National Park Service
U.S. Department of the Interior

Kenai Fjords National Park
Seward, Alaska

Kenai Fjords National Park
Over-the-Snow Transportation Feasibility Study

PMIS No. 160607

January 2012

John A. Volpe National Transportation Systems Center

U.S. Department of Transportation
Research and Innovative Technology Administration

Report Notes

This report was prepared by the U.S. Department of Transportation (U.S. DOT) Research and Innovative Technology Administration (RITA) John A. Volpe National Transportation Systems Center (Volpe Center) in Cambridge, Massachusetts. The Volpe Center study team was led by Alexander S. Linthicum of the Transportation Planning Division and F. Scott Lian of the Energy Analysis Division.

This effort was undertaken in fulfillment of PMIS 160607 under an August 2011 reimbursable agreement between Western Federal Lands Highway Division and the Volpe Center (DTFH70-11-X-30048).

Acknowledgments

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List of Acronyms

AKDOT&PF	Alaska Department of Transportation and Public Facilities
ATIA	Alaska Travel Industry Association
ATV	All-terrain vehicle
AWD	All-wheel drive
BAT	Best available technology
CDL	Commercial driver's license
CPG	Chugach Powder Guides
CPI	Consumer price index
CUA	Commercial use authorization
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FLMA	Federal land management agency
FLREA	Federal Lands Recreation Enhancement Act of 2004
FWS	Fish and Wildlife Service
GGT	Great Glen Trails
GMP	General Management Plan
GS	General schedule (pay scale)
LRIP	Long range interpretive plan
NPS	National Park Service
OTS	Over-the-snow
PRPP	Park Roads and Parkways Program
ROW	Right-of-way
TCFO	Total cost of facility ownership
TRIP	Paul S. Sarbanes Transit in Parks Program
USFS	United States Forest Service
VHT	Vehicle hours traveled
WASO	Washington Support Office

Executive Summary

Kenai Fjords National Park seeks to expand winter access to the Exit Glacier Area. Year-round access would better enable the park to accomplish its mission objectives related to visitor experience, education, and research. The Exit Glacier Area is located north of Seward, Alaska, and 7.3 miles northeast of the Seward Highway at the end of Herman Leirer Road. The road is inaccessible to cars November through April because of snow and ice conditions.

This report documents a feasibility study for over-the-snow (OTS) transportation service on Herman Leirer Road to the Exit Glacier Area. Such a service would carry passengers up the snow-covered road in a vehicle with treads instead of wheels. Through a site visit, interviews, and independent analysis, the study team examined existing conditions, comparable services, vehicle options, market demand, owner-operator models, and business models. The team's conclusions and recommendations are as follows:

Winter use facilitated by OTS service will cost the park roughly $750 per day

Annual indirect operations costs are expected to be $750 per day, or $12,000 for 16 days of OTS service. One-time capital expenses of $8,000 to $13,000 are required to purchase a grooming sled and trail markings. Total first year indirect costs are expected to be between $20,000 and $25,000.

Kenai Fjords National Park should select one of three owner-operator models that achieves its goal to improve access to the Exit Glacier Area while assigning it minimal liability

The three OTS owner-operator models that best allow the park to meet its goal while limiting liability are as follows, in order of least to greatest NPS liability:

- Non-NPS-owned, non-NPS-operated commercial use authorization
- Non-NPS-owned, non-NPS-operated concessions contract
- Non-NPS-owned, non-NPS-operated service contract

Privately-owned vehicles may be put to use at other locations when not in service on Herman Leirer Road, thus spreading capital cost recovery over a greater number of riders and driving down breakeven fares.

Commercial use authorizations and concession contracts assign most liabilities to private operators

Commercial use authorizations (CUAs) and concession contracts assign liability for operations, maintenance, and direct costs to the private operator(s). If for any reason demand drops, fuel costs escalate, or weather conditions in a given season are unfavorable, the park would not be liable for providing or paying for service.

Turn-key service contracts shift liability for service provision and cost recovery to the park

A turn-key service contract shifts liability to the park comparative to a CUA or concession contract, but may provide more year-on-year consistency of operations (particularly over a CUA). Kenai Fjords National Park should only consider a service contract if it considers itself responsible for *providing* winter access as opposed to *enabling* winter access to the Exit Glacier Area.

