

**National Park Service
U.S. Department of the Interior**



Gates of the Arctic National Park and Preserve Alaska

Anaktuvuk Pass Wind Power Generator

*Environmental Assessment
February 2008*



Table of Contents

1.0 PURPOSE AND NEED.....	1
2.0 DESCRIPTION OF ALTERNATIVES	4
2.1 Alternative 1: No Action.....	4
2.2 Alternative 2: Install a wind power generator for the Anaktuvuk Pass ranger station (NPS Preferred Alternative, and Environmentally Preferred Alternative).....	4
3.0 AFFECTED ENVIRONMENT	5
4.0 ENVIRONMENTAL CONSEQUENCES	7
4.1 Alternative 1: No Action.....	7
4.2 Alternative 2: Install a wind power generator for the Anaktuvuk Pass ranger station (NPS Preferred Alternative, and Environmentally Preferred Alternative).....	7
5.0 CONSULTATION AND COORDINATION	9
List of Preparers:.....	9
References:.....	9

List of Figures

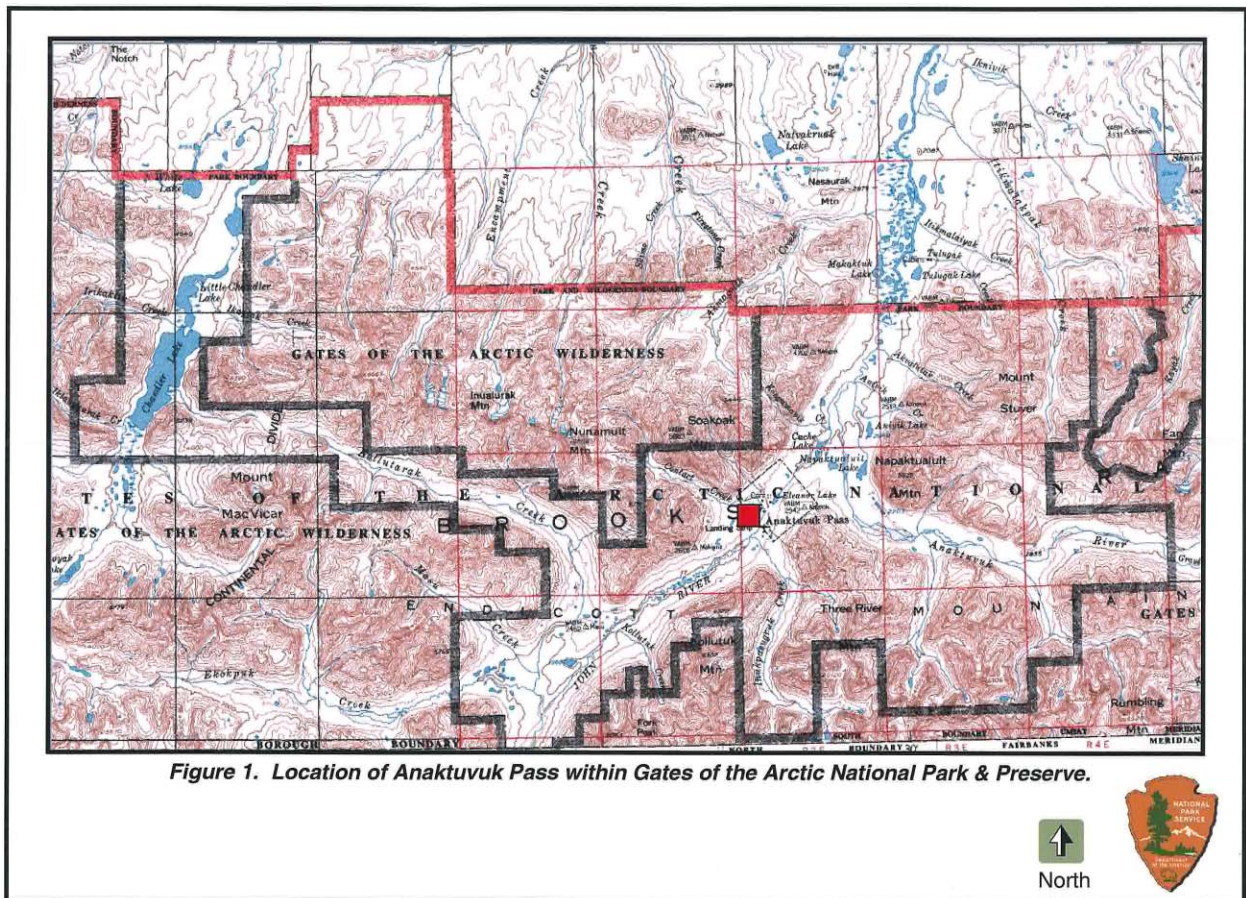
- Figure 1.** Location of Anaktuvuk Pass within Gates of the Arctic NP&P
Figure 2. Specific Location of Anaktuvuk Pass at the Headwaters of the John River
Figure 3. Anaktuvuk Pass Ranger Station
Figure 4. Anaktuvuk Pass Lot Diagram
Figure 5. Example of a wind power generator
Figure 6. Proposed location of wind power generator
Figure 7. NPS lot, Anaktuvuk Pass

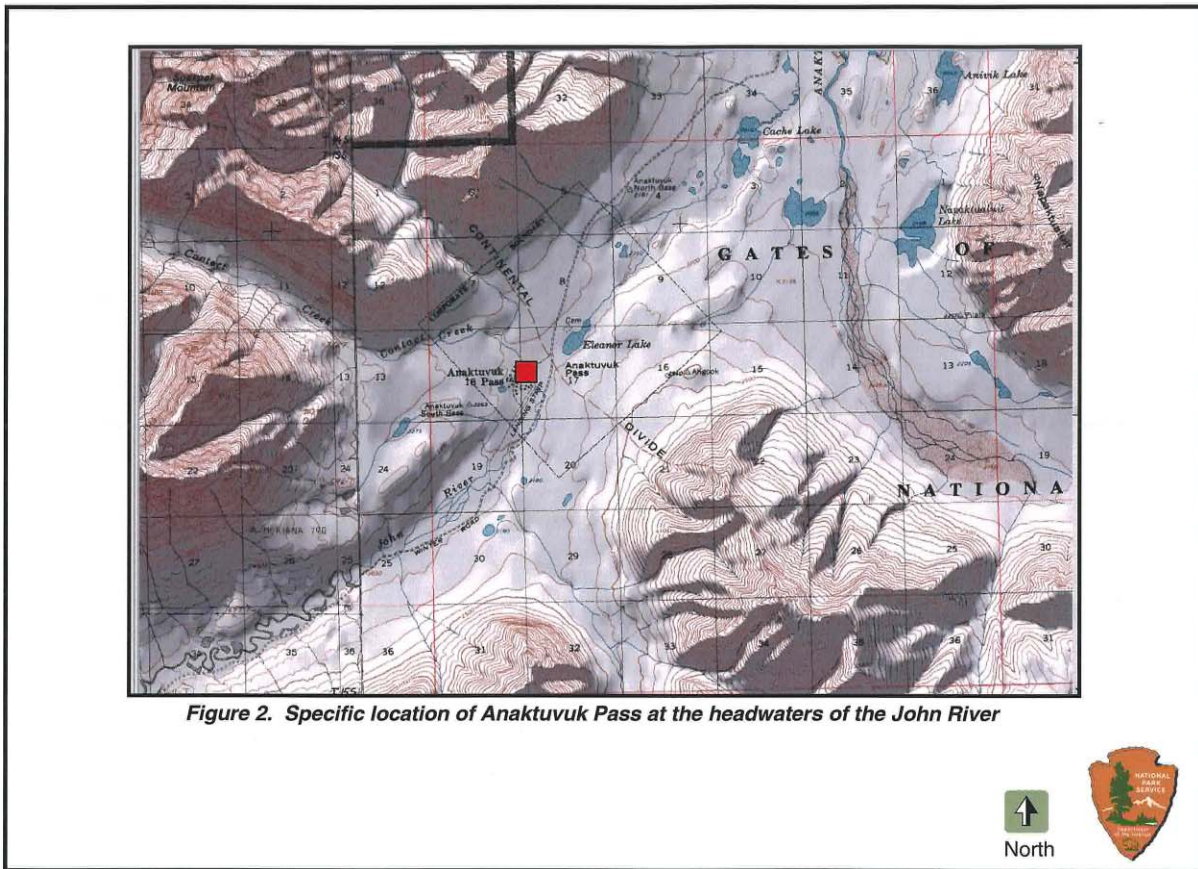
Appendices

Appendix A. Section 810 Evaluation

1.0 PURPOSE AND NEED

Gates of the Arctic National Park & Preserve, a unit of the National Park Service (NPS) proposes to install a wind power generator at the Anaktuvuk Pass Ranger Station. The Ranger Station is located in the City of Anaktuvuk Pass in the central Brooks Range (Figure 1), at the continental divide (elev. 2,200') between the headwaters of the Anaktuvuk and John Rivers (Figure 2).





Anaktuvuk Pass is within the North Slope Borough, and is a primarily Nunamiut (inland northern Inupiat Eskimo) Native community located within the boundary of Gates of the Arctic NP&P. The Ranger Station and associated outbuildings are located on NPS property within the village (about 5 mi.² in size, 300 residents).



Figure 3. Anaktuvuk Pass Ranger Station NPS Photo taken August 2007.

Because Anaktuvuk Pass is accessible solely via aircraft, the cost of importing supplies, including diesel fuel, is very high. Currently, electric power for the ranger station is purchased from a local source that is dependant on imported diesel fuel to operate their generator. The cost for this locally generated electricity reflects the high cost of purchase and transport for diesel fuel, and power is therefore very expensive. The NPS desires to switch the power source for the Ranger

Station to one which meets the following criteria:

- Reduces dependence on local power sources using diesel fuel and the associated barrel disposal problems;
- Is environmentally sound and supports the NPS Green Energy policy;
- Produces electric power in a cost-effective manner; and
- Allows the NPS to assume a leadership role through the installation of sustainable energy sources.

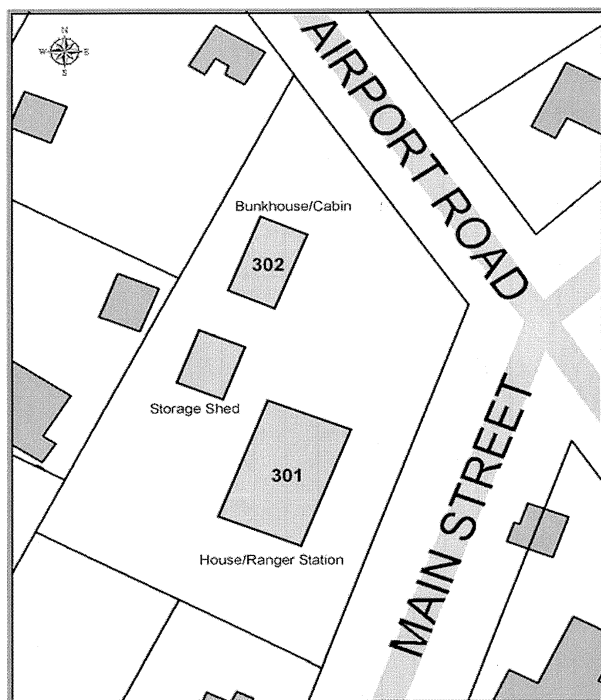


Figure 4. Anaktuvuk Pass Lot Diagram

The Anaktuvuk Pass administrative site serves as the operational headquarters for the Anaktuvuk Pass area (Gates of the Arctic Housing Management Plan 2007). Some of the operations conducted from this location include law enforcement, search and rescue, visitor contact, and resource management project support. Facilities consist of one two-story frame house (#301) that is serviced by community water and sewer systems; a bunkhouse/cabin (#302), and a storage shed (Figure 4). These three structures are situated on a 0.53-acre lot that is surrounded by Nunamuit Native Corporation Land, and was purchased by the National Park Service in 1990.

This NPS administrative site is subject to regular maintenance and current energy efficiency policies (green energy parks and sustainable energy programs). The text of a

new Executive Order (signed January 24, 2007) pertaining to sustainable energy in the national parks states that it is the policy of federal agencies to operate in an environmentally, economically and fiscally sound manner. The policy states that the head of each agency shall: “... improve energy efficiency and reduce greenhouse gas emissions...”, and ensure that “... at least half of the statutorily required renewable energy consumed by the agency in a fiscal year comes from new renewable sources, and ... to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use...”¹. The proposed project, the installation of an alternative energy system at the Anaktuvuk Pass administrative site, would support the implementation of NPS sustainable energy policies and decrease park operational costs for electrical power.

This environmental assessment (EA) analyzes the potential environmental impacts which could result from the alternatives considered, including the No Action alternative. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations

¹ Green Energy Parks Program website, emphasis added.

of the Council of Environmental Quality (CEQ) (40 Code of Federal Regulations 1508.9), and the NPS NEPA compliance guidance handbook (Director's Order [DO]-12, *Conservation Planning, Environmental Impact Analysis, and Decision Making*) (NPS 2001).

2.0 DESCRIPTION OF ALTERNATIVES

2.1 Alternative 1: No Action

Under the no-action alternative, no modification would occur for the power system at the Anaktuvuk Pass ranger station. The building would continue to be dependant on expensive, electric power that is locally generated using diesel fuel transported to the remote community by air. No energy efficient, environmentally friendly, alternative fuel source would be installed.

2.2 Alternative 2: Install a wind power generator for the Anaktuvuk Pass ranger station (NPS Preferred Alternative, and Environmentally Preferred Alternative).



Photo Courtesy of Southwest Windpower, Inc., Flagstaff, Arizona

Under the preferred alternative, a wind power generator would be installed on the NPS lot in Anaktuvuk Pass. This generator would be installed on the site with minimal ground disturbance, would have a set of blades that do not exceed 12 feet in diameter, and would not be more than 50 feet tall.

Additional specifications for the proposed wind power generator include but may not be limited to:

- Minimum 1.8 kW, 220V/60HZ capacity
- 50-325 RPM capacity
- Gearless, brushless, magnet-based alternator for power generation in low wind
- Internal inverter for power conversion
- Capacity to connect to utility lines
- Sound isolator to decrease noise transmitted to tower
- Sound pressure level less than 60 decibels
- Hinged tower base for maintenance

The wind power generator would be installed on a small (less than 25 ft²) footprint on the NPS lot ("main street" side). This location would allow for the best access to prevailing winds, maximum distance to existing overhead power lines, and ability to tip the tower down for maintenance if necessary. Figure 6 (below) illustrates the proposed position of the tower.

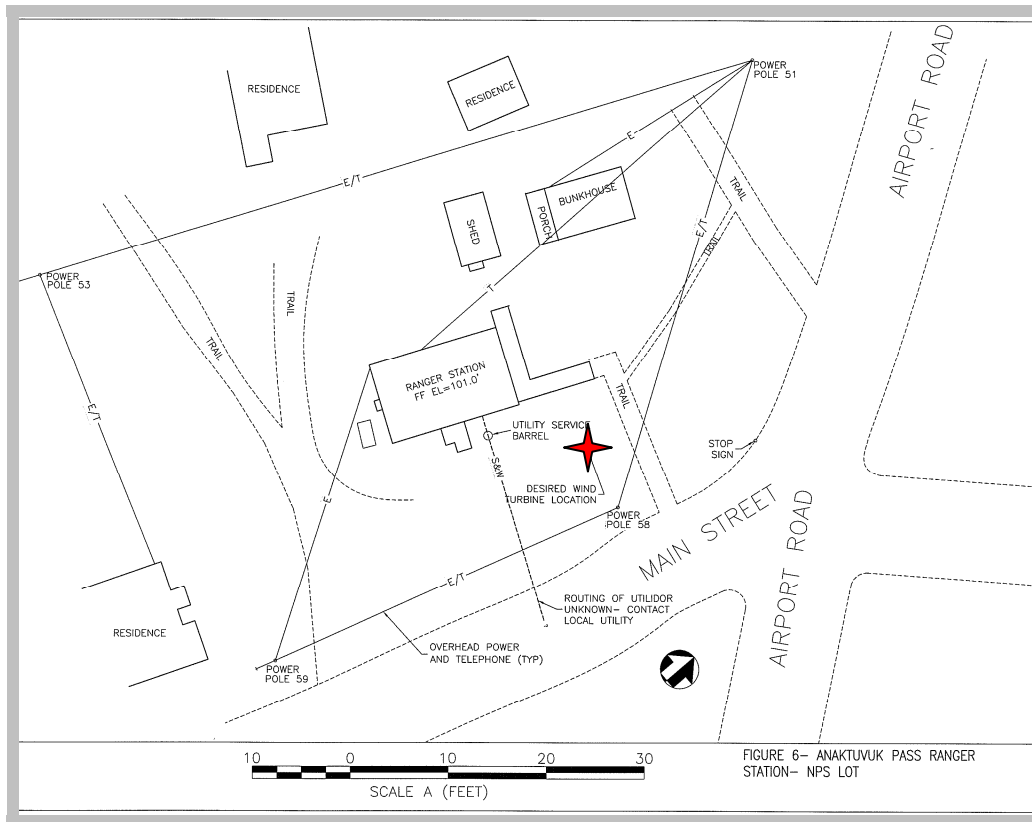


Figure 6. Proposed location of wind power generator

3.0 AFFECTED ENVIRONMENT

Air Quality: The air quality in Anaktuvuk Pass is typical of a small, remote Alaskan Village. It is excellent in general, and is locally impacted by refuse disposal, blowing dust, motorized vehicle exhaust, and the operation of a large diesel generator that provides power to the community.

Soils/Vegetation: The lot where the three NPS buildings are located is a previously disturbed 0.53 acre site within the Anaktuvuk Pass townsite. The vegetation in the immediate vicinity is comprised of willow shrubs (*Salix* spp.), grasses, and abundant fireweed (*Epilobium angustifolium*, *E. latifolium*) (Figure 7).



Figure 7. NPS Lot, Anaktuvuk Pass NPS Photo taken August 2007.

Wildlife (emphasis on avian species): Species of raptors occurring in the Anaktuvuk Pass area include: Osprey, Bald Eagle, Gyrfalcon (also recognized as a species of conservation concern by Boreal Partners in Flight 1999), Merlin, American Kestrel, Rough-legged Hawk, Northern Goshawk, Northern Harrier, Peregrine Falcon, Snowy Owl, Great-horned Owl, Boreal Owl and Short-eared Owl. Complete bird species lists are available for the entire Park & Preserve, but site-specific lists for Anaktuvuk Pass are not available. Alaska has only 6 species of bats and only 2 of those, the little brown bat (*Myotis lucifugus*) and the big brown bat (*Eptesicus fuscus*) are occasionally found north of Interior Alaska. The little brown bat is the most wide-ranging bat in Alaska, but is not abundant (very uncommon) anywhere in the northern areas of the state. Only one specimen of a big brown bat has ever been collected in Alaska, therefore, it is also uncommon (Alaska Department of Fish and Game 1996).

Visual Environment: The area is surrounded by other previously disturbed city lots and dirt roads, and is without trees. Vertical structures in the area include overhead power/telephone lines on telephone poles that are strung across the lot in various directions (fig. 6).

Soundscape: Background noise for the NPS lot within the Village of Anaktuvuk Pass is produced by motor vehicles such as automobiles, off-road vehicles, snowmachines, and occasionally heavy equipment; generators, and aircraft, in addition to the natural sounds of human voices and wind.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Alternative 1: No Action

No impacts would accrue to any natural resources under the No Action Alternative. NPS would not construct a wind power generator and no changes to the power generation system would be implemented.

4.2 Alternative 2: Install a wind power generator for the Anaktuvuk Pass ranger station (NPS Preferred Alternative, and Environmentally Preferred Alternative).

Air Quality: No impacts to air quality that would occur during the construction phase of this project. After the wind power generator is operational, minor positive impacts to air quality would occur due to reduction in use of locally generated power from diesel fuel by the NPS.

Effects on Soils/Vegetation: This site contains soils that have been previously disturbed and compacted. Disturbance to soils would occur within an approximately 25 ft² footprint during installation and some additional compaction would occur due to the possible use of heavy equipment. Vegetation within the approximately 25 ft² footprint would be removed during this project. Minor negative impacts on soils and vegetation would occur.

Effects on wildlife (emphasis on avian species):

The operation of a relatively small wind power generator on the NPS lot in Anaktuvuk Pass would have negligible impacts on migratory bird, bat, and raptor populations in the area. Professional literature indicates that in general, wind power generation facilities can have certain adverse environmental effects on a local or regional level, by damaging habitat and killing birds and bats that fly into turbines. A recent report by the National Academy of Sciences (Environmental Impacts of Wind Energy Projects) from May of 2007 states that while wind energy projects do cause mortalities in migratory birds and bats, there is currently not enough research available to determine if these mortalities are generating measurable impacts on bird and bat populations. Most turbines examined in previous studies are orders of magnitude larger (up to 300 feet in diameter) than the wind power generator proposed for Anaktuvuk Pass.

In general, the most frequent bird fatalities due to wind turbines are related to nocturnal, migrating songbirds, probably because of their abundance. The prolonged daylight (>16-22 hours) during the prime migratory periods (April-October) in the Anaktuvuk Pass area would mitigate some potential impacts and/or mortalities of migratory birds.

Raptorial bird mortalities are most often documented for older, smaller wind turbines (National Academy of Science 2007). The wind power generator proposed for Anaktuvuk Pass is relatively very small, and would use the newest renewable energy technology available. The rotation speed of the blades would be relatively low, and the blades would therefore be very visible to passing \ hunting raptors.

A study by the National Academy of Sciences (2007) states that wind turbines placed on ridges generated the highest proportion of bat mortalities. Bat mortalities due to this project would be

negligible due to placement of the wind power generator in a valley that has very low bat abundance.

Visual Impacts: There would be minor ongoing visual impacts due to the presence and operation of the wind power generator. The height of the wind power generator would not exceed 50 feet and would therefore be comparable to the telephone poles surrounding the lot (35-40 feet). The proposed position of the tower will allow it to be installed and tipped down for maintenance without conflict with overhead power/telephone lines.

Soundscape: There would be minor short-term noise from heavy equipment or power tools during the installation phase. Long-term noise impacts from the operation of the generator would not exceed 60 decibels, which is the typical level for human conversation (decibel scale is available at: <http://www.glenbrook.k12.il.us/gbssci/phys/Class/sound/u1112b.html>). The wind power generator would have an internal noise dampener to decrease noise and vibration from the blade rotation. The impact on the Anaktuvuk Pass soundscape due to the implementation of this alternative would be negligible.

Cumulative Effects: Past minor impacts on air quality, soundscape, and the visual environment in Anaktuvuk Pass have been due to the presence of this rural village and include refuse disposal, blowing dust, motorized vehicle exhaust, and the operation of a large diesel generator that provides power to the community. Wildlife species in the area have likely been slightly impacted by the presence of the Anaktuvuk residents. Avian species have likely experienced a slight displacement due to townsite, but no evidence for negative impacts to these wildlife populations is available. Soils/vegetation on the site have been moderately disturbed due to the construction and operation of a ranger station on the NPS lot.

Additional minor negative impacts to the visual environment due to the implementation of this alternative would not change the overall cumulative effects from a minor level for this resource. Additional minor negative impacts to the soils/vegetation on the NPS lot due to the implementation of this alternative would not change the overall cumulative effects from a moderate level for this resource.

Conclusion: Environmental effects for Alternative 2: the installation of a wind power generator for the Anaktuvuk Pass ranger station (NPS Preferred Alternative) range from negligible (air quality, wildlife, soundscape) to minor (soils/vegetation, visual environment). A long-term positive impact from this project would be a reduction in electrical power use by the NPS. Effects on air quality, wildlife, and the visual environment would be negligible. Any minor impacts to soils/vegetation and the soundscape within Anaktuvuk Pass, would be outweighed by the long term beneficial impacts of installing the wind power generator for clean, efficient energy. Implementation of Alternative 2: the installation of a wind power generator for the Anaktuvuk Pass ranger station (NPS Preferred Alternative), would not lead to the impairment of park unit natural resources that are key to the purposes and values for which the park unit was established.

5.0 CONSULTATION AND COORDINATION

Section 7 Consultation: On 9/19/2007 the NPS initiated informal consultation with the U.S. Fish & Wildlife Service (USFWS) for this project regarding Section 7, Endangered Species concerns. The USFWS determined that there were no listed species in the project area, and the project is not close to any designated or proposed critical habitat. Neither further consultation, nor preparation of a Biological Assessment were therefore required (documentation from Sarah Conn, USFWS, included in project file).

List of Preparers:

Gates of the Arctic National Park & Preserve:

Jobe Chakuchin, Natural Resource Specialist

Melanie Flamme, Wildlife Biologist

Alaska Region

Lisa Fox, Environmental Protection Specialist

Clarence Summers, Subsistence Manager

Bill Heubner, Engineer

References:

Alaska Department of Fish & Game 1996. Wildlife Notebook Series: "Bats". Text by Jack Whitman / Doreen Parker. 1pp.

National Academy of Sciences, Committee on Environmental Impacts of Wind Energy Projects, National Research Council. 2007. Environmental Impacts of Wind-Energy Projects. 394pp.

National Park Service. 1986. General Management Plan, Gates of the Arctic National Park and Preserve. U.S. Department of the Interior. 299pp.

National Park Service. 2001. Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision Making. U.S. Department of the Interior. 123pp.

National Park Service. 2007. Gates of the Arctic National Park & Preserve Housing Management Plan. U.S. Department of the Interior. Fairbanks, Alaska. 27pp.

Appendix A

ANILCA 810 Evaluations

I. INTRODUCTION

This section was prepared to comply with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). It summarizes the evaluations of potential restrictions to subsistence activities which could result from the construction, operation and maintenance of a wind power generator at the Anaktuvuk Pass Ranger Station for Gates of the Arctic National Park and Preserve.

II. EVALUATION PROCESS

Section 810(a) ANILCA states:

In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions, the head of the federal agency...over such lands...shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency –

- (1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to section 805;
- (2) gives notice, and holds, a hearing in the vicinity of the area involved; and
- (3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

ANILCA created new units and additions to existing units of the national park system in Alaska. Gates of the Arctic National Park & Preserve was established by ANILCA section 201 (4)(a) for the purposes among others:

“ To maintain the wild and undeveloped character of the area, including opportunities for visitors to experience solitude, and the natural environmental integrity and scenic beauty of the mountains, forelands, rivers and lakes, and other natural features; to provide continued opportunities, including reasonable access for mountain climbing, mountaineering, and other wilderness recreational

activities; and to protect habitat for and the populations of, fish and wildlife, including, but not limited to caribou, grizzly bears, Dall sheep, moose, wolves, and raptorial birds. Subsistence uses by local residents shall be permitted in the park, where such uses are traditional, in accordance with the provisions of title VIII.”

The potential for significant restriction must be evaluated for the proposed action’s effect upon”...subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives that would reduce or eliminate the use.”

III. PROPOSED ACTION ON FEDERAL LANDS

Alternative 1: No Action

Under the no-action alternative no modification would occur for the power system at the Anaktuvuk Pass Ranger Station. Environmental impacts from construction, operation, and maintenance associated with the Proposed Action would not occur. The NPS would continue to use locally generated power that is produced by the local power company (diesel fuel generators).

Alternative 2 (Proposed Action / NPS Preferred Alternative): Construct, operate and maintain a wind power generator at the Anaktuvuk Pass Ranger Station with minimal ground disturbance.

IV. AFFECTED ENVIRONMENT

A summary of the affected environment pertinent to subsistence uses is presented here. Gates of the Arctic National Park and Preserve boundaries include 8,229,946 acres of federal land of which approximately 7,052,000 acres are designated wilderness and 242,136 acres are private land. The park and preserve lie in the central Brooks Range and occupy lands on either side of the continental divide from the eastern boundary at the Trans-Alaska Pipeline Utility Corridor and the Dalton Highway to the Noatak National Preserve boundary on the west. The northern boundary runs along the range front; the North Slope stretches beyond to the Arctic Ocean. The southern boundary runs through the taiga forest including some of the southern foothills within the park. The Nunamiut community of Anaktuvuk Pass is located within Gates of the Arctic National Park and Preserve.

Nomadic peoples have used and occupied the area for thousands of years, following caribou herds and traveling to regional trading areas to meet with other Native groups. These peoples were from at least three distinct Alaska Native cultures: Koyukon Athapaskan Indians, Kobuk Eskimo, and Nunamiut Eskimo. Archeological sites found today trace their history and use, and may give clues to the earliest human inhabitants of northern Alaska. The temporal range of known sites in the Park/Preserve covers at least the last ten millennia. The variety of known archeological sites includes seasonal villages, long- and short-term camps, hunting and butchering locales, caribou fences, lookout sites, fish camps, trapping camps, and resource harvesting locations such as birch bark gathering. Local rural residents still depend upon traditional areas and a wide array of resources in the park to sustain a subsistence way of life.

Subsistence harvest of fish and wildlife is allowed in Gates of the Arctic National Park and Preserve by qualified subsistence users subject to Federal subsistence management regulations and Park-specific regulations and policies. ANICLA protects subsistence uses by local rural residents

as a priority consumptive use over other non-subsistence consumptive uses.

Hunting, fishing, trapping and gathering remain a vital part of a subsistence way of life for local residents that continue to evolve in this region. Major subsistence resources include lake trout, Arctic grayling, Arctic char, ptarmigan, furbearers, waterfowl, squirrels, grizzly bears, moose, wolves, Dall's sheep, caribou and several species of berries. Occasionally subsistence users will make special trips into specific areas such as Chandler Lake or other large lakes to fish for Arctic char and lake trout. Arctic grayling are caught in large numbers on lower Ekokpuk Creek near the confluence with Kollutarak Creek. Summer and fall hunting for caribou, Dall's sheep, moose, grizzly bear, Arctic ground squirrel and birds occurs opportunistically whenever people leave the village. Winter trapping efforts concentrate on the harvest of lynx, wolverine, wolves, marten and red fox. These and other subsistence activities occur throughout the year and are concentrated in a large region surrounding the community in the central, northern and eastern portions of the Park and Preserve.

The NPS recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife, other renewable natural resources, and regulatory openings and closings of areas. A subsistence harvest in a given year may vary considerably from previous years because of such factors as weather, surface snow conditions for traveling, wildlife migration patterns, natural population cycles, wildlife conservation practices such as leaving a trapline fallow periodically, and regulatory changes.

For a comprehensive description of NPS management policies review the 1996 NPS Management Policies document, the Gates of the Arctic National Park and Preserve, Final General Management Plan (NPS 1986) and the Gates of the Arctic National Park and Preserve Final Wilderness Environmental Impact Statement EIS (NPS 1988).

V. SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impact on existing subsistence activities, three evaluation criteria were analyzed relative to existing subsistence resources that could be impacted. The evaluation criteria were:

- 1) The potential to reduce important subsistence wildlife populations by a) reductions in numbers, b) redistribution of subsistence resources, or c) habitat losses;
- 2) What effect the action might have on subsistence hunter access;
- 3) The potential for the action to increase competition.

- 1) The potential to reduce populations:

The proposed actions are not expected to have any significant effect on subsistence species or habitats. Wildlife and habitats would be subjected to minimal potential impacts and disturbances. However, provisions of ANILCA and Federal regulations provide the tools for adequate protection of fish and wildlife populations on federal public lands. In addition, NPS regulations allow the

superintendent to enact closures and/or restrictions if necessary to protect subsistence opportunities and ensure the continued viability of a particular fish or wildlife populations.

2) Restriction of Access:

All rights of general access for subsistence harvest on NPS lands are granted by Section 811 of ANILCA and the 1996 Anaktuvuk Pass Land Exchange Agreement for specific areas surrounding the community. Gates of the Arctic National Park and Preserve are managed according to legislative mandates, NPS management policies and guidelines within the approved General Management Plan. The proposed action is not expected to limit or restrict the access of subsistence users to natural resources within the Park or Preserve. The superintendent may enact closures and/or restrictions if necessary to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population.

3) Increase in Competition:

Competition for wildlife or resources is not expected to significantly impact subsistence users as a result of the proposed actions. NPS regulations and provisions of ANILCA mandate that if and when it is necessary to restrict taking of fish or wildlife subsistence users are given a priority over other user groups. Continued implementation of the ANILCA provisions should mitigate any increased competition from resource users other than subsistence users. The superintendent may enact closures and/or restrictions if necessary to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population.

VI. AVAILABILITY OF OTHER LANDS

Subsistence users use other Federal public lands within the region. The proposed action does not affect the availability of Federal lands for subsistence uses. The proposed actions are consistent with NPS mandates and the park/preserve General Management Plan.

VII. ALTERNATIVES CONSIDERED

The EA and this evaluation have described and analyzed the proposed alternatives. The proposed actions are consistent with NPS mandates and the Park/Preserve General Management Plan.

VII. FINDINGS

This analysis concludes that the proposed actions will not result in a significant restriction of subsistence uses.