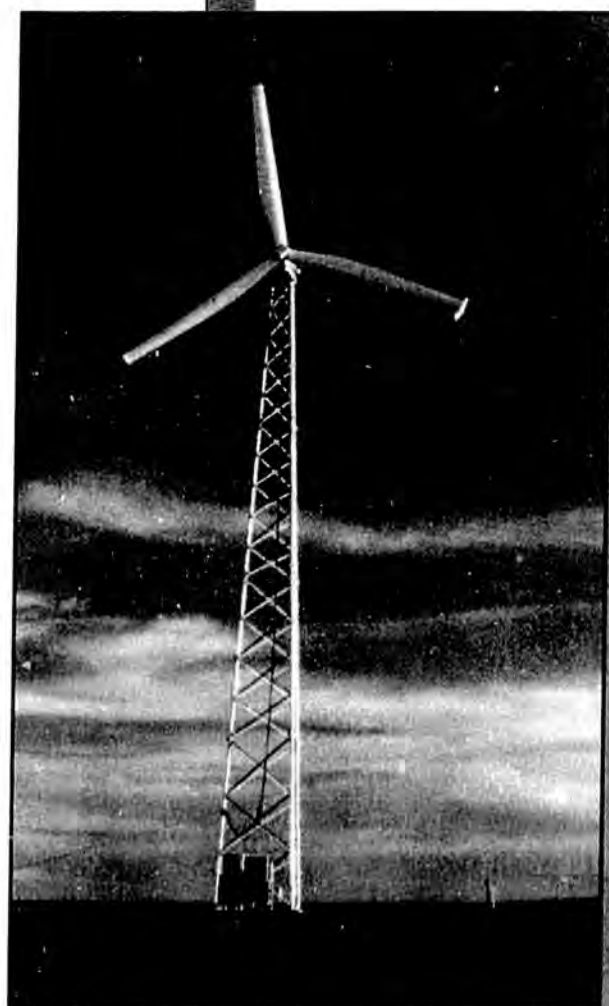
KEA is already working with a nearby village on another wind project. The one in Deering, just across Kotzebue Sound, will include a system for using excess wind power to help heat community buildings.

KEA and NREL worked together in successfully applying for a \$600,000 "Innovative Technology Grant" from the U.S. Environmental Protection Agency for the project. It's expected the system will be installed sometime in the next year. It will include a cluster of American-made wind turbines tied into the current diesel system and is expected to save about 45,000 gallons of fuel per year.

The Kotzebue experience shows that it takes years to do the appropriate planning and implementation of alternative energy projects that may help to lower rural energy costs. "Anytime you're dealing with a new technology area, you do have to spend a lot of time to research and understand how it's going to function in a new environment; that's something that just takes a lot of time," Reeve said.

That's one of the reasons it's important to keep the Power Cost Equalization (PCE) program around, with the financial stability it provides rural utilities, until it's clear these alternatives work, he said. "Having (PCE) around allows us to be able to try some alternatives that we wouldn't be able to do otherwise," Reeve said.

An Atlantic Orient Corporation 15/50 wind turbine on Prince Edward Island in eastern Canada.



The Alaska Rural Electric Cooperative Association (ARECA) is the statewide trade association for electric utilities in Alaska. In August 1995, ARECA's Board of Directors formally recognized the ARECA Rural Issues Forum as an advisory group of the organization.

The Forum includes the chief executive officers of ARECA member electric utilities that participate in the Power Cost Equalization (PCE) program. At this time, there are 17 utilities participating that provide electricity to more than 53,000 people in 100 communities. Nine of the member utilities are consumer-owned cooperatives, four are municipal utilities, three are investor or employee-owned, and one is a regional electrical authority.

ARECA Rural Issues Forum

Alaska Power and Telephone serves 2,971 electricity consumers in 21 communities, including: Skagway, Tok, Tanacross, Dot Lake, Chistochina, Mentasta Lake, Tetlin, Healy Lake, Allakaket, Alatna, Craig, Hydaburg, Hollis, Bettles, Evansville, Coffman Cove, Whale Pass, Eagle, Eagle Village, Northway and Northway Village.

Alaska Village Electric Cooperative serves 5,679 consumers in 50 villages with plants in: Alakanuk, Ambler, Andreafski, Anvik, Brevig Mission, Chevak, Eek, Elim, Emmonak, Gambell, Goodnews Bay, Grayling, Holy Cross, Hooper Bay, Huslia, Kalskag (Lower & Upper), Kasigluk, Kaltag, Kiana, Kivalina, Koyuk, Marshall, Mekoryuk, Minto, Mountain Village, New Stuyahok, Noatak, Noorvik, Nulato, Nunapitchuk, Old Harbor, Pilot Station, Pitkas Point, Quinhagak, Russian Mission, St. Marys, St. Michael, Savoonga, Scammon Bay, Selawik, Shageluk, Shaktoolik, Shishmaref, Shungnak, Stebbins, Togiak, Toksook Bay, Tununak and Wales.

City of Galena serves 320 consumers in Galena.

City of Unalaska serves 844 consumers in Unalaska.

Cordova Electric Cooperative serves 1,559 consumers in Cordova.

Haines Light and Power serves 950 consumers in Haines.

INN Electric Cooperative serves 266 consumers in Newhalen, Nondalton and Iliamna.

ARECA and the Rural Issues Forum

Kotzebue Electric Association serves 1,150 consumers in Kotzebue.

Levelock Electric Cooperative serves 75 consumers in Levelock.

McGrath Light and Power serves 267 consumers in McGrath.

Middle Kuskokwim Electric Cooperative serves 183 consumers in Sleetmute, Stony River, Chuathbaluk, Crooked Creek and Red Devil.

Naknek Electric Association serves 907 consumers in Naknek, South Naknek and King Salmon.

Nome Joint Utility Systems serves 1,940 consumers in Nome.

Nushagak Electric Cooperative serves 1,277 consumers in Dillingham and Aleknagik.

Tlingit-Haida Regional Electrical Authority serves 1,507 consumers in Angoon, Hoonah, Kake, Kasaan, Klawock and the Chilkat Valley.

Unalakleet Valley Electric Cooperative serves 311 consumers in Unalakleet.

Yakutat Power serves 358 consumers in Yakutat.

References

In addition to references specifically mentioned in the text, and information provided by ARECA member utilities, the following references were used in developing the information presented in this booklet:

"Alaska Electric Power Statistics" Alaska Systems Coordinating Council and Alaska Energy Authority, Twentieth Edition. October 1995.

"Alaska Energy Strategy," State of Alaska, Division of Energy, Department of Community and Regional Affairs. April 1994.

"Anchorage Visitor Survey," Anchorage Convention and Visitor Bureau. September 25th to October 9th, 1993.

Consumer Price Index for All Urban Consumers (CPI-U) Anchorage and U.S., 1980 -1st half 1995; Table, U.S. Department of Labor, Bureau of Labor Statistics. Updated August 11, 1995.

National Rural Electric Cooperative Association (NRECA), Don Smith. Communication regarding national electricity cost and use. September 29, 1995.

"Order Issuing Notice of Proposed Base Amount for Power Cost Equalization Calculations," Proposed Order, Alaska Public Utilities Commission. August 23, 1995.

"Purchasing Preferences of Levelock Households: A Survey of Levelock Residents," Community Development Program, Cooperative Extension Service, University of Alaska, Fairbanks. August, 1991.

"Rural Alaska's Different Economic Picture," Neal Fried, *Alaska Economic Trends*. January 1994.

"Statistical Report of the Power Cost Equalization Program," Fiscal Year, 1995, Eighth Edition, State of Alaska, Division of Energy, Department of Community and Regional Affairs. December 1995.

Photo Credits

Page 8: Patrick J. Sullivan

Pages 10 and 11: Patti Harper, ARECA

Page 15: Patti Harper, ARECA

Pages 24 and 25: Peter Metcalfe, Kake Tribal Corporation

Page 29: Richard Montagna

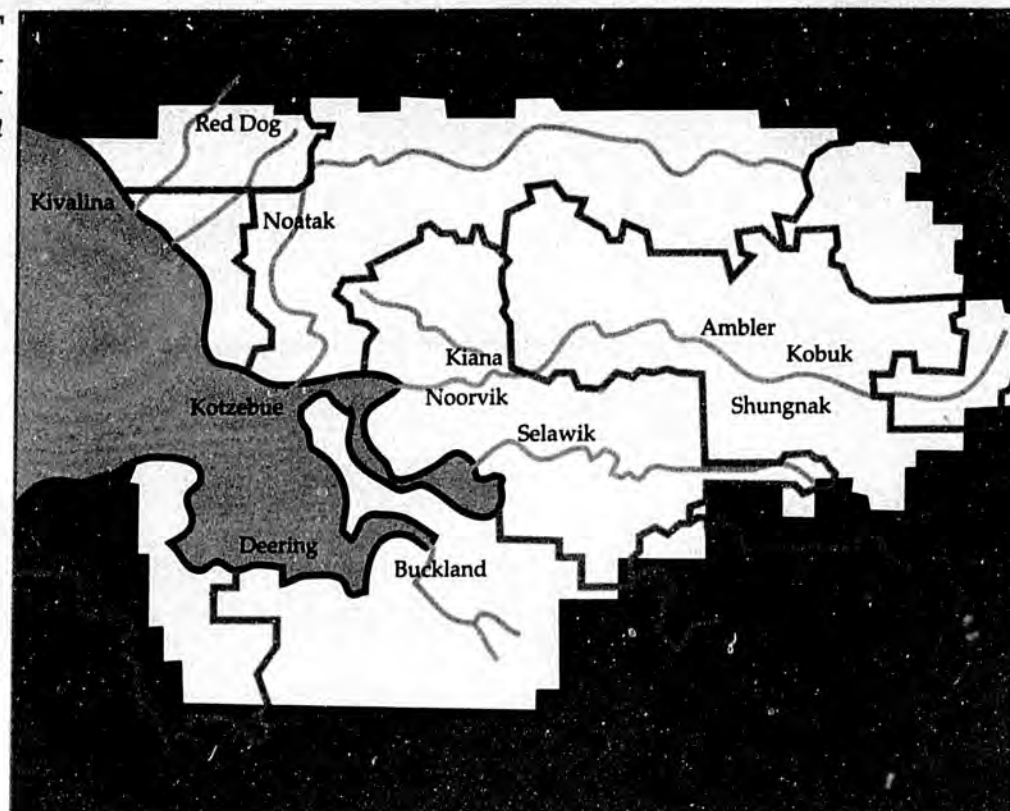
Page 36: Patti Harper, ARECA

Page 40: Patti Harper, ARECA

Page 41: Atlantic Orient Corporation

NORTHWEST ARCTIC BOROUGH

The Region



The Northwest Arctic Borough is the second-largest borough in the state of Alaska, comprising approximately 39,000 square miles. Extending 175 miles north to south and 250 miles east to west, the borough is roughly the same size as the state of Indiana.

The borough is home to 6,641 people in 11 communities. Over 90 percent of the residents are Inupiaq Eskimos whose ancestors settled the land over 10,000 years ago. Then, as today, life in the region depended on the resources of the land — the bounty of the sea, wild game and fowl, and the berries and plants of the earth.

The terrain of northwest Alaska varies dramatically, with mountains, giant sand dunes, tundra and boreal forests. Numerous rivers thread the region from surrounding mountain ranges. Major waterways include the Kivalina, Noatak, Kobuk, Selawik and Ambler rivers.

While the region's economy is still largely based on subsistence activities, the land offers great opportunities for economic development. Mineral deposits within the borough include zinc, lead, silver, gold, coal, jade, copper and other metals. There is also opportunity for expanded tourism and seafood marketing. The Northwest Arctic Borough's goal is to manage the land and its resources wisely so as to strengthen the local economy while protecting the traditional lifestyle of its residents.

Local Government

The Northwest Arctic Borough was incorporated as a first-class borough under state law in 1986 with full authority over education, planning, and taxation. In 1987, borough voters adopted a home-rule charter, the highest form of local government permitted under state law. The borough has a strong mayor form of government with an 11-member assembly.

The borough is based in Kotzebue, the transportation, commercial and communication center for the region. Kotzebue is located 549 air miles northwest of Anchorage.

Regional Organizations

In addition to the borough government, three other regional institutions have a strong impact on the social, cultural and economic activities within the borough.

NANA Regional Corporation

Perhaps the most influential of all organizations is NANA Regional Corporation, organized under the Alaska Native Claims Settlement Act (ANCSA) of 1971. Under ANCSA, regional and village corporations received cash and land in settlement of the Natives' aboriginal land claims. In the northwest region, 8,500 shareholders — all Inupiaq Eskimos — enrolled in NANA.

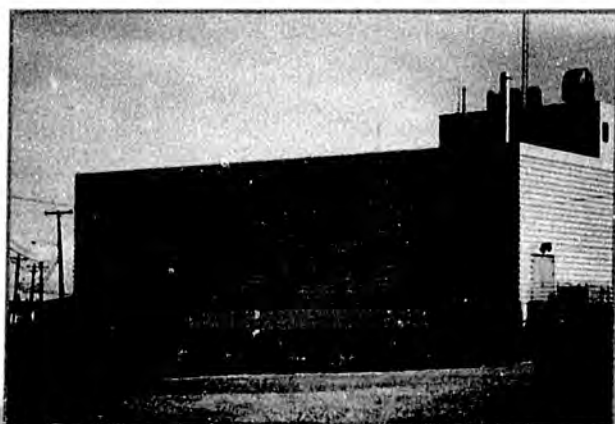
such, it has initiated much of the economic development of the region's private sector. NANA's diverse portfolio ranges from ownership of the world class lead/zinc reserves at Red Dog Mine to oil field services and personnel services for the oil industry, to industrial security, catering and housekeeping as well as hotel ownership, crafts marketing and other related hospitality investments.

In all its enterprises, NANA provides employment and training opportunities for its shareholders.

Maniilaq Association

Maniilaq Association is a regional non-profit organization which serves the health and social needs of Northwest Arctic Borough villages and Pt. Hope. In the 1970s, Maniilaq managed health and social service pro-

NANA, like all Native corporations, was formed as a profit-making entity. As



grams established by the federal government to meet its obligation to Native Americans. By the 1990s, Maniilaq's role had expanded to include management of state programs and services.

Maniilaq currently oversees a wide variety of services, including hospital and dental services, counseling, substance abuse treatment, emergency shelter, village government assistance, vocational training and housing assistance. Although based in Kotzebue, Maniilaq has a presence in all the villages it serves through a network of community clinics, adult education programs and tribal operations.

Northwest Arctic Borough School District

The Northwest Arctic Borough School District provides public education in all 11 villages, from early childhood education through adult courses. The district seeks to prepare students with the skills to succeed in the modern world, enhanced by a knowledge of the traditional Inupiat culture. Accordingly, a standard curriculum is blended with the language, history and traditional activities of the Inupiat people.

The Northwest Arctic Borough School District, with an annual budget of more than \$22 million, is the largest employer in the borough, employing nearly 400 personnel, including 130 teachers and principals. The administrative staff, based in Kotzebue, travels extensively throughout the region assisting schools with their educational programs and needs. The district also operates a post-secondary technical center, located in Kotzebue.



Other Major Employers/ Contributors to the Economy

Red Dog — The largest economic project in the Northwest Arctic Borough is the Red Dog Mine, located 90 miles north of Kotzebue. Owned by NANA Regional Corporation and operated by Cominco, Inc., the mine holds the richest zinc deposits in the world, as well as a large supply of lead. At peak production, Red Dog is expected to produce about 5 percent of the world's zinc supply and provide approximately 360 direct jobs. The mine, which has a 50-year life, provides a steady wage base of \$10 million to \$15 million on an annual basis to local residents.

Federal and State Government — The economy of the Northwest Arctic Borough is strongly driven by public sector spending. The state and federal governments have provided funding for the region's infrastructure, such as water and sewer systems, community facilities and bulk fuel storage tanks. Future construction projects include airports, a new hospital, water and sewer systems, and major capital project repairs in Kotzebue and several villages.

Other Private Businesses — The private sector is the smallest segment of the borough's economy, and is mainly focused on providing goods and services to the public sectors. A survey taken in 1989 showed that 266 businesses operated in the borough. Sixty-five of those businesses provided real estate services, and 45 provided merchandise, groceries or miscellaneous retail items. The remainder supplied a wide variety of goods and services, ranging from agricultural products to sporting goods.

Dividends — Dividend payments are an important part of the region's economy. The Alaska Permanent Fund dividends to local residents total approximately \$4.5 million yearly. NANA and Kikiktagrük Inupiat Corporation (the Kotzebue village corporation) issue dividends that total between \$1.5 million and \$2 million each year.



Population and Labor Force

The population of the Northwest Arctic Borough is 90 percent Inupiaq Eskimo and 7 percent Caucasian. According to a 1991 economic survey, nearly 40 percent of the population works full or part time, and slightly more than one-fourth engage in seasonal or temporary work.

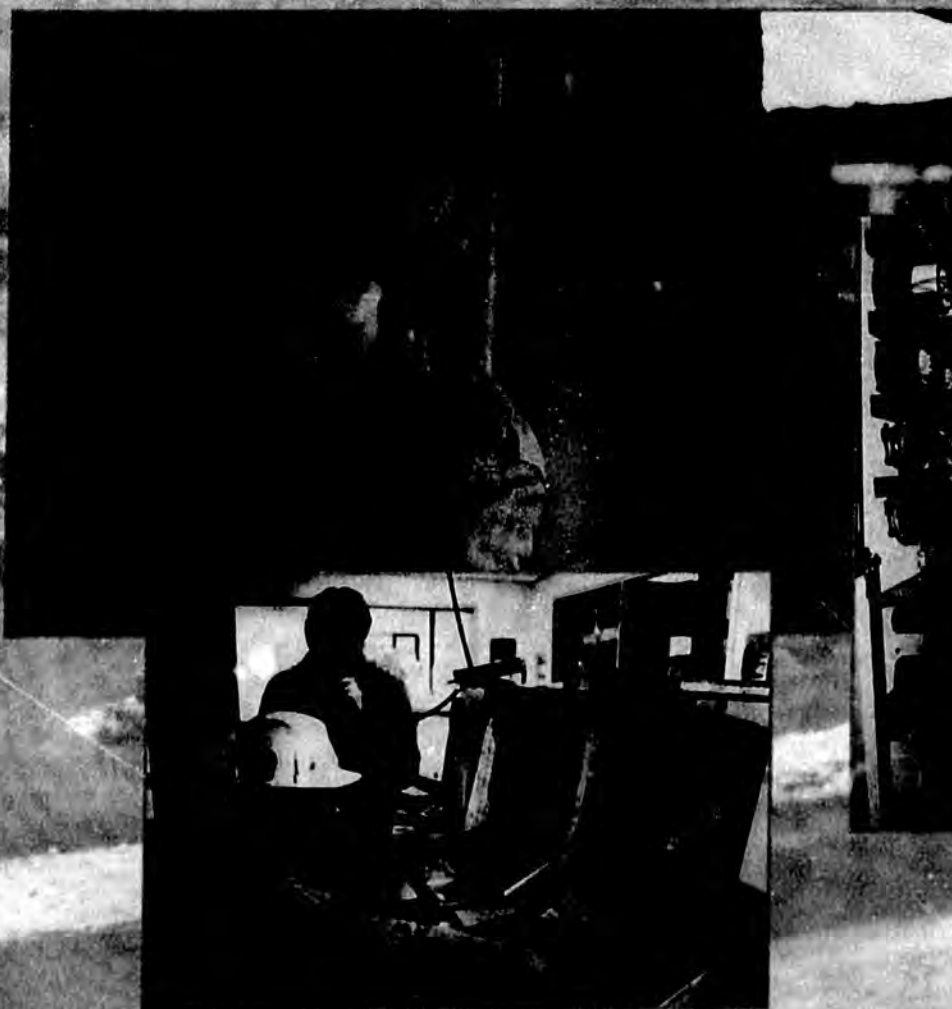
The household income for families in the region tends to be low, since most of the population relies heavily on subsistence. About 28 percent of households earn more than \$50,000/year, 20 percent earn between \$35,000 and \$49,000, and 52 percent earn less than \$20,000. The labor force is comprised of 2,220 men and women.

Education

Residents have the opportunity to take post-secondary courses at the following institutions:

Chukchi Campus — Chukchi Campus is a branch of the University of Alaska Fairbanks College of Rural Alaska, based in Kotzebue. Chukchi Campus provides academic programs throughout the region through the use of audio-conferences. Students can pursue studies in math and English, a two-year degree in General Studies or a B.A. degree in education, rural development or social work.

Alaska Technical Center — The Alaska Technical Center (ATC) is an adult vocational school built in 1981 specifically to meet the vocational and technical needs for both nine-month courses and employer-designed short courses. The result is a small but very efficient school with a high placement rate among graduates. The long-term core programs include: Building Industrial Technology, Health Occupations, and Office Occupations. Some of the short courses include Adult Basic Education, Standard First Aid/CPR, Introduction to Computers, Computer Applications, Coast Guard License Preparation, and a Management Development Series. Although located in Kotzebue, ATC serves students from all over the state.



CORRECTION

**THE FOLLOWING DOCUMENT(S)
HAVE BEEN REFILMED TO
ASSURE LEGIBILITY OR PAGINATION**



Rev. 6/98

Central Microfilm Services
Department of Education
State of Alaska

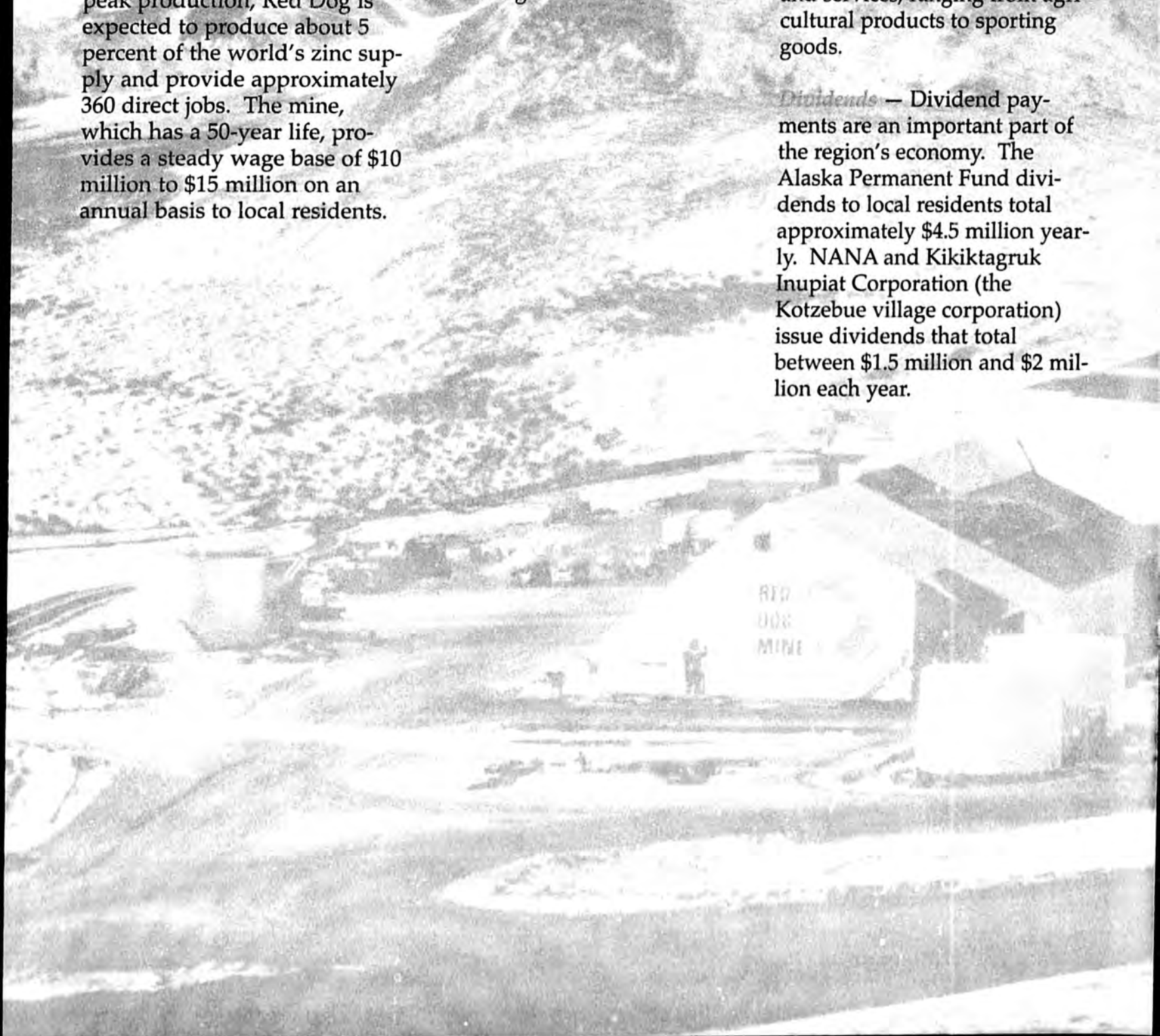
*Other Major Employers/
Contributors
to the Economy*

Red Dog — The largest economic project in the Northwest Arctic Borough is the Red Dog Mine, located 90 miles north of Kotzebue. Owned by NANA Regional Corporation and operated by Cominco, Inc., the mine holds the richest zinc deposits in the world, as well as a large supply of lead. At peak production, Red Dog is expected to produce about 5 percent of the world's zinc supply and provide approximately 360 direct jobs. The mine, which has a 50-year life, provides a steady wage base of \$10 million to \$15 million on an annual basis to local residents.

Federal and State Government — The economy of the Northwest Arctic Borough is strongly driven by public sector spending. The state and federal governments have provided funding for the region's infrastructure, such as water and sewer systems, community facilities and bulk fuel storage tanks. Future construction projects include airports, a new hospital, water and sewer systems, and major capital project repairs in Kotzebue and several villages.

Other Private Businesses — The private sector is the smallest segment of the borough's economy, and is mainly focused on providing goods and services to the public sectors. A survey taken in 1989 showed that 266 businesses operated in the borough. Sixty-five of those businesses provided real estate services, and 45 provided merchandise, groceries or miscellaneous retail items. The remainder supplied a wide variety of goods and services, ranging from agricultural products to sporting goods.

Dividends — Dividend payments are an important part of the region's economy. The Alaska Permanent Fund dividends to local residents total approximately \$4.5 million yearly. NANA and Kikiktagruk Inupiat Corporation (the Kotzebue village corporation) issue dividends that total between \$1.5 million and \$2 million each year.



Population and Labor Force

The population of the Northwest Arctic Borough is 90 percent Inupiaq Eskimo and 7 percent Caucasian. According to a 1991 economic survey, nearly 40 percent of the population works full or part time, and slightly more than one-fourth engage in seasonal or temporary work.

The household income for families in the region tends to be low, since most of the population relies heavily on subsistence. About 28 percent of households earn more than \$50,000/year, 20 percent earn between \$35,000 and \$49,000, and 52 percent earn less than \$20,000. The labor force is comprised of 2,220 men and women.

Education

Residents have the opportunity to take post-secondary courses at the following institutions:

Chukchi Campus — Chukchi Campus is a branch of the University of Alaska-Fairbanks, College of Rural Alaska. Based in Kotzebue, Chukchi Campus provides academic programs throughout the region through the use of audio-conferences. Students can pursue studies in math and English, a two-year degree in General Studies or a B.A. degree in education, rural development or social work.

Alaska Technical Center — The Alaska Technical Center (ATC) is an adult vocational school built in 1981 specifically to meet the vocational and technical needs for both nine-month courses and employer-designed short courses. The result is a small but very efficient school with a high placement rate among graduates. The long-term core programs include: Building Industrial Technology, Health Occupations, and Office Occupations. Some of the short courses include Adult Basic Education, Standard First Aid/CPR, Introduction to Computers, Computer Applications, Coast Guard License Preparation, and a Management Development Series. Although located in Kotzebue, ATC serves students from all over the state.



Land Ownership and Development Potential

Major land owners within the region are NANA Regional Corporation, Kikiktagrut Inupiat Corporation, the Northwest Arctic Borough, the State of Alaska and the federal government. More than half of all the land within the borough is federally owned and is protected as parks, preserves and wildlife refuges. State lands are primarily located in the upper Kobuk, Kivalina and Seward Peninsula areas. These lands have high mineral potential.

Under the terms of ANCSA, NANA was entitled to select more than two million acres of land, most of it located around the villages in the region. The Kikiktagruk Inupiat Corporation of Kotzebue owns 161,000 acres of surface acreage. The Northwest Arctic Borough is entitled to 285,000 acres of state lands, and is currently in the process of making its selection.

Planning and zoning is overseen by the Northwest Arctic Borough Planning Department. While development projects on private lands must be coordinated with the private owners, all development requests must be approved by the Borough Planning Department.

Potential Areas of Economic Growth

Secondary jobs — Red Dog Mine is expected to generate between \$7 million and \$10 million annually in local wages, money which has the potential of creating secondary employment in goods and services. The borough is in the process of developing an assistance program for new or expanding businesses in the region.

Commercial Fishing — A small salmon fishery currently exists in the Northwest Arctic Borough, and has the potential for expansion. The borough administration is exploring ways to develop value-added products to the fishery, such as processing roe or producing smoked salmon. Other commercial fisheries might also be developed, using such species as whitefish and flounder.



Russian Far East — The warming relations between Alaska and the Russian Far East could create opportunities in tourism, trade and cultural exchanges. The Northwest Arctic Borough, NANA and the Soviet precursor of the Chukotka district of Russia have already signed a protocol to further ties between the two regions.

Tourism — Tour Arctic, a NANA subsidiary, currently offers visitors an opportunity to explore Kotzebue and the nearby area. This growing tourism industry can be expanded further with improved marketing of locally-made Native arts and crafts; side excursions from Kotzebue to villages, the Red Dog Mine or the Russian Far East; and enhanced shopping opportunities for tourists in the evenings. Increased sportfishing opportunities for visitors are also being developed throughout the region. Interested parties should contact the Borough for further information about sportfishing opportunities.

Mineral Development — With the operation of the Red Dog Mine now on-line, attention can be turned to the development of other mineralized areas. The most promising are:

- Lead/zinc/silver deposits northwest of the Red Dog Mine
- Copper in the Ambler Mining District
- Chicago Creek coal deposits on the Seward Peninsula

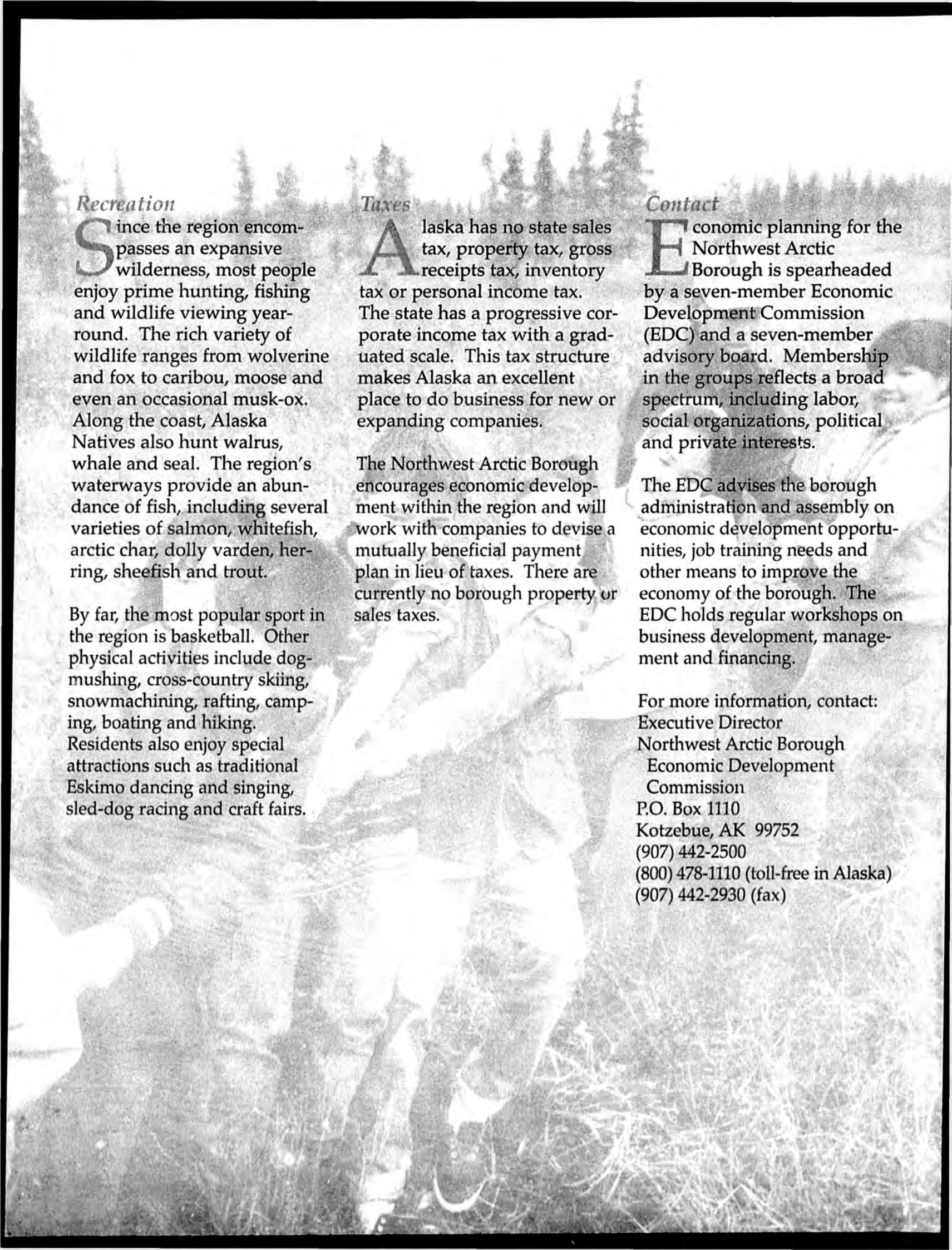
Communications

The Northwest Arctic Borough is linked to the rest of Alaska and the world with a state-of-the-art telecommunication network. Residents and businesses enjoy excellent long-distance phone and fax service, broadcast and cable television, public radio, statewide and local newspapers, and dependable mail service.

Transportation

The only way to reach the Northwest Arctic Borough is by air or water. One passenger airline and two freight airlines provide daily service to Kotzebue from Anchorage. Individuals wishing to travel or send cargo to the outlying communities have a choice of several scheduled and chartered airlines based in Kotzebue, Ambler and Kiana. The region is also served by air carriers from Anchorage (Frontier and Alaska Airlines.) Crowley Marine Services and Bowhead Transportation provide barge freight services to Kotzebue, and from Kotzebue to the outlying communities. Air Cargo is also available directly from Anchorage by Lynden Air and Northern Air Cargo.





Recreation

Since the region encompasses an expansive wilderness, most people enjoy prime hunting, fishing and wildlife viewing year-round. The rich variety of wildlife ranges from wolverine and fox to caribou, moose and even an occasional musk-ox. Along the coast, Alaska Natives also hunt walrus, whale and seal. The region's waterways provide an abundance of fish, including several varieties of salmon, whitefish, arctic char, dolly varden, her-ring, sheefish and trout.

By far, the most popular sport in the region is basketball. Other physical activities include dog-mushing, cross-country skiing, snowmachining, rafting, camping, boating and hiking. Residents also enjoy special attractions such as traditional Eskimo dancing and singing, sled-dog racing and craft fairs.

Taxes

Alaska has no state sales tax, property tax, gross receipts tax, inventory tax or personal income tax. The state has a progressive corporate income tax with a graduated scale. This tax structure makes Alaska an excellent place to do business for new or expanding companies.

The Northwest Arctic Borough encourages economic development within the region and will work with companies to devise a mutually beneficial payment plan in lieu of taxes. There are currently no borough property or sales taxes.

Contact

Economic planning for the Northwest Arctic Borough is spearheaded by a seven-member Economic Development Commission (EDC) and a seven-member advisory board. Membership in the groups reflects a broad spectrum, including labor, social organizations, political and private interests.

The EDC advises the borough administration and assembly on economic development opportunities, job training needs and other means to improve the economy of the borough. The EDC holds regular workshops on business development, management and financing.

For more information, contact:

Executive Director

Northwest Arctic Borough

Economic Development
Commission

P.O. Box 1110

Kotzebue, AK 99752

(907) 442-2500

(800) 478-1110 (toll-free in Alaska)

(907) 442-2930 (fax)



Noorvik

Location

Noorvik is located on the right-hand bank of the Nazuruk Channel of the Kobuk River, 33 miles northwest of Selawik and approximately 45 miles east of Kotzebue. The village was established by the Kowagmuit Eskimo fishermen and hunters from the village of Deering in the early 1900s.

Noorvik, which means "a place that is moved to," was also settled by people from Oksik, a few miles upriver. The village is downriver from the 1.7-million-acre Kobuk Valley National Park.

The People

The population of Noorvik declined from 1920 through the 1930s, but has rapidly increased since then. The 1990 census put the population at 543 people, of whom nearly 94 percent are Inupiaq Eskimos.

Labor and Employment

The Noorvik economy is primarily based on subsistence, and is supplemented with cash income in most cases. Many residents find seasonal employment in the summer at Red Dog Mine, commercial fishing in Kotzebue or in fire fighting. Depending on the need, the Bureau of Land Management hires between 16 and 32 firefighters from Noorvik each summer. Residents also find work in occasional construction projects.

The Northwest Arctic Borough School District provides most of the year-round employment in the community, with 33 full-or part-time employees. The Maniilaq Association employs 10 people, the City of Noorvik employs five, and the Alaska National Guard Armory has one full-time and 22 part-time employees. Other contributors to the economy include the Noorvik Public Health Clinic, the Noorvik IRA, and Noorvik's two stores. The Morris Hotel provides food and lodging to tourists and construction workers.

Climate and Topography

Noorvik is located in the transitional climate zone which is characterized by long, cold winters and cool summers. Temperature extremes of 87 degrees in the summer and minus 54 degrees in the winter have been recorded, with summer temperatures averaging 60 degrees. Over 16 inches of precipitation falls annually, including 60 inches of snow. Prevailing winds are easterly in the winter and westerly in the summer, averaging 10 knots. Noorvik's topography consists of a sloping river bluff with low bushes and trees.



Transportation Services and Facilities

The major means of transportation in Noorvik are barge, plane, small boat and snowmachine. There are no roads linking the village to other communities.

Air — The Robert (Bob) Curtis Memorial Airport has a 2,600-foot by 100-foot gravel runway, with runway lights and navigational aids. There is a 200-foot by 50-foot taxiway and a 200-foot by 100-foot parking apron. The airport, maintained year-round by the city, is the second-largest airfield in the borough. Six airlines provide charter and regular scheduled air service to Noorvik: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There are two charter-air guide services and one cargo-only airline. A round-trip ticket from Noorvik to Kotzebue starts at \$70.

Land — Roads extend throughout the village and out of town to the airstrip, cemetery and solid waste disposal site, as well as down to the waterfront. Residents use the many trails, especially along streams, for inter-village travel and access to hunting and fishing grounds. Villagers commonly use all-terrain vehicles and snowmachines in the winter.

Water — Crowley Marine Services barges general supplies and fuel to Noorvik from July through mid-September in small, shallow-draft vessels at the rate of \$17.10/100 lbs. Small boats are often used for travel to other villages for visits and supplies as well as for subsistence hunting and fishing.

Community Facilities

Community buildings in Noorvik include the city office, the IRA

(tribal council) office, health clinic, water and sewer plant, National Guard Armory and Public Safety Building, which accommodates between 300 and 400 people. Noorvik's two stores sell and deliver food, dry goods, fuel, gas, and a variety of other products.

Housing

In Noorvik there are approximately 80 homes, none for rent. The Northwest Inupiaq Housing Authority (NIHA) recently completed repairs and insulation upgrades on 29 homes, spending an average of \$12,000 on each unit. The repairs have helped homeowners lower their monthly heating costs significantly. NIHA has also recently spent \$1.2 million to build 10 new homes for low-income families under a HUD contract.

Land Ownership

The townsite trustee is in the process of transferring established lots to existing home-owners. Noorvik is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

Noorvik incorporated as a second-class city in 1964 and has a mayor-council form of government. The city employs an administrator, clerk, finance director, water/sewer operator and village public officer. Current services include:

Water — The present water supply consists of an intermittent pumping system using the Kobuk River as a source. Water is filtered, chlorinated and fluoridated in the utility building in the west part of town. From the storage tank, a conventional system provides pressure to a single-main circulating system which transports the water throughout the village in utilidors. Water samples are routinely sent to Fairbanks to ensure the water's purity. Monthly water and sewer charges are \$85 for homes, and \$1,702 for the school district.

Sewer — Noorvik has a vacuum sewer system in which sewage is carried by air instead of water. A constant vacuum is maintained by vacuum pumps in the 60,000-gallon collection tank at the end of the sewer mains. The system requires special toilets and water valves which collect waste from conventional sinks, lavatories and showers.

Solid Waste Disposal — Solid waste is collected by the city and deposited in a solid waste disposal area.

Public Safety — Noorvik has two public safety officers and a Public Safety Building which can accommodate three people in its cells.

Other Services and Utilities

Health Services — A health clinic, operated by Maniilaq Association, is staffed by four health aides who are on call 24 hours a day. Routine

medical services are offered between 10 a.m. and 12 p.m. and from 1 p.m. to 5 p.m. daily, but patients needing emergency services fly to Kotzebue. The single-story clinic has seven rooms, including two examination rooms.

Electricity — The Alaska Village Electric Co-op supplies power to the schools and residents of the village. The generating facility includes three diesel generators with a peak capacity of 350 kw. Monthly rates are as follows: residential use, 49.98¢/kwh; small commercial use, 45.98¢/kwh; and large commercial use, 44.08¢/kwh for the first 1,500 kwh in one month, and then 36.08¢/kwh thereafter in that month.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Fuel — The Noorvik Native Store sells heating oil for \$2.61/gallon, and gasoline for \$2.81/gallon.

Communications

Noorvik keeps up-to-date on news and entertainment through the selected network programming available on the Alaska Rural Communications System (ARCS), through Microcom (cable television) of Anchorage, and through public radio station KOTZ. The village also occasionally receives other Anchorage and Fairbanks radio stations. A wide range of newspapers are delivered to the community including the Arctic Sounder, Tundra Times and Anchorage Daily News. The post office is open Monday through Saturday and mail is delivered to the community on a daily basis.

Schools

Both elementary and high school level classes are held in the Noorvik Aqqaq High School. Currently, there are approximately 118 elementary, middle and high school students enrolled in the school system. Built in 1974-75, the school is a modern facility with computers installed. Chukchi Campus, a telecommunications service of the University of Alaska-Fairbanks, offers post-secondary courses in Noorvik.

For more information, contact:

City of Noorvik
P.O. Box 146
Noorvik, AK 99763
(907) 636-2100/2211
(907) 636-2135 (fax)



Buckland

Location

The community of Buckland is located on the west bank of the Buckland River, about 75 miles, southeast of Kotzebue. Although this site was settled in the late 1960s, the community of Buckland existed under various names at other locations, including Elephant Point, Old Buckland and New Site. The presence of many fossil finds at Elephant Point indicates that site was used by prehistoric civilization.



The People

The 1970 census showed a population of 104 and a 1975 update estimated the population at 145. Since then, the community has steadily grown, and estimates show that 440 persons now live in Buckland. A recent survey indicates that 95 percent of the population is Inupiaq Eskimo.

Labor and Employment

Buckland primarily exists on subsistence activities. According to a 1989 survey, 20.3 percent of the population works full time, 25.4 percent works part time, and 27.4 percent holds seasonal or temporary jobs. More than one-fourth do not hold paying jobs. The Northwest Arctic Borough School District is a major employer, with 18 employees in Buckland.

A reindeer herd of more than 2,000 supplements the local economy; helpers are paid in meat. Other employers include the City of Buckland (which employs nine persons), the Northwest Arctic Borough School District (18), Maniilaq Association (five), the health clinic (four), Buckland Native Store (four) and a private store (one).

Climate

Cool summers and long, cold winters characterize Buckland's transitional climate zone. Although temperatures of 85 degrees and minus 60 degrees have been recorded, temperatures are usually closer to 59 degrees in summer and minus 19 degrees in winter. Precipitation is light, with less than nine inches annually, including 35 to 40 inches of snow. Winds average 10 knots, and are easterly in winter and westerly in summer.

Buckland's landscape is made up of riverbed tundra with low bushes and no trees.

Transportation Services and Facilities

Buckland's main means of transportation are plane, barge, small boat and snowmachine; there are no roads linking Buckland with other parts of the state.

Air — Most supplies are brought into Buckland by air. Flying weather is considered good year-round, but is best in late winter and spring. Adverse crosswinds restrict flying approximately 5 percent of the time, primarily in winter. Buckland has a 2,600-foot by 100-foot gravel airstrip. Six chartered and regular scheduled air carriers serve Buckland: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There is one airline that ships only cargo and two that offer charter-air guide service. A round-trip ticket from Kotzebue to Buckland starts at \$80.

Water — Crowley Marine Services barges general supplies and fuel each year from July to September at the rate of \$20.50/100 lbs. Small boats are often used for travel to other villages for visits, supplies and subsistence hunting and fishing.

Land — Roads extend through the village to the river, airstrip and waste disposal site. Villagers use the many trails along the river for year-round inter-village travel and for hunting and fishing. Residents commonly use all-terrain vehicles and snowmachines to travel in the winter, but rarely use dog sleds except for recreation.

Community Facilities

The city building houses the city administration office, the police department, NANA Fuel Project (an energy project of the regional Native corporation) and Maniilaq Association, a regional non-profit health and social service agency. A central

washeteria offers showers, a Laundromat and drinking water. Other community buildings include a community hall, health clinic, Friends Church and a snowmachine sales and repair shop.

Housing

Currently, there are 72 homes in Buckland. Although six homes are available for rent, four of those are usually occupied by teachers. The Northwest Inupiaq Housing Authority recently upgraded 30 houses, spending an average of \$12,000 on each for insulation and repairs to help cut homeowners' heating bills, which can average \$300/month. Heating oil and gasoline cost \$2.85/gallon through the NANA Fuel Project.

Land Ownership

The township trustee is in the process of transferring established lots to existing homeowners. Buckland is eligible to receive title to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

Buckland was incorporated as a second-class city in 1966, and has a mayor-council form of government. The city employs an administrator, clerk, part-time mechanic, electric plant operator, patrol officer, and washeteria clerk. The city levies a 2 percent sales tax and offers the following services:

Water — Water is pumped from the Buckland River through a 300-foot-long insulated transmission line to a community washeteria. The water is filtered, chlorinated and fluoridated in the washeteria building before being stored in a 100,000-gallon insulated water storage tank. Residents obtain drinking water from the washeteria and use the facility for showers and laundry. Buckland school facilities, connected to the washeteria, have full plumbing. Residents are charged for the use of the washeteria, the school district is charged \$1,500/month for water and sewer service.

Wastewater — Greywater from the washeteria is stored in a holding tank located in the washeteria building, and is pumped periodically through a 500-foot-long main to a greywater treatment lagoon. In individual homes, chemical toilets and honey buckets are used.

Solid Waste Disposal — Residents dispose of solid waste at a sewage lagoon.

Public Safety — A patrol officer oversees public safety.

Fire Protection — Buckland is served by a volunteer chief and fire department, with the use of a fire truck.

Electricity — A village co-op maintained by the Indian Reorganization Act (IRA) tribal council provides electricity to Buckland. There are three diesel generators with a peak capacity of 100 kw. Costs average \$100 to \$150 a month at 33¢/kwh for residential use.

Other Services and Utilities

Health Services — A health clinic, operated by Maniilaq Association, has three health aides who are on call 24 hours a day. Routine medical services are offered 9 a.m. to 12 p.m. and from 2 p.m. to 3 p.m. daily. In cases of emergency, patients fly to Kotzebue. The clinic has full water and sewer service.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Communications

Buckland stays up-to-date on news and entertainment through public radio station KOTZ, through Microcom (cable television) of Anchorage, and through the selected network programming on the Alaska Rural Communications System (ARCS). Buckland also receives two weekly newspapers, the Arctic Sounder and Tundra Times. The community enjoys daily mail delivery, and the post office is open Monday through Saturday.

Schools

The school in Buckland serves 163 students from early childhood education to 12th grade. The staff includes one principal, eight teachers and 12 classified employees. The school consists of three buildings. One school building holds the gymnasium, library and six classrooms, the second houses pre-kindergarten classes, and the smallest building houses a workshop. Post-secondary courses are available in Buckland through Chukchi Campus.

For more information, contact:

City of Buckland
P.O. Box 49
Buckland, AK 99727
(907) 494-2121
(907) 494-2138 (fax)



Kiana

Location

Kiana is located on the north bank of the Kobuk River, 57 air miles east of Kotzebue. Long ago, Kiana was the central village of the Kobuk River people and later became a supply center for placer gold mines on the Squirrel River in 1909. Translated, Kiana means a "place where three rivers meet."

The People

The population of Kiana has steadily increased during the past 50 years. The 1970 census reported 278 residents, all but 10 of them Inupiaq Eskimos. By 1995, the population had risen to 403, with 93.5 percent of them Inupiaq Eskimos.

Labor and Employment

The economy in Kiana still depends on traditional subsistence patterns, but is increasingly being augmented or replaced by a cash economy. According to a recent survey, 30.4 percent of the population works full-time, 23.2 percent works part-time and 21.4 percent holds seasonal or temporary jobs.

The community's largest employer is the Northwest Arctic Borough School District, with 24 employees. Other employers include the City of Kiana, with 12 employees, and Maniilaq Association with seven. Seasonal jobs are also available in commercial fishing, fire fighting, jade and copper ore mining, and working on river barges. Red Dog Mine also provides employment opportunities.

One of the more modern villages, Kiana has three general stores, and one small engine repair service.

Climate and Topography

Located in the transitional climate zone, Kiana's weather is characterized by long, cold winters and cool summers. Temperatures usually range between 67 degrees in the summer and minus 16 in the winter, although extremes of 85 degrees and minus 60 have been recorded. On the average, over 16 inches of precipitation falls annually, including 60 inches of snow. The topography consists of sloping riverbanks with trees. Prevailing winds are easterly in winter and westerly in summer, averaging 10 knots.

Transportation Services and Facilities

Kiana's main means of transportation are plane, small boat and snowmachine. There are no roads linking the village to other areas of the state.

Air — Flying weather is generally good year-round, but the best is in winter and early spring. Kiana's Bob Baker Memorial Airport has a 4,000-foot by 150-foot gravel runway with beacon



lights, and a 100-foot by 200-foot parking apron. The airport is graded on a regular basis by the city. Five chartered and regular scheduled air carriers serve Kiana: Baker Aviation,

Cape Smythe Air, Bering Air, Yute Air, Hagland and Alaska Island Air. There is one airline that ships only cargo and two that offer charter-air guide service. A round-trip ticket from Kotzebue to Kiana starts at \$80.

Water — Crowley Marine Services barges fuel and general supplies to Kiana each year between July and mid-September at the rate of \$17.10/100 lbs. There are rarely any problems, such as low water or high winds, that limit barge traffic. The Kobuk River is normally open to small boats from the last week in May to the first week in October.

Land — A road extends out of Kiana along the river shoreline to Kobuk Camp, and returns along the bluff on high ground. Another road also connects the village to the airstrip and several garbage disposal sites beyond the runway. Residents still use a network of old trading trails along the river for inter-village travel, and for hunting and fishing.

The City of Kiana uses an emergency van for bringing residents to the health clinic and transporting elders. There are 20 trucks, while most residents own snowmachines and all-terrain vehicles.

Community Facilities

Kiana has a combined City Hall/Community Center which is used for city meetings, as well as for youth games and other activities. Other community structures include the Kiana Traditional Council building, which is used for potlatches and meetings by elders; the health clinic, school, fire hall, police building, National Guard Armory, Friends Church and Baptist Church.

Housing

There are 98 homes in Kiana, but only a few are for rent. The Northwest Inupiaq Housing Authority has recently upgraded 35 homes in the village, spending up to \$12,000 to repair and upgrade the insulation on each unit, bringing significant reductions in monthly heating costs. The authority also recently built 10 new HUD homes for low-income families, which sold for approximately \$120,000 each.

Land Ownership

The townsite trustee is in the process of transferring established lots to existing home owners. Kiana is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

Kiana was incorporated as a second-class city in 1964 and has a mayor/council form of government. The city employs a manager, administrative assistant, clerk, two water/sewer operators, an airport manager, fuel project manager, patrolman, cable television operator, and three janitors. The city levies a two-percent sales tax and provides the following services:

Water — Kiana has two community water wells and a central distribution system. The wells are connected to a 1,600-foot circulating well line. One well is on-line at a time, whereby water is pumped to the water treatment building. There, it is chlorinated, fluoridated and stored in the 200,000-gallon, insulated, bolted steel storage tank. The water is then pumped through a pressurized, circulating distribution system. The city provides water and sewage service to approximately 80 homes at a monthly rate of \$51, plus tax.

Sewage — The sewage collection system consists of 3,300 feet of six-inch Arctic pipe and 2,000 feet of eight-inch Arctic pipe. Wastewater flows from the homes by gravity through the collection system to an 18,000 gallon/day extended aeration package treatment plant. After chlorination, the treated waste flows by gravity through a manhole and 400 feet of six-inch pipe to the river.

Solid Waste Disposal — Solid waste is collected sporadically with a city-owned dump truck and hauled to a disposal area approximately one mile from town.

Police Services/Fire Protection — Kiana has two public safety officers and two holding cells for offenders in the Public Safety Building. Fire protection is provided by a volunteer fire chief and a 22-member fire crew with the use of a fire truck.

Other Services and Utilities

Health Clinic — The health clinic, operated by Maniilaq Association, is staffed by three health aides on call 24-hours a day. Routine medical services are offered 10 a.m. to 12 p.m. and from 1 p.m. to 5 p.m. daily. The two-story clinic is fully plumbed and has several medical and dental examination rooms. The second floor is used as lodging for visiting doctors and has a kitchen available.

Electricity — Electricity is provided by the Alaska Village Electric Co-op. The generating facility includes three diesel generators with a peak capacity of 350 kw. Monthly rates are as follows: residential use, 45.63¢/kwh; small commercial use, 42.53¢/kwh; and large commercial use, 40.73¢/kwh for the first 1,500 kwh in one month, and then 32.73¢/kwh thereafter in that month. The Kiana Traditional Council sells heating oil for \$2.50/gallon.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Communications

Kiana keeps up-to-date on news and entertainment through public radio station KOTZ, through Microcom (cable television) of Anchorage, and through the selected network programming on the Alaska Rural Communications System (ARCS). Kiana also receives two weekly newspapers: the Arctic Sounder and the Nome Nugget. Mail is delivered six days a week and the post office is closed Sunday.

Schools

The elementary school in Kiana houses six classrooms and a library, and serves 131 students from pre-kindergarten to sixth grade. The high school houses four classrooms, a typing/computer room, a gymnasium, shop and library; and serves 58 students. The schools employ one principal, nine teachers and 14 staff. Chukchi Campus offers post-secondary courses in Kiana.

For more information, contact:

City of Kiana
P.O. Box 150
Kiana, Alaska 99749
(907) 475-2136 • (907) 475-2174 (fax)



Shungnak

Location

Shungnak is located about 150 miles east of Kotzebue on a bluff overlooking the Kobuk River. The village was settled in the 1920s by residents of Kobuk, 10 miles upstream, who came here because of riverbank erosion at the Kobuk site.

Shungnak takes its name from the Inupiaq Eskimo word "Issingnak," which means jade, a stone found extensively throughout the surrounding hills.

The People

A 1970 census showed Shungnak's population at 165. That figure rose only slightly in a 1976 estimate, which placed the population at 175. Today, Shungnak has a population of 237 residents, of which 95 percent is Inupiaq Eskimo.

Labor and Employment

Shungnak exists primarily on subsistence activities, although many residents depend on seasonal jobs for some cash income. According to a 1989 survey, 18.9 percent of the population works full-time, 13.2 percent works part-time and 43.4 percent holds seasonal or temporary jobs.

The main year-round employers include the Northwest Arctic Borough School District (with 17 employees), the City of Shungnak (eight) and Maniilaq Association (four). The primary seasonal employer is the Bureau of Land Management, which hires up to 32 residents each year for fire fighting. Shungnak also has a strong crafts industry. Residents make and sell finely crafted baskets, masks, mukluks, parkas, hats and mittens.

Climate and Topography

Located in the continental climate zone, Shungnak's weather is characterized by long, cold winters and relatively warm summers. Temperatures typically range between 68 degrees in summer and minus 12 degrees in winter. Precipitation is relatively high for the region at 16 inches, including 71 inches of snow. Shungnak's topography consists of river highlands with spruce and birch trees. Prevailing winds average five knots annually, and are east-northeasterly most of the year, except for the summer when they are westerly.

Transportation Services and Facilities

The major means of transportation in Shungnak are barge, plane, small boat and snowmachine. There are no roads linking the village to other parts of the state.

Air — The airport consists of a 3,400-foot gravel airstrip with beacon lights. Flying weather is considered best in late winter and early spring and poorest in late summer and fall. Six air-

lines provide charter and regular scheduled air service to Shungnak: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There are



two charter-air guide services and one cargo-only airline. A round-trip ticket from Kotzebue to Shungnak starts at \$140

Water — Fuel and general supplies are barged to Shungnak each year by Crowley Marine Services at the rate of \$20.50/100 lbs. The Kobuk River is generally safe for boats from the last week in May to the first week in October. Small boats are often used for inter-village travel, supplies, subsistence hunting and fishing.

Land — Roads extend throughout the village and trails along the river are still used for inter-village travel, hunting and fishing. Residents use all-terrain vehicles, snowmachines and dog sleds for winter travel.

Community Facilities

Shungnak has two stores and a lodge which accommodates up to 20 people. Other community buildings include the recreation center, city office, health clinic, National Guard Armory and public safety building. The village also has three churches — Friends, Baptist and Seventh-day Adventist.

Housing

Housing in Shungnak consists of 57 privately owned homes and two trailers for teachers. Three of the homes are available for rent. The Northwest Inupiaq Housing Authority in Kotzebue is the primary developer within the region. New homes cost approximately \$69,500.

Land Ownership

The townsite trustee is in the process of transferring established lots to existing home-owners. Shungnak is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

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/repair operator, electrical operator, public safety officer, airport maintenance operator, city janitor, and clinic janitor. The city has a 2 percent tax and provides the following services:

Water — An intermittently filled reservoir utilizing the Kobuk River is Shungnak's water source. A portable pump fills the 200,000-gallon steel water storage tank through 1,110 feet of buried four-inch arctic pipe. The water storage tank and a pump house are located at the top of the river bluff, and serve the area on top of the bluff. Running water and sewer service is provided to most homes, the health clinic, school, community building and one of the churches. Water and sewer services cost \$50 per month for homes and businesses.

Wastewater — Shungnak has 4,500 feet of buried six-inch arctic gravity main line which connects to buildings through four-inch service lines. An additional 2,220 feet of the sewer main drains sewage to a small lake located one-half mile northwest of the city. A dike surrounds the lake to provide a 4 million-gallon waste stabilization lagoon. The effluent is chlorinated before being discharged to the lake, and the lagoon is fenced.

Solid Waste Disposal — A solid waste disposal area is maintained with use of a trailer and full-tracked tractor. There is no charge for disposing of solid waste.

Public Safety/Fire Protection - The City of Shungnak employs a public safety officer and uses the services of a Village Public Safety Officer employed by Maniilaq Association. The city has use of a Paktrak fire vehicle for fire protection.

Other Services and Utilities

Health Services — Shungnak's health clinic, operated by Maniilaq Association, employs a certified health aide and two certified health practitioners who are on call 24 hours a day. Routine medical services are provided from 10 a.m. to 12 p.m. and from 1 p.m. to 5 p.m. daily, but patients needing emergency services fly to Kotzebue.

Electricity — Electricity is provided by the Alaska Village Electric Co-op. The generating facility includes four diesel generators with a peak capacity of 297 kw. Monthly rates are as follows: residential use, 50.38¢/kwh; small commercial use, 47.28¢/kwh; and large commercial use, 45.48¢/kwh for the first 1,500 kwh in one month, and 37.48¢/kwh thereafter in that month.

Fuel — The Shungnak Native Store sells heating oil for \$3/gallon, and gasoline for \$3.25/gallon.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Communications

Shungnak keeps up-to-date on news and entertainment through cable television and through the selected network programming on the Alaska Rural Communications System (ARCS). Shungnak also receives public radio station KOTZ and two weekly newspapers: the Arctic Sounder and the Tundra Times. Many residents also use citizens band radio. The post office is open six days a week and mail is delivered to the community on a daily basis.

Schools

Shungnak schools serve 73 students from pre-kindergarten to 12th grade, including high school students from Kobuk. The elementary and high schools are combined in one building with a total of five classrooms, a large open classroom, library, shop and gymnasium. The school employs five teachers and 13 staff members. Chukchi Campus, a telecommunications service of the University of Alaska-Fairbanks, offers post-secondary courses in Shungnak.

For more information, contact:

City of Shungnak
General Delivery
Shungnak, AK 99773
(907) 484-2132
(907) 437-2176 (fax)

moderate-income housing for eligible residents through HUD contracts. Since 1970, NIHA has received contracts to build 102 low-income houses for qualified Kotzebue residents. Low-income Native residents can receive federal funding for home repairs and renovations through the Kotzebue IRA, a local tribal organization. The IRA also provides insulation and other energy-saving services.

Hotel Accommodations

The Nullagvik Hotel provides comfortable, modern accommodations for visitors to Kotzebue. A subsidiary of NANA, the Nullagvik offers 67 rooms and full-service restaurant overlooking the Kotzebue Sound. Hotel rates begin at \$97/night.

Land Ownership and Development Potential

The City of Kotzebue comprises about 850 acres of land. Approximately 340 acres (40 percent) of the land is owned by the state, borough, federal government, NANA and Kikiktagruk Inupiaq Corporation. The City of Kotzebue owns approximately 136 acres (16 percent) and the remaining 374 acres (44 percent) are privately owned.

Local Governmental Services

Kotzebue is a second-class city, incorporated in 1954. The city functions under the authority of a mayor and seven-member council. The day-to-day affairs are handled by a city manager and administrative staff. The city levies a 3 percent sales tax and offers the following services:

Police — The police department consists of a chief of police, captain and seven patrolmen.

Fire — The city fire department consists of one fire chief, two paid firemen/EMTs, a volunteer fire department, one fire truck on tracks, one quick-attack truck, one pumper fire truck and one tanker fire truck.

Water/Sewer - The city provides water/sewer service to 521 homes with sewer hookup. The water is piped from a lake one-and-a-half miles east of the city through a four-inch plastic hook-up. The sewer rate is \$13.03/month. Because of recurring freeze-up problems in the winter, the City of Kotzebue is seeking approximately \$10 million in state and federal money to overhaul the system.

Solid waste — Garbage and honeybuckets are disposed of in an open pit. Garbage rates are \$12.41/month.

Other utilities and services

Electricity — Electricity is supplied by the Kotzebue Electric Association. Average cost/home is \$52.99 month. The rate breakdown is as follows: 36.55¢/kwh is charged for the first 50 kwh; 32.14¢/kwh is charged for the next 50 kwh; 22.79¢ is charged for the next 9,900 kwh; and 21.69¢/kwh is charged for over 10,000 kwh/month.

Fuel — Fuel is supplied by Pacific Alaska Fuel Services. Other fuel can be purchased at Hanson's, Bison Street, Lee's Auto, Pacific Alaska Fuel Services, NAPA Auto Parts, K.I.C. and Baker's Fuel.

Communications

Kotzebue keeps up-to-date on news and entertainment through public radio station KOTZ, cable television, and the selected network programming on the Alaska Rural Communications System (ARCS). Kotzebue receives the Arctic Sounder and other newspapers from around the state. The community enjoys daily mail delivery, and the post office is open Monday through Saturday.

Schools

Schools in Kotzebue serve a total of 676 students from pre-kindergarten through 12th grade. The high school employs a principal, assistant principal and 22 teachers; the elementary school employs a principal, assistant principal and 28 teachers. The Northwest Arctic Borough School District office, which is based in Kotzebue, houses the administrative staff for the entire region, including a superintendent, assistant superintendent and support personnel in bilingual education, special education, counseling and other programs.

The middle/high school's facilities include a full-size gymnasium, library, shop and classrooms. The elementary school includes a library, multi-purpose room, classrooms and playgrounds. The district also operates an adult technical center that serves the entire borough. Chukchi Campus, a telecommunications service of the University of Alaska-Fairbanks, offers post-secondary courses in Kotzebue.

For more information, contact:

City of Kotzebue
P.O. Box 46
Kotzebue, AK 99752
(907) 442-3401 • (907) 442-3742 (fax)



Location

Kotzebue is built on a spit approximately three miles long and from 1,100 feet to 3,600 feet wide. The site has been inhabited for at least 600 years. Centuries before European explorers visited the area, "Kikiktagruk" was a busy trading center. Its location on ocean waters near the discharge point of a number of major interior river systems made it the hub of ancient arctic trading routes.

Today, Kotzebue is still an active trading center. Located 549 air miles from Anchorage, Kotzebue is the gateway to northwest Alaska. Its proximity to the Russian Far East, only 200 miles from the eastern tip of the region, enables Kotzebue to engage in cultural and economic exchange with the Russian Far East.

The People

The population of Kotzebue has increased steadily since the early 1900s. From a population of 200 at the turn of the century, the community grew rapidly to its present population of 3,705. This increase has resulted from expanding economic activities and services in the area. Within the next 15 years, officials estimate that Kotzebue's population may well increase to 6,000 as economic development continues. Seventy-five percent of the City of Kotzebue is Inupiaq Eskimo, with the rest of the population comprised of Caucasians, other Natives and other ethnic groups.

Labor and Employment

Kotzebue is the urban center for all the villages in the northwest region, with a healthy cash economy, a growing private sector and a variety of public service agencies. The basis for Kotzebue's economic strength lies in its strategic position in the water transportation system. The three major river systems that drain into the Kotzebue Sound — the Noatak, Kobuk and Selawik — are easily accessible from Kotzebue. Because of this, Kotzebue has become the transfer point between ocean and inland shipping. Kotzebue is also the air transport center for the region.

Kotzebue

The regional offices of many state and federal agencies serving northwest Alaska are in Kotzebue, the seat of the Northwest Arctic Borough. NANA Regional Corporation and Maniilaq



Association (a regional health and social service organization) also have their headquarters in Kotzebue.

The main employers in Kotzebue include the Northwest Arctic Borough School District (420 employees), Maniilaq Association (383), retail and commercial stores (101), the City of Kotzebue (86), airline companies (72), the State of Alaska (59) and NANA (44).

Many local residents also hunt, fish and gather food for subsistence purposes; at least half of this region's livelihood is from non-monetary subsistence income. During the summer, many residents are active in commercial fishing, catching and processing chum salmon. Much of the fish is sold to the locally-owned Kotzebue Sound Area Fisheries.

Climate

Kotzebue is located in the transitional climate zone which is characterized by long, cold winters and cool summers. Temperatures typically range from 58 degrees in the summer to minus 15 degrees in the winter, although temperature extremes of 85 degrees and minus 52 have been recorded. An average of nine inches of precipitation falls annually, including 40 inches of snow. The topography consists of a gravel and tundra spit, low bushes and no trees.

Transportation Services and Facilities

Air — The Ralph Wein Memorial Airport's main runway is 6,000 feet long with an asphalt surface. The north/south runway is 4,000 feet long with a gravel surface. There are six airlines providing charter and regular scheduled air service: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There is one airline that ships only cargo and two that offer charter-air guide service. A round-trip ticket from Anchorage to Kotzebue starts at \$338.

Water — Kotzebue Sound is free of ice three months of the year. During this time, deep-draft ocean-going vessels arrive carrying fuel, building materials, heavy equipment and food supplies. However, due to the gravel and sand deposited by the Noatak River, which enters the Sound four miles above Kotzebue, these vessels are forced to anchor about 15 miles offshore.

Crowley Marine Services has shallow draft barges that are able to provide lighterage services. Freight is unloaded and stored at Kotzebue and later delivered to the outlying villages by barge. Lighterage services for the last 15 miles make up one-fourth of the total shipping cost from Seattle, over 3,000 miles away. Most of the major supplies are shipped from Seattle.

Land — Kotzebue has approximately 26 miles of gravel roads, used by cars, trucks and motorcycles in the summer. In the winter months, residents use snowmachines as their preferred means of transportation. There are also two taxi services in Kotzebue, including Cab Co. and Polar Cab. The regular fare is \$3/ride in town and \$5 to or from the airport.

City Offices

City Hall — City Hall is a two-story building built in 1974 to house the

city's administrative offices and to provide meeting space for the city council and community. Current occupants include the city manager, city clerk, administrative staff, division of finance and the receptionist.

Old Fire Hall — The Old Fire Hall located adjacent to City Hall was built in 1973 and consists of two offices, four vehicle parking stalls, a shop and several storage rooms.

Public Works — The Public Works building is a two-story complex consisting of a large maintenance/garage/mechanic shop on the ground floor with a partial second story devoted to office space and an open mezzanine for parts storage.

Transit Facility — The two-story transit building was constructed in 1987. It is designed to house three transit vans used in transporting the public, handicapped and elderly on daily routes throughout the city. The building also houses the Building Maintenance Division.

Building Maintenance Storage/City Jail Exercise Center — This wood frame, sheet-metal sided structure located next to the Public Safety building was built in 1974. Originally designed as a Public Works garage, its interior was divided in part into a storage area for maintenance

supplies, and a large room where inmates at the City Jail exercise. The building is in poor condition and the storage portion will be torn down to make room for the new jail facilities.

Vehicle Garage — This large, metal Quonset building was constructed in 1969-70 to serve as a storage and equipment facility. It is located next to the Public Works headquarters, and is in fair condition.

Public Safety

Police — The Kotzebue Public Safety Building is located behind the Old Fire Hall and contains the offices of the Kotzebue Police Department, the City Jail, Animal Control kennels and staff. The two-story building was constructed in 1976 and is in poor condition. The city began construction of a new facility in 1989.

Fire — The Fire Training Center was built with state funding in 1982 to assist in training rural fire department personnel. The two-story building is composed of three vehicle stalls, a hose drying and drill tower, a training room, sleeping quarters, several offices, a break room, fire extinguisher room, air pack room and storage. The center houses a hook and ladder fire truck, a tanker and an ambulance.



Community Facilities

Medical/Dental — Kotzebue has one Public Health Service Hospital which has 17 beds. Professional health care is provided by six doctors, 22 nurses, three pharmacists and three dentists. This hospital is used by all the outlying villages, comprising an area of approximately 43,000 square miles. A state Public Health Service Clinic also serves the area.

Other — Other community buildings include Chukchi Campus, the Alaska Technical Center, a recreation center, senior citizens' cultural center, hotel, library, bank, two museums, restaurants, beauty parlors, three main grocery stores, variety and video stores, snowmachine shops, hardware stores, and miscellaneous other stores. There is a wide selection of churches, such as Catholic, Baptist, Friends, Mormon, Seventh-day Adventist, Episcopal and Church of God.

Housing

A recent housing survey showed a total inventory of 864 units, consisting of 629 single-family homes, 26 duplexes, one 41-plex, one 29-plex, one 16-plex, one 10-plex, three nine-plexes, four six-plexes and nine four-plexes. Since Kotzebue's population is expected to nearly double in the next 15 years, the city will soon need additional housing. However, Kotzebue faces an unusual problem: built on a spit of land only two miles long and one mile wide, there is not much land left for residential growth. The city is currently exploring other places to build additional homes. Privately owned one and two-bedroom homes or unit-plexes are being leased or rented at from \$500 to \$700/month. A three- to four-bedroom home or apartment rents for \$700 to \$900/month. Efficiencies rent for \$640/month.

The Northwest Inupiaq Housing Authority (NIHA) provides low- and



Ambler

Location

Ambler is located on the north bank of the Kobuk River, approximately 138 air miles northeast of Kotzebue. The newest community in this region, Ambler was settled in 1958 when people from Shungnak and Kobuk moved upstream for the rich variety of fish and game. Points of interest nearby include Onion Portage, the site of an archeological dig, and the Great Kobuk Sand Dunes, some 35 miles away.

The People

The 1970 census listed 29 families in Ambler and a total population of 169. By 1995, the total population had grown to 297, according to the Alaska Department of Community and Regional Affairs. Today, almost 90 percent of the community is Inupiaq Eskimo, and the remaining 10 percent is Caucasian.

Labor and Employment

Ambler's economy is based on subsistence activities. According to a 1989 survey, 25.4 percent of the population works full time, 19.5 percent works part time, and 28 percent holds seasonal or temporary jobs.

The main employer in Ambler is the Northwest Arctic Borough School District, which employs 26 people, including a principal, eight teachers and 17 classified employees. The City of Ambler is the next largest employer, with seven employees, and Maniilaq Association has six employees. Other cash income comes from Ambler's two grocery stores, a general merchandise store and a store that specializes in snowmachine sales, repairs and parts. Some residents sell finely crafted birch baskets in gift stores throughout the state, and other others sell animal pelts. There are also skilled stonecutters, who get jade from the nearby Kobuk Valley jade mine.



Climate

Located in the continental climate zone, Ambler's weather is characterized by long, cold winters and relatively warm summers. Although temperatures typically range from minus 14 degrees to 68 degrees, Ambler has had record temperatures of 92 degrees in the summer and minus 65 degrees in the winter. Precipitation averages 16 inches annually, including 80 inches of snow. Prevailing winds are westerly in the summer and east-northeasterly during the rest of the year, averaging five knots.

Transportation Services and Facilities

Ambler's main means of transportation are barge, plane, small boat and snowmachine. There are no roads linking Ambler with other parts of the state.

Air — Ambler is served by a 3,000-foot gravel main airstrip and a 2,400-foot gravel crosswind airstrip, located approximately one-and-a-half miles from the city. The airstrip is lighted and maintained year-round by the city. Flying weather is acceptable year-round but is best in late winter and early spring. Six chartered and regular scheduled air carriers serve Ambler: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There is one airline that ships only cargo and two that offer charter-air guide service. A round-trip ticket from Kotzebue to Ambler starts at \$180.

Water — Crowley Marine Services barges fuel and general supplies to Ambler each year between early July and mid-October at a rate of \$20.50/100 lbs. Small boats are often used for travel to other villages for visits and supplies, as well as for subsistence hunting and fishing.

Land — Roads extend throughout the village to the river, airstrip, cemetery and waste disposal site. Residents use the many trails along the river for year-round inter-village travel and for hunting and fishing. Villagers commonly use all-terrain vehicles and snowmachines in the winter, but rarely use dog sleds except for recreation.

Community Facilities

The city building houses the city administrative office, the court system, OTZ telephone, ATU-Alascom, and the Village Public Safety Officer office. The main meeting place is the community hall, which accommodates 40 to 50 persons. Other community facilities include the elementary and high schools, the National Guard Armory, the IRA (tribal council) building and community freezer, health clinic, Friends Church and Baptist Mission.

Housing

There are about 57 homes in Ambler, with very few for rent. The Northwest Inupiaq Housing Authority (NIHA) recently built 10 new three- and four-bedroom HUD homes, each costing about \$120,000. Funding for low-income housing upgrades and repairs is also available through Maniilaq Association, a regional non-profit health social service agency.

Visitors to Ambler can stay at the Kobuk River Lodge, a private lodge and restaurant, with three rooms and a cabin available year-round. The nightly rate is \$90/person.

Land Ownership and Development Potential

Coal deposits are known to occur in the region, but their extent has not been determined. Sand and gravel are available for construction from a pit at the far end of the runway, approximately one and a half miles northwest of town.

The townsite trustee is in the process of transferring established lots to existing homeowners. Ambler is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

Ambler was incorporated as a second-class city in 1971 and has a mayor-council form of government. The city employs an administrator, clerk, public safety officer, health aide, water and sewer attendant, airport manager and custodian. A 2 percent sales tax is levied. The city offers the following services:

Water — The main water source for Ambler's piped distribution system is a 17-foot-deep well, installed near the Kobuk River. Water is pumped from the well by a submersible pump through 940 feet of transmission line to the pumphouse/water treatment plant. A standby well is also located at the plant. Water is stored in a 210,000-gallon, insulated water storage tank. Fifty-seven homes are connected to the city's circulating water system.

The City of Ambler provides residential water and sewer services at the monthly rate of \$70/month.

Sewer — A piped collection system serves 57 homes. Service lines are connected to eight-inch and six-inch arctic pipe. Sewage flows to a facultative lagoon through two lift stations, where it discharges to a natural watershed and then to the Kobuk River.

Solid Waste Disposal — Ambler uses a sanitary landfill for solid waste disposal and maintains the facility with the use of a truck, two-wheeled trailer and full-track tractor.

Public Safety — Public safety is handled by two public safety officers. The office has two cells for holding offenders.

Fire Protection — Ambler is served by a volunteer fire department. Fire hydrants are installed along the main water line for limited fire protection.

Other Services and Utilities

Health Services — The health clinic, operated by Maniilaq Association, consists of a single-story, wood frame building with eight rooms, including two exam rooms and a dental exam office. Routine medical services are offered on a daily basis, but individuals fly to Kotzebue for emergency services.

Electricity — The Alaska Village Electric Co-op supplies power to the schools and residents of Ambler. The generating facility includes three diesel generators with a peak capacity of 271 kw. Monthly rates are as follows: residential, 50.81¢/kwh; small commercial, 47.71¢/kwh; and large commercial, 45.91¢/kwh for the first 1,500 kwh in one month, and then 37.91¢/kwh thereafter in that month.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Communications

Ambler keeps up-to-date on news and entertainment through public radio station KOTZ, through Microcom (cable television) of Anchorage, and through the selected network programming on the Alaska Rural Communications System (ARCS). Ambler also receives the weekly Arctic Sounder newspaper. The community enjoys daily mail delivery, and the post office is open six days a week.

Schools

The school in Ambler provides education for grades kindergarten through high school for 101 students. Facilities include a high school with a gymnasium, three classrooms, a shop and a kitchen; and an elementary school with an office and five classrooms. Chukchi Campus also offers post-secondary education.

For more information, contact:

City of Ambler
P.O. Box 9
Ambler, AK 99786
(907) 445-2122
(907) 445-2174 (fax)



Deering

Location

Deering is located on the north side of the Seward Peninsula at the mouth of the Inmachuk River on Kotzebue Sound, 57 miles southwest of Kotzebue. The city was established in 1901 as a supply station for gold mining near the historic Eskimo village of Inmachukmiut. Today, the city sits on a flat sand and gravel spit 18 feet above sea level.

The People

The population of Deering dropped from more than 100 in 1958 to a low of 85 in a 1970 census. Since that time, the population has steadily increased, and today is 159 persons. Over 94 percent of the community is Inupiaq Eskimo.

Labor and Employment

Deering's economy is a mix of cash and subsistence activities. According to a 1989 survey, 30.4 percent of the population works full time, 23.2 percent works part time and 21.5 percent holds seasonal or temporary jobs. A number of residents earn income from trapping and handicraft activities.

Year-round employment opportunities in Deering are provided by the Northwest Arctic Borough School District (with five teachers and six classified employees), the City of Deering (nine employees), health clinic (one), stores (two), Maniilaq Association (four) and the airlines (three). Summer construction projects and reindeer herding provide additional employment.

Climate and Topography

Located in the transitional climate, Deering's weather is characterized by long, cold winters and cool summers. The all-time high in Deering was 85 degrees, and the low was minus 60 degrees, but temperatures generally hover between 63 degrees in summer and minus 19 degrees in winter. Precipitation is light and averages less than nine inches annually, including 36 inches of snow. Built on a spit in the Kotzebue Sound, Deering's topography consists of a treeless tundra and river system. Prevailing winds average 10 knots annually and are easterly in winter and westerly in summer.

Transportation Services and Facilities

Deering's main means of transportation are plane, small boat and snowmachine. There are no roads linking Deering with other parts of the state.

Air — Deering's 2,600-foot by 80-foot gravel airstrip, located south of town, accommodates the mail and passenger flights provided by six chartered and regular scheduled air services: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There is one airline that ships only cargo and two that offer charter-air guide service. A round-trip ticket from Kotzebue to Deering starts at \$80.

Water — Deering's location on the coast provides the community with good access by water. Crowley Marine barges

goods from Kotzebue at the rate of \$20.50/100 lbs. Small boats are mainly used for subsistence activities.

Land — There are a number of roads in the Deering area, including roads to the dumpsite and the cemetery, and a

road that leads to several mining sites in the interior of the Seward Peninsula. Residents travel on the many winter snow machine trails, including the trails to Candle and Buckland.

Community Facilities

The city building houses the city administrative offices, library, post office, public safety office and electric company office. Other community buildings include the school, health clinic, Friends Church, two stores and a community hall.

Housing

A 1986 survey showed a total of 52 homes in Deering, with 37 occupied full time. The Northwest Inupiaq Housing Authority recently refurbished three homes in Deering, spending an average of \$12,000 for insulation and general repairs on each, to help lower residents' heating costs.



Land Ownership

The township trustee is in the process of transferring established lots to existing homeowners. Deering is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

Deering was incorporated as a second-class city in 1970, and has a mayor-council form of government. The city employs an administrator, clerk, patrol officer, alternate health aide, heavy equipment operator, librarian, airport manager, airport maintenance operator and city electrical generator and manager operator. To pay for services, the city levies a 3 percent sales tax and offers the following services:

Water — Water is pumped from the Inmachuk River. The water is filtered, chlorinated and fluoridated before being pumped to a 400,000-gallon insulated storage tank located in town. Deering uses a "fill-and-draw" system, filling a storage tank in summer, which the community draws on for a winter water supply. The Deering School water storage tank is also filled in the summer. The city is currently pursuing a piped water and sewer system.

A community washeteria contains a laundry room, shower facilities, sinks, flush toilets and a watering point. Residents can purchase water at the washeteria for 10¢/gallon.

Sewage — Residents use honey buckets for in-house liquid waste disposal. Honeybucket wastes are disposed of on the beach in front of town, on the sea ice or at the community dumpsite. The school has a small package sewage treatment plant that treats sewage before it is disposed of through an outfall in the ocean in front of town. The washeteria utilizes a small subsurface septic tank and leach field to dispose of liquid wastes.

Solid Waste Disposal — A fenced, sanitary landfill is used for solid waste disposal. The community has a refuse haul trailer; however, residents dispose of their solid waste individually.

Electricity — Ikpnaphciaq Electric supplies electricity to the City of Deering with four diesel-powered generators, with a peak capacity of 255 kw. The minimum monthly charge for residential use is \$125 for the first 450 kwh, and 38.5¢/kwh for any additional usage. The school and washeteria are charged 34.5¢/kwh. The City of Deering owns the electric company, but it is managed by an independent board.

Police Services/Fire Protection — Public safety is handled by one public safety officer with one holding cell for offenders. Fire protection is provided by a volunteer fire fighting force.

Other Services and Utilities

Health clinic — A health clinic, operated by Maniilaq Association, has one health aide on call 24 hours a day. Routine medical services are offered from 10 a.m. to 12 p.m. and from 1 p.m. to 5 p.m. daily, but patients needing emergency services fly to Kotzebue. The clinic has three rooms, including one examination room.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Communications

Deering stays up-to-date on news and entertainment through public radio station KOTZ, six channels of cable television, and the selected network programming on the Alaska Rural Communications System (ARCS). Deering also receives four newspapers: the Arctic Sounder, Nome Nugget, Northland News and Fairbanks Daily News-Miner. The post office is open every day except Saturday and Sunday, and mail is delivered to the community six days a week.

Schools

The Deering school consists of a new steel-frame building that houses the school offices, elementary, middle and high school classrooms, gymnasium, cafeteria and library. School employees include one principal, five teachers, and nine staff. There are seven classrooms serving 40 students from pre-kindergarten through grade 12. Community and adult education classes are conducted in the school which is also used for a variety of community meetings. Chukchi Campus offers post-secondary courses in Deering.

For more information, contact

City of Deering
P.O. Box 36049
Deering, AK 99736
(907) 363-2136
(907) 363-2156 (fax)



Kivalina

Location

The city of Kivalina sits at the tip of a barrier reef, 700 feet wide by eight miles long, located between the Chukchi Sea and Kivalina River. Approximately 80 air miles northwest of Kotzebue, the village has long been a stopping-off place for seasonal travelers between arctic coastal areas and Kotzebue Sound communities. Kivalina is the only village in the region where people hunt the bowhead whale.

The People

Population growth in Kivalina has steadily increased over the past 50 years. In 1920, Kivalina was estimated to have 87 residents; by 1970, the number had grown to 188. Today, the population is approximately 372, of which nearly 98 percent is Inupiaq Eskimo.

Labor and Employment

Although Kivalina residents subsist mainly on hunting and fishing, full and part-time jobs supplement the local economy. A recent survey shows that 27.1 percent of the population works full-time, 25.6 percent works part-time, and 19.4 percent holds seasonal or temporary jobs.

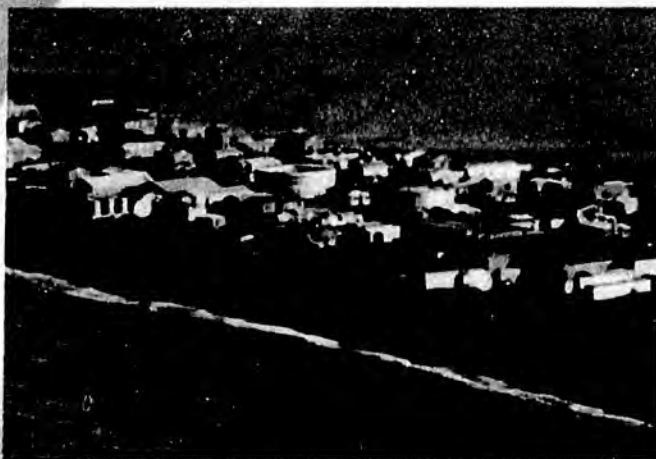
The main employer in Kivalina is the Northwest Arctic Borough School District, with 19 full and part-time employees. Other employers include the City of Kivalina (seven employees); Maniilaq Association, a regional health and social service association (four); the IRA tribal council (three); the Kivalina Native Store (five); the post office (one) and airline companies (four, part-time). Some residents find summer employment at the Red Dog Mine, or in fire fighting or commercial fishing. The Native crafts industry has expanded in recent years, with Kivalina residents specializing in carving ivory and producing jewelry from caribou hoofs.

Kivalina has five stores which provide a variety of goods, including groceries, sporting goods, gift items, sewing notions, hardware, dry goods and fuel.

Climate and Topography

Kivalina lies in the transitional climate zone which is characterized by long, cold winters and cool summers. Even though the village is located on the coast, the climate is more continental than maritime, partly because the Chukchi Sea is ice-covered from November to June. Temperatures typically range between 60 degrees in summer and minus 17 degrees in

winter. About 8.6 inches of precipitation falls here annually, including 57 inches of snow. Winds average 10 knots. The topography consists of a



sand and gravel ocean spit.

Transportation Services & Facilities

The main means of transportation in Kivalina are plane, small boat and snowmachine. There are no roads linking the village to other areas of the state.

Air — Kivalina has a 3,000-foot airstrip, which lies on the beach 11 feet above sea level. Flying weather is considered good year-round, but is best in winter and poorest in late summer. Six chartered and regular scheduled air carriers serve Kivalina: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There is one cargo-only airline and two charter-air guide services. A round-trip ticket from Kotzebue to Kivalina starts at \$60.

Water — Crowley Marine Services barges fuel and general supplies to Kivalina each year between July and August at the rate of \$17.10/100 lbs. The Chukchi Sea is usually open to boat traffic from about mid-June to the first of November. Small boats are used for inter-village travel, supplies, hunting and fishing.

Land — Residents rely on all-terrain vehicles for transportation in the summer and on snowmachines in the winter. Two main hunting trails follow the Kivalina and Wulik rivers.

Community Facilities

Community facilities at Kivalina include the city office, community building, fire hall, jail, National Guard Armory, elementary and high school, Native Store, and post office. Kivalina has two churches, the Episcopal Church and Friends Church. Social services are offered in the suicide prevention center and the health clinic.

Housing

There are approximately 65 homes in Kivalina, not counting school staff quarters. With all available housing fully occupied, the community needs more housing. The average cost of a new home is \$70,000. The Northwest Inupiaq Housing Authority, based in Kotzebue, provides construction services based on HUD contracts.

Land Ownership

The townsite trustee is in the process of transferring established lots to existing home owners. Kivalina is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c) (3) reconveyance process.

Local Governmental Services

Kivalina was incorporated as a second-class city in 1969 and has a mayor/council form of government. The city employs an administrator, clerk, public safety officer and custodian full time; and a water-treatment-plant operator, bingo accountant and cable TV operator part time. The city offers the following services:

Water — Kivalina's source of water is the Wulik River. Water is pumped through a three-mile surface transmission line into a 600,000-gallon steel storage tank. The water is chlorinated and fluoridated before it is stored. Kivalina "fill-and draw" system, filling a storage tank in summer, then drawing on it for a winter water supply.

Sewage — Household sewage is emptied into four disposal bunkers located throughout the community.

Solid Waste Disposal — Residents bring their solid waste to a disposal site located one and one-quarter miles from the town.

Police Services — Kivalina has two public safety officers, who provide police protection.

Other Services and Utilities

Health Clinic — Kivalina's health clinic, operated by Maniilaq Association, is staffed by two health aides who are on call 24 hours a day. The clinic offers routine medical services from 10 a.m. to 12 p.m., and from 1 p.m. to 3 p.m., but patients fly to Kotzebue for emergency services. The single-story clinic contains a waiting room, two exam rooms, office/radio room, toilet and storage room.

Electricity — Electricity is provided by the Alaska Village Electric Co-op. The generating facility includes four diesel generators with a peak capacity of 337 kw. Monthly rates are as follows: residential use, 46.14¢/kwh; small commercial use, 43.04¢/kwh; and large commercial use, 41.24¢/kwh for the first 1,500 kwh in one month, and then 33.24¢/kwh thereafter in that month.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Communications

Kivalina keeps up-to-date on news and entertainment through public radio station KOTZ, through Microcom (cable television) of Anchorage, and through the selected network programming on the Rural Alaska Television Network (RATNET). Kivalina also receives three newspapers: the Arctic Sounder, Tundra Times and Northland News. Mail is delivered to the community six days a week, and the post office is open Monday through Saturday.

Schools

A combined elementary and high school serves Kivalina's 109 students from pre-kindergarten to 12th grade. The school employs one principal, seven teachers and 13 staff. Kivalina's school, known as the McQueen School, consists of nine classrooms, a wood shop, darkroom, gymnasium and library. Chukchi Campus offers post-secondary courses in Kivalina.

For more information, contact:

City of Kivalina
P.O. Box 50079
Kivalina, AK 99750
(907) 645-2137 • (907) 645-2175 (fax)



Kobuk

Location

Originally called Shungnak, Kobuk is located on the right bank of the Kobuk River about seven miles northeast of Shungnak and 128 air miles northeast of Kotzebue. The village was founded in 1899 as a supply point for mining activities in the Cosmos Hills. Due to river erosion, the village was relocated in the 1920s to a new site downstream called Kochuk — now Shungnak. The few people who stayed behind renamed the present village Kobuk.

The People

Kobuk is the smallest village in the Northwest Arctic Borough. The 1970 census listed a population of 56 people, which represented approximately nine families. The 1990 census put the population at 97. Nearly 90 percent of the community is Inupiaq Eskimo.

Labor and Employment

Subsistence is the primary way of life in Kobuk. According to a 1989 survey 36.1 percent of the population works full-time, 11.1 percent works part-time and 30.6 percent holds seasonal or temporary jobs.

The main employers in Kobuk include the Northwest Arctic Borough School District (eight employees), the City of Kobuk (two) and Maniilaq Association (two). During the summer, some residents find work in fire fighting and construction.

Climate and Topography

Kobuk lies in the continental climate zone, characterized by long, cold winters and relatively warm summers. Although record temperatures of 90 degrees and minus 68 degrees have been recorded, temperatures normally range between 68 degrees in the summer and minus 24 degrees in the winter. Roughly 17 inches of precipitation fall annually in Kobuk, including 56 inches of snow. Prevailing winds average five knots annually and are

east-northeast most of the year, and westerly in the summer. The topography consists of riverbanks, tundra, foothills and trees.

Transportation Services and Facilities

The main means of transportation in Kobuk are plane, barge, small boat and snowmachine; there are no roads linking the village with other parts of the state.

Air — Kobuk has a 2,500-foot lighted gravel airstrip. Aircraft land either on the airstrip or on the river with floats. Flying weather is considered good year-round, but is best in the winter and early spring. Five airlines provide charter and regular scheduled air service to Kobuk: Baker Aviation, Cape Smythe Air, Hagland, Bering Air, Yute Air and Alaska Island Air. There is one airline that ships only cargo and two that offer charter-air guide service. A round-trip ticket from Kobuk to Kotzebue starts at \$190.

Water — Crowley Marine Services barges general supplies and fuel during spring and fall high river stages at the rate of \$20.50/100 lbs. Small boats are often used for travel to other

villages for visits, supplies and subsistence hunting and fishing. The Kobuk River is generally safe for small boats from the end of May to the end of October.

Land — Residents use many of the trails along the river for

year-round inter-village travel and for hunting and fishing. Villagers use all-terrain vehicles for transportation in the summer and snowmachines in the winter.

Community Facilities

A health clinic, community hall, two privately owned stores and a Baptist Church make up Kobuk's community facilities.



Housing

There are now 25 homes in Kobuk, most of them older log structures. Nine of these homes recently received up to \$12,000 in repairs and insulation upgrades, reducing monthly heating costs for residents.

Land ownership

The townsite trustee is in the process of transferring established lots to existing home owners. Kobuk is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

Kobuk was incorporated as a second-class city in 1973 and has a mayor-council form of government. The city has an administrator, clerk and volunteer fire department. Kobuk provides the following services:

Water — Kobuk has a community washeteria, which includes laundry facilities, showers and drinkable water. Residents haul water from the washeteria for their private use. The water is stored in a well and is filtered, chlorinated and fluoridated. The school system has its own well and treated water.

Sewer — Sewage from the washeteria is discharged to a septic tank and seepage pit. In individual homes, honeybuckets and privies are used and waste is disposed of at Dall Creek.

Solid Waste Disposal — Residents haul solid wastes to an uncontrolled dump-site located two miles out of town. The dump is inaccessible in the summer due to the tundra bog.

Electricity — Kobuk receives electricity through the generators in Shungnak. Residents pay rates established by the Kobuk Valley Electric Cooperative. Monthly rates are as follows: 53¢/kwh for everyone in the village except the school and airport.

Other Services and Utilities

Health services — Kobuk's health clinic, operated by Maniilaq Association, is staffed by a health aide and is open from 1 p.m. to 5 p.m. daily. The clinic offers routine medical services, but patients needing emergency care fly to Kotzebue. The clinic houses an office, waiting room, two exam rooms, bathroom, storage room and furnace.

Police Services — A Village Public Safety Officer, employed by Maniilaq Association, oversees public safety.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Communications

Kobuk keeps up-to-date on news and entertainment through the selected network programming on the Alaska Rural Communications System (ARCS), and through public radio station KOTZ. Mail is delivered to the community six days a week and the post office is open Monday through Saturday.

Schools

The smallest school in the region, with just 19 students from pre-kindergarten through 8th grade, Kobuk School employs one principal/teacher, one teacher and three staff members. High school students attend the Shungnak School, just seven miles away. The one-room school is attached to the principal's quarters.

For more information, contact:

City of Kobuk
P.O. Box 49
Kobuk, AK 99751
(907) 948-2217
(907) 948-2228 (fax)



Noatak

Location

Noatak is located on the west bank of the Noatak River, 55 miles north of Kotzebue at about 60 feet above sea level. Named for an adjacent waterway meaning "inland river," Noatak was established as a fishing and hunting camp in the 19th century. This is the only settlement along the pristine, 296 mile-long Noatak River, which is encompassed by a 66-million acre national preserve.

The People

The population of Noatak increased steadily from 1880 to 1939, at which time the population began to decline slightly. Today, the population stands at about 369, nearly all Inupiaq Eskimo. Recent trends show that the current population appears stable and may be increasing.

Labor and Employment

The economy is fairly diverse, but principally based on subsistence hunting and fishing. According to a 1989 economic survey, 16.2 percent of the population works full-time, 20.2 percent works part-time and 27.3 percent holds seasonal or temporary jobs.

Noatak's main employers include the Northwest Arctic Borough School District (with 19 employees), the City of Noatak (four)



and Maniilaq Association (four). Other income comes from the city's four stores, occasional housing construction and water/sewer repairs. In the summer, many residents travel to seasonal fish camps at Sheshalik and Kotzebue, where the men work as commercial fishermen and the women tend subsistence fisheries.

Climate

Located on the border between the transitional and continental climate zones, Noatak is characterized by long, cold winters and warm summers. Due to its proximity to the coast, the area is slower to warm up in the spring and the summer temperatures tend to be cooler than inland locations. Temperatures typically range between 54 degrees in summer and minus 21 degrees in winter.

Precipitation averages from 10 inches to 13 inches annually, including 48 inches of snow. Prevailing winds average 10 knots annually and are easterly in winter, and westerly in summer.

Transportation Services and Facilities

The major means of transportation in Noatak are plane, small boat and snowmachine. There are no roads linking the village to other communities.

Air — Noatak's airport is located at the south end of the village and has a 2,400-foot by 90-foot gravel runway with runway lights and a small parking apron measuring 150 feet by 200 feet. There are six airlines providing charter and regular scheduled air service: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There is one cargo-only airline and two charter-air guide services. A round-trip ticket from Kotzebue to Noatak starts at \$70.

Water — Barge service to Noatak has been discontinued, but small boats are often used for inter-village travel and for subsistence hunting and fishing.

Land — A network of gravel roads links the community. In addition, there are small roads from the village to the airstrip and the garbage dump. Many historic trails along the Noatak River remain important today for inter-village travel, hunting and fishing both summer and winter. Residents commonly use all-terrain vehicles and snowmachines in the winter.

Community Facilities

Most of the city business is conducted in the Noatak IRA building which houses the IRA office, post office and Village Public Safety office. Other community buildings include the Noatak clinic, fire hall, bingo hall, the warm storage building, the Napaaqtugmiut elementary and high school and the Alaska National Guard. The Noatak Friends Church was built in 1989 and the Noatak Native Store was remodeled that same year.

Housing

There are 85 houses in Noatak, none of them available as rentals. Twenty homes were upgraded when the Northwest Inupiaq Housing Authority (NIHA) recently spent up to \$12,000 on each house to perform structural repairs and insulation upgrades. NIHA also recently built 10 new homes for low-income families through HUD's Mutual Help and Occupancy Program, which sold for approximately \$120,000 each.

Land Ownership

The townsite trustee is in the process of transferring established lots to existing home owners. Noatak is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

Noatak is incorporated as an IRA village (a village incorporated by the Bureau of Indian Affairs under the Indian reorganization Act), but is unincorporated under state law as a municipality. The community has a seven-member council with a president appointed from the council. Employees include an administrator, power plant operator, water/sewer operator and janitor. The village provides the following services:

Water/Sewer — A piped, recirculating water and sewer distribution system served all the homes in Noatak before a severe cold snap in 1989 rendered the entire system inoperative. Local and state agencies are seeking to replace the system with new pipe facilities during the summer of 1991.

Solid Waste Disposal — A landfill is maintained by the city one-quarter mile beyond the airport. Residents haul their trash individually to the dump.

Fire Protection — Fire hydrants are distributed throughout the village, and residents all help in fire fighting.

Other Services and Utilities

Health Clinic — Noatak's health clinic, operated by Maniilaq Association, is staffed by three health aides. Routine medical services are provided from 10 a.m. to 12 p.m. and from 1 p.m. to 5 p.m. daily,

but patients needing emergency services fly to Kotzebue. The single-story clinic houses an office/radio room, guest area, kitchen, bathroom, waiting room and storage area.

Public Safety — Public safety is provided by a Village Public Safety Officer, employed by Maniilaq Association.

Electricity — The Alaska Village Electric Co-op supplies power to the schools and residents of the village. The generating facility includes three diesel generators with a peak capacity of 271 kw. Monthly rates are as follows: residential use, 52.81¢/kwh; small commercial use, 49.08¢/kwh; and large commercial use, 47.28¢/kwh for the first 1,500 kwh in one month, and then 39.28¢/kwh thereafter in that month.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Fuel — The Noatak Native Store sells heating oil for \$2.40/gallon, and gasoline for \$3.50/gallon.

Communications

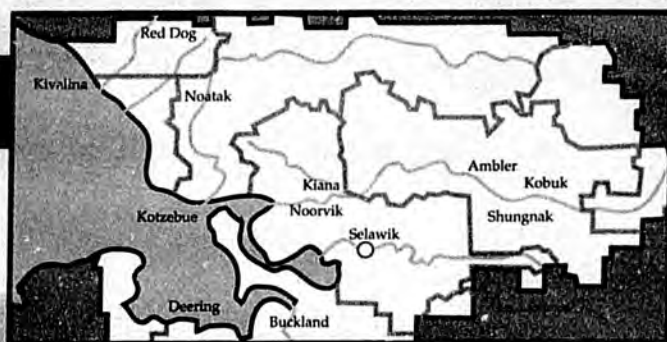
Noatak keeps up-to-date on news and entertainment through public radio station KOTZ, and the selected network programming on the Alaska Rural Communications System (ARCS). Noatak also receives three newspapers: the Arctic Sounder, Tundra Times, and Nome Nugget. The community enjoys daily mail delivery, and the post office is open Monday through Saturday.

Schools

The Napaaqtugmiut School provides education for 118 students from pre-kindergarten to 12th grade. The high school and elementary programs are housed in two buildings that are attached, in addition to a second, older building for elementary school use. The schools' facilities include eight classrooms, a library, shop, special education room, gymnasium and student store. The schools employ one principal, seven teachers and 15 staff. Chukchi Campus, a telecommunications service of the University of Alaska-Fairbanks, offers post-secondary courses in Noatak.

For more information, contact:

Noatak IRA Council
P.O. Box 89
Noatak, AK 99761
(907) 485-2173



Selawik

Location

Selawik, approximately 70 miles southeast of Kotzebue, is the second-largest village in the region. Lt. L.A. Zagoskin of the Imperial Russian Navy first reported its existence in the 1840s as the settlement of "Chilyik." Ivan Petroff counted 100 "Selawigamute" people in his 1880 census. Selawik takes its name from the adjacent river, which is the Native name for a species of fish. The community is located near the Selawik National Wildlife Refuge, which is a key breeding and resting spot for migratory waterfowl.

The People

Around 1908, the present site consisted of a small wooden schoolhouse and church. The community has continued to grow since then and has expanded across the Selawik River onto three banks, linked by bridges. The current population of Selawik is estimated at 640 people, nearly 96 percent of them Inupiaq Eskimos.

Labor and Employment

Inhabitants of Selawik subsist mainly on fishing and hunting. According to a 1989 survey, 22.4 percent of the population works fulltime, 15.5 percent works parttime and 33.9 percent holds seasonal or temporary jobs. Some residents sell handmade crafts in local stores or outside the community.

The Northwest Arctic Borough School District is the primary year-round employer, with 30 full and part-time employees. The City of Selawik is the second-largest employer, with 15 employees. Other employers in Selawik include the IRA (tribal council), Maniilaq Association (a regional health and social service agency), the State of Alaska, the U.S. Postal Service and Selawik's three local grocery stores. Residents also find work outside of Selawik at Red Dog Mine or in fire fighting, commercial fishing or barge operations.

Climate and Topography

Selawik is located in the transitional climate zone which is characterized by long, cold winters and cool summers. Temperatures typically range between 61 degrees in summer and minus 23 degrees in winter. Precipitation is relatively light, with less than 10 inches annually, including 35 to 40 inches of snow. The topography consists of river flood plains and tundra with low bushes. Prevailing winds are easterly in winter and westerly in summer, averaging 10 knots.



Transportation Services and Facilities

The major means of transportation in Selawik are barge, plane, small boat and snowmachine. There are no roads linking the village to other parts of the state.

Air — Most supplies are brought in by air. The airport consists of a 3,000-foot by 70-foot gravel runway with one maintenance building. Flying weather is considered good year-round but is best in late winter and early spring, and poorest in summer when storms and fog are more frequent. Six airlines provide charter and regular scheduled air service to Selawik: Hagland, Baker Aviation, Cape Smythe Air, Bering Air, Yute Air and Alaska Island Air. There is one cargo-only airline and two charter-air guide services. A round-trip ticket from Kotzebue to Selawik starts at \$80.

Water — Fuel and general supplies are barged to Selawik each year between July and mid-September by Crowley Marine Services at the rate of \$17.10/100 lbs. The Selawik River is normally open to small boats from the last week in May to the second week in October. These boats are often used for inter-village travel, as well as for subsistence hunting and fishing.

Land — Boardwalks constructed throughout town allow movement between buildings when ground conditions are wet and marshy. The boardwalks lead through town and out to the airport, cemetery and dumpsite. In the winter, residents use all-terrain vehicles and snowmachines for transportation.

Community Facilities

Meeting places in Selawik include a community building,

which can accommodate 100 people, and a multi-purpose building, which can accommodate 300 people. In addition, there are four churches — Baptist, Friends, Seventh-day Adventist and Selawik Christian Fellowship. Other community facilities include the city office, IRA office, safe water facility, shop building, health clinic and three stores.

Housing

There are 153 single family housing units, with a few for rent. More housing is needed. The Northwest Inupiaq Housing Authority recently completed construction of a low-rent housing project in Selawik.

Land Ownership

The townsite trustee is in the process of transferring established lots to existing home owners. Selawik is eligible to receive up to 1,280 acres under the Alaska Native Claims Settlement Act 14 (c)(3) reconveyance process.

Local Governmental Services

Selawik is incorporated as a second-class city and has a mayor-council form of government. The city employs an administrator, clerk and 12 other employees who work in the city office, health clinic, public safety and the water treatment facility. City services include:

Water — A central facility pumps water in from the Selawik River, treats it prior to use and provides up to 8,000 gallons of water a day. The central building provides laundry and shower facilities and a water distribution point from which residents can purchase water for 10¢/gallon. A summer distribution line extends throughout the town for three miles. In winter, however, the line freezes and cannot be used.

Currently, the school, teachers' quarters, health clinic and about one-third of the homes have full plumbing. Water and sewer service costs \$20 a month for residents, and \$125 per day for the school.

Sewer — Waste from the central facility and the school is pumped to a sewage lagoon. Individuals use honeybuckets, which are either emptied at a sewage lagoon or on the river ice.

Solid Waste Disposal — Residents bring their solid waste to a city-maintained dumpsite located one mile west of town.

Public Safety/Fire Protection — Public safety is provided by three Public Safety Officers. A holding facility with three cells each hold a maximum of six people. Fire protection is provided by a volunteer fire force of 15 people with the use of two fire pumps.

Fuel — The Selawik Native Store sells heating oil for \$1.50/gallon in the summer, and gasoline for \$2/gallon.

Other Services and Utilities

Health Services — Selawik's health clinic, operated by Maniilaq Association, employs a community health practitioner and alternate who are on-call 24 hours a day. Patients are seen daily from 10 a.m. to 12 p.m. and from 1 p.m. to 5 p.m., but patients needing emergency services fly to Kotzebue. The single-story clinic has eight rooms, including two examination rooms.

Electricity — Electricity is provided by the Alaska Village Electric Co-op. The generating facility includes three diesel generators with a peak capacity of 350 kw, and a 557 kw unit is currently being installed. Monthly rates are as follows: residential use, 48.02¢/kwh; small commercial use, 44.92¢/kwh; and large commercial use, 43.12¢/kwh for the first 1,500 kwh in one month, and then 35.12¢/kwh thereafter in that month.

Telephone — Telephone service is offered by OTZ from Kotzebue. Basic monthly service and maintenance charges for a single line are \$21.31 for homes and \$29.61 for businesses, without tax. Hook-up fees begin at \$37.50 and increase depending on the service needed. For more information, call OTZ at 442-3114 or (800) 478-3111. Long-distance service is available through ATU-Alascom.

Communications

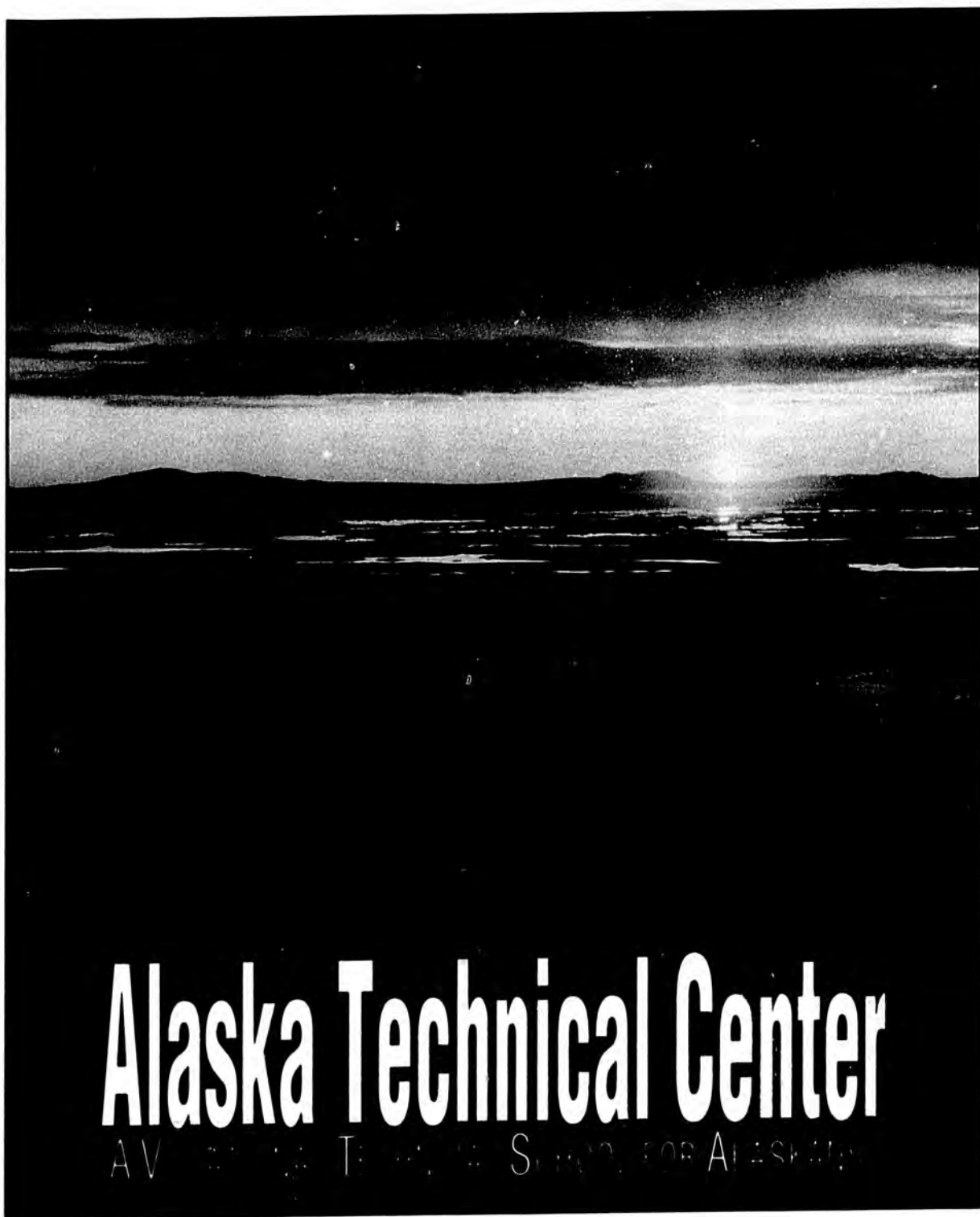
Selawik stays up-to-date on news and entertainment through cable television, the selected network programming on the Alaska Rural Communications System (ARCS), public radio station KOTZ, and three newspapers: the Arctic Sounder, Tundra Times and Nome Nugget. Mail is delivered to the community on a daily basis, and the post office is open Monday through Saturday.

Schools

The schools in Selawik serve 217 students from pre-kindergarten through 12th grade. The elementary facility consists of six classrooms and the high school houses nine classrooms, a library, gymnasium and shop. The two schools employ one principal, 13 teachers and 16 staff. Chukchi Campus, a telecommunications service of the University of Alaska-Fairbanks, offers post-secondary courses in Selawik.

For more information, contact:

City of Selawik
P.O. Box 49
Selawik, AK 99770
(907) 484-22132



Alaska Technical Center

AN OFFICE OF TECHNICAL SERVICES FOR ALASKA



The Alaska Technical Center does not discriminate in employment admissions, access to or treatment in its programs, activities and services on the basis of race, color, age, sex, national origin, religion, veteran status, handicap or otherwise as prescribed by applicable state and federal laws and regulations, including Title IX of the Education Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973 and E.O. 11246 as amended.

FOUNDED 1981

Alaska Technical Center

A VOCATIONAL TECHNICAL SCHOOL FOR ALASKANS

Student Catalog
1995-1997

P. O. Box 51
Kotzebue, Alaska
99752

Phone:
907-442-3733

Toll-free:
800-478-3733

Fax:
907-442-2764

Office hours:
8 a.m. to 4:30 p.m.

WELCOME

FROM THE DIRECTOR

Welcome to the Alaska Technical Center!

The Alaska Technical Center (ATC) is part of a state-wide vocational training system, working together with industry and state agencies to provide a comprehensive and unified response to Alaska's training needs.

Our job here is to provide the opportunity for you to obtain the skills and knowledge needed to get a job, or to advance in your current occupation.

Our ATC family believes that everyone has something to offer, and our staff is just as prepared to learn from you as we are to offer invaluable occupational knowledge.

One of ATC's greatest strengths is our staff's genuine concern for the success of each student. We are here to help you reach your goals.

We are very proud of our school, and strive for continuous improvement in order to provide quality programs. We pride ourselves on our blend of traditional and modern-day technology, which we provide in a comfortable, rural setting.

This catalog will provide you with information about the vocational and technical training opportunities and services offered here at ATC.

If, after reading this catalog, you would like to learn more about our school, please call, drop us a line, or come visit.

We look forward to hearing from you.

CHERYL EDENSHAW
DIRECTOR