Two NPS-ownership models should be considered as a last resort

If no private operator is willing to participate in a CUA, concession contract, or turn-key service contract, and if Kenai Fjords National Park considers itself responsible for *providing* winter access to the Exit Glacier Area as opposed to *enabling* winter access, then the park might consider one of two NPS-owned models, presented in order of least to greatest NPS liability:

- NPS-owned, non-NPS-operated service contract

- NPS-owned, NPS-operated

The park would not have the same flexibility as a private operator to operate the vehicle at other locations during the year, and the vehicle would remain dormant for as many as ten months of the year.

The park would fund a service contract or NPS-operated service with an authorized fund source

Under a service contract or NPS-operated service, NPS must use an authorized fund source to pay for direct capital, operations, and/or maintenance costs. Three sources are available: the park's own base operational funds, a new expanded amenity fee, or a new transportation fee. For 16 service days, direct costs are estimated to range from $4,300 to $8,300, depending on the business model, vehicle type, and vehicle purchase price.

The Seward business community has an opportunity to support OTS service

Businesses could support OTS service by pledging a nominal amount to help the park offset its indirect operating costs. To encourage support from many businesses, the business community could set an all-or-nothing target. If the business community misses the target, none of the businesses would be committed to contribute. Businesses who contribute would be listed as sponsors of the system on promotional materials for the service.

If implemented, OTS service will require a novel method to restrict cars

The current system of jersey barriers is designed to allow snowmachines to access closed portions of Herman Leirer Road while preventing access by cars. If OTS service is implemented, a new method of access management will have to allow an OTS vehicle to pass while still preventing access by cars.

If implemented, OTS service should initially be offered during March and April

Existing conditions – including temperature, precipitation, daylight conditions, visitation trends in Seward, a push by the Alaska Travel Industry Association (ATIA) to create a "hidden" winter peak season between February 1st and April 15th, and seasonal marketing for conference facilities in south-central Alaska – suggest the best opportunity for initiating OTS transportation to the Exit Glacier Area is in March and April. If demand during these months is strong, service in subsequent years may be expanded.

If implemented, OTS service should initially be targeted toward casual, sightseeing visitors

The largest target market consists of casual, sightseeing visitors traveling with families. The trip should accommodate people with a wide range of abilities so that the whole family can participate, and prices should be family friendly and comparable to those of the SeaLife Center, a nearby regional attraction. Fares around $30 to $40 are expected to be within a reasonable range for a unique service targeted to out-of-town casual visitors.

If popular, OTS service may be expanded to target additional markets

Another less understood and likely smaller target market consists of non-local visitors who are looking to take part in organized activities such as snowshoeing, cross-country skiing, and ice climbing. Fares for this target market may bundle the cost of transportation with the cost of an activity. Demand for these trips, however, is thought to be smaller.

1. Introduction

Kenai Fjords National Park seeks to expand winter access to the Exit Glacier Area in order to accomplish the visitor experience, education, and research aspects of its mission throughout the year. Located 7.3 miles northeast of the Seward Highway at the end of Herman Leirer Road, the Exit Glacier Area is the only area of the park accessible to cars and buses. During June, July, and August of an average year, over 180,000 visitors arrive to the Exit Glacier Area by this road.

During the winter, the road is blocked by snow and closed to all motor vehicles except snowmachines. Alaska Department of Transportation and Public Facilities (AKDOT&PF) has the responsibility for maintaining Herman Leirer Road between the Seward Highway and the beginning of NPS-managed land, and the department elects to close the road instead of clearing it from snow and ice November through April. During this time, Herman Leirer Road becomes a popular recreation route for cross-country skiers, snowshoers, dogsleders, and snowmachiners.

Allowing and even expanding winter access to the Exit Glacier Area is a common component among Kenai Fjords National Park's Foundation Statement, its Long Range Interpretive Plan (LRIP), and the Exit Glacier Area Plan, an amendment to the park's General Management Plan (GMP). The latter document includes the concept of a "snowcoach" operation to bring groups to the Exit Glacier area in winter.

In addition, the Seward business community has expressed interest in growing winter tourism to the city. OTS service to the Exit Glacier Area has often been suggested at community meetings and conversations with park management as a potential attraction for winter visitors, and with the suggestion comes key questions:

- What is the ideal winter use envisioned by NPS at the Exit Glacier Area?
- Who are the primary user groups or market segments an OTS service should target?
- What facility and service investments should NPS make to support increased use at the Exit Glacier Area? What are associated costs and potential funding streams for these investments?
- Is OTS service logistically and financially feasible by either the park or a private operator?
- If privately owned and/or operated, what type of agreement or authorization would be required?
- What additional impacts on natural resources might accompany additional winter use at the Exit Glacier Area?

This report documents the results of study of the feasibility of such an OTS service and helps Kenai Fjords National Park formulate answers to the above questions. The report is presented in eight chapters. Following this introduction chapter, each chapter reviews a topic related to over-the-snow (OTS) transportation service and ends with the study team's analysis and conclusions for how the chapter's findings may guide the park's decision making process.

Chapter 2 documents natural resources, the local climate, visitation and use, and existing transportation services and services for the Exit Glacier Area and Herman Leirer Road. Existing conditions were compiled from September 2011 through November 2011 using information supplied by the park, as well as information collected online and in-person on a site visit to Seward. During the site visit, the study team examined the existing conditions at the park, met park staff members to discuss winter use, interviewed local stakeholders, and facilitated a public meeting. A description of the site visit is included in Appendix A: Site visit notes, September 26-29, 2011.

Chapter 3 reviews market conditions, operating conditions, operational decisions (e.g., vehicle type, service frequency, visitor demand, fare prices), and business models from OTS services in other parts of Alaska and the continental United States. The chapter concludes with how these lessons learned from other services may inform OTS service on Herman Leirer Road.

Chapter 4 investigates the advantages and disadvantages of five OTS vehicle options. It concludes by suggesting a snowmachine with passenger sled or a purpose-built snowcoach are the most compatible with the needs of the park and operating conditions on Herman Leirer Road.

Chapter 5 analyzes potential demand for OTS service. It describes potential target markets, identifies submarkets of desired user experience, and roughly estimates the size of each submarket. The chapter concludes by suggesting that casual sightseers make up the largest target market and that a service tailored to these visitors may have the greatest likelihood of success as a pilot service.

Chapter 6 compares six owner-operator models that provide transit services to visitors of national parks and describes the funding sources available to each. The chapter concludes by presenting a decision process park management may use to select an owner-operator model that helps the park meet its transportation goals while minimizing liability.

Chapter 7 analyzes two scenarios for each of three potential business models. It introduces the use of a lifecycle cost model spreadsheet tool and details all input variables and model outputs. It describes the three business models and associated six scenarios and presents model outputs for the scenarios. The chapter concludes with an analysis of the business models.

Chapter 8 summarizes conclusions and recommendations for implementing OTS service on Herman Leirer Road.

Appendix A contains a detailed summary of the September 2011 site visit to Kenai Fjords National Park.

Appendix B contains the Memorandum of Understanding for Exit Glacier Road (Forest Highway 46) between the U.S. Forest Service, National Park Service, Federal Highway Administration, AKDOT&PF, the Kenai Peninsula Borough, and the City of Seward.

2. Existing Conditions

Location

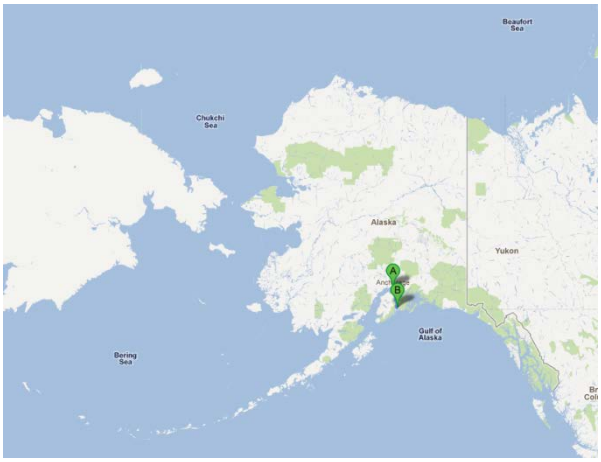
Kenai Fjords National Park was established in 1980 by the Alaska National Interest Lands Conservation Act. The park covers 1,047 square miles on the Kenai Peninsula in south-central Alaska near the city of Seward, Alaska.

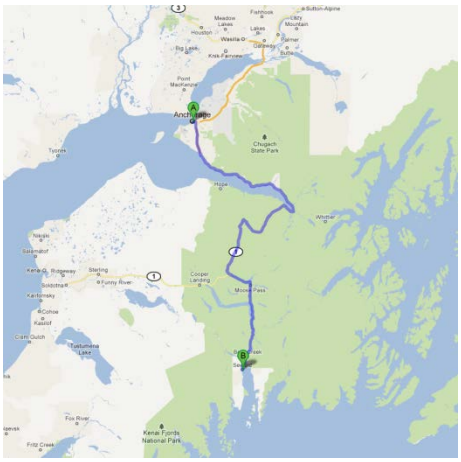
Located 130 miles south of Anchorage at the head of Resurrection Bay on the southern shore of the Kenai Peninsula, Seward, shown in Figure 1, is surrounded by lush vegetation and snow-capped mountains and is a gateway community to Kenai Fjords National Park and Chugach National Forest. Seward is the southern terminus of both the Alaska Railroad and the 127 mile Seward Highway. As Alaska's only deep-water, ice-free port, with rail, highway and air transportation to Alaska's interior and urban population centers, the city is a hub of maritime commerce. As of the 2010 census, there were close to 2,700 permanent residents in the city of Seward, and the population is said to increase substantially in warmer months as the service economy swells to meet the needs of visitors.

Kenai Fjords National Park contains the Harding Icefield, one of the largest icefields in the U.S. and the source of 38 glaciers. During the warmer months, tourists visit the area to view fjords, glacial ice, and diverse wildlife including Steller sea lions, sea otters, Orca, mountain goats, bald eagles, and a vast number of sea birds. Migrating whale species are common sights in the fjords and include Orca, Humpback, Gray, Minke, and Fin whales.

Local tour operators offer wildlife-viewing tours during the warmer seasons, including kayak and boat tours of the fjords, helicopter tours, and guided hiking tours. These tours are not offered during the winter months.

Figure 1
Left: Location of Anchorage (A) and Seward (B). Right: Seward Highway between Anchorage (A) and Seward (B).
Source: Google Maps





The Exit Glacier Area

Exit Glacier is the most accessible glacier at Kenai Fjords National Park. It is located in the Exit Glacier Area, the only area of the park accessible by road. From this point, hiking trails offering views of the glacier and the Harding Icefield may be accessed easily.

The Harding Icefield and Exit Glacier are cornerstone attractions at Kenai Fjords National Park and serve as both natural vistas and educational tools for the park to discuss the effects of natural forces and the environment on the geographical landscape. The retreat of Exit Glacier over the past several decades is a reminder of the effects of climate change and global warming.

Figure 2
View of Exit Glacier and the Harding Icefield
Source: Volpe Center

Whether as an educational experience or a display of natural beauty, Exit Glacier is a natural resource central to the park's priorities and mission. Providing access for all visitors at all times of the year is central to achievement of this mission. However, Herman Leirer Road, the only road that provides access to the Exit Glacier Area, is all but closed to the casual, sight-seeing visitor in the winter. During November through April, the AKDOT&PF closes this road and focuses its limited plowing resources on commercial, industrial, and residential needs. During these months, snow and ice cover the pavement and Herman Leirer Road becomes an active recreation corridor for cross-country skiers, snowmachiners, and dog mushers. Currently, few of these users make the seven mile journey for the explicit purpose of visiting the Exit Glacier Area.

Providing winter access to the Exit Glacier Area is specifically mentioned within the park's management documents. The 2004 amendment to the park's GMP, the Exit Glacier Area Plan, specifically addresses winter accessibility and includes the desire and language for a "snowcoach" operation to "bring groups, such as school children and Elder Hostel, to the Exit Glacier Area in winter to participate in educational programs at the Exit Glacier Nature Center and to improve access to the Exit Glacier Area for individuals and families to participate in winter recreation activities and educational programs."

The park's LRIP notes Kenai Fjords National Park has national significance because it "provides opportunities to experience, understand, and appreciate the scenic and wild values of the Harding Icefield, its outflowing glaciers, coastal fjords, and wildlife and to comprehend environmental change in a human context." The LRIP specifically seeks access for "winter visitors [who are] unable to access Exit Glacier because they lack appropriate transportation and/or gear." Without adequate personal gear and private OTS capabilities, such as skis, snowmachines, or snowshoes, there are no provisions for winter visitors to access the park.

Herman Leirer Road

Herman Leirer Road connects the Exit Glacier Area with the Seward Highway at a point approximately 3.5 miles north of Seward. The paved, two-lane road, shown in Figure 3, stretches 8.4 miles, of which the first 7.3 miles is operated and maintained by AKDOT&PF. While the road increases in elevation from east to west, it does not feature significant grades or steep hills.[*]

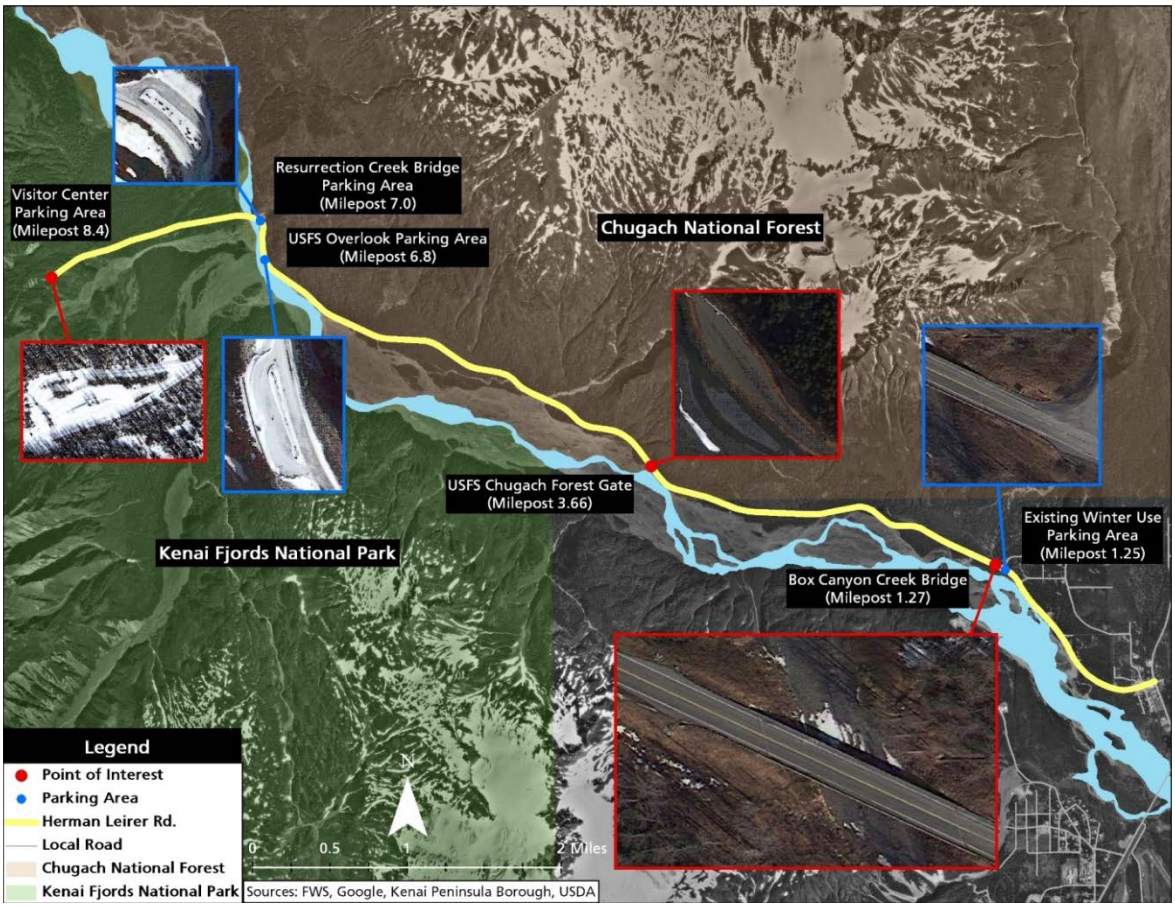
The section of road from Seward Highway (MP 0) to Box Canyon Creek Bridge (MP 1.3) is mostly flat and is bordered by private land until reaching state owned land prior to the Box Canyon Creek Bridge. This section is plowed and maintained for vehicle traffic during the winter by AKDOT&PF. The first gate is located just east of the Box Canyon Creek Bridge, and in winter months jersey barriers are placed 50 yards west of the bridge to permit passage of snowmachines but block cars.

The section of road from Box Canyon Creek Bridge (MP 1.3) to the U.S. Forest Service boundary (MP 3.7) is managed on both sides by the Alaska Department of Natural Resources. The elevation of the road rises gradually from east to west. The U.S. Forest Service boundary is the beginning of Chugach National Forest and is marked by a sign followed by a large pullout / parking area and then a gate, referred to as the second gate.

The section of road from the beginning of the Chugach National Forest (MP 3.7) to the Resurrection Creek Bridge (MP 7.3) is managed on both sides by U.S. Forest Service. Along this portion of the road, snow conditions are frequently deeper and more consistent than over lower portions of the road. Prior to the Resurrection Creek Bridge there are two pullouts. The first pullout / scenic overlook is on the southwest side of the road, roughly 1,000 feet before the bridge and provides parking space for six to ten vehicles. The second pullout is just prior to the bridge on the northeast side of the road, and provides access to the Resurrection River Trail and parking for six to eight vehicles.

[*] Exit Glacier Recreational Corridor, Pre-Design, Phase I Submittal; RIM Architects with Corvus Design, URS & Alta Planning and Design, 2009.

Figure 3
Key features along the Herman Leirer Road
Sources: FWS, Google, Kenai Peninsula Borough, USDA



The final road section is from Resurrection Creek Bridge (MP 7.3) to the Exit Glacier Area (MP 8.4). The road and land on both sides of the road lie within Kenai Fjords National Park and are managed by NPS. The welcome sign for the Exit Glacier Area is located about a quarter mile past the bridge. The road continues to gradually slope upward here. The Exit Glacier Area consists of facilities including a parking lot, public use cabins, a warming hut, outhouses, and the Exit Glacier Nature Center, as shown in Figure 4.

Figure 4
Visitor facilities located at the Exit Glacier Area
Source: Google Maps

Towards the end of the fall season, the river, creek, and floodplain can threaten parts of the road with flooding. Typically, flooding occurs due to heavy rain prior to snowfall, with water causing issues along Herman Leirer Road at Box Canyon Bridge, sections of the road within Forest Service land, and sections of the road within the park's boundary in the half-mile nearest Resurrection Creek Bridge. Flooding sometimes limits accessibility to the park and causes dangerous icy conditions when the temperatures drop below freezing.

Winter management

From the beginning of November through April, Herman Leirer Road is closed by the AKDOT&PF.[*] The road's closure blocks all vehicular access to Exit Glacier during the winter months and is achieved by placing jersey barriers just beyond the Box Canyon Creek Bridge, shown in Figure 5.

Figure 5
Location of Jersey barriers used by the AKDOT&PF to close the road
Source: Google Maps

[*]Memorandum of Understanding for Exit Glacier Road (Forest Highway 46) between the U.S. Forest Service, National Park Service, Federal Highway Administration, AKDOT&PF, the Kenai Peninsula Borough, and the City of Seward, 1981 (Revised July 1988). Provided in Appendix B.

The use of jersey style barriers to close the road came about after previous years' attempts to close the road with gates, visible at the start of the bridge in Figure 6. Closing the gate at this point resulted in cars parking in and along the sides of the road and impinged on AKDOT&PF's ability to plow the road by reducing the space available to pile snow and turn the plow. By placing the jersey barriers after the bridge, there is enough space for limited parking and for the plow to complete its snow-clearing duties. The jersey barriers are placed close enough to block the passage of cars on the road but wide enough to allow snowmachines through.

Figure 6
Looking east over the Box Canyon Creek Bridge on Herman Leirer Road
Source: Volpe Center

A road closure gate can be seen prior to the bridge on the south (left) side of the road.

The road's closure from November through April is a result of varying conditions along the road during the winter and AKDOT&PF's snow plowing priorities.

Topography, elevation differences from one end of the road to the other, and the presence of Exit Glacier create varying microclimates at points along Herman Leirer Road. Often times it may be snowing near Exit Glacier and raining in downtown Seward which is along the ocean coast. A traveler approaching the glacier along the road during such conditions might traverse through rain on the lower portions of the road near the Seward Highway, ice or sleet in the middle sections, and heavy snow near the Exit Glacier Area. Along the way the surface of the road may change from glare ice, a result of rainfall freezing on the road due to low ground temperatures, to snow accumulating on top of glare ice, to rapidly increasing snowfall accumulations. The park has recently installed a Snowpack Telemetry station at the Exit Glacier Area to gain a firmer understanding of local weather conditions.[*]

The road's relatively low travel demands during winter months make it a lower priority for plowing than Seward's major arteries, commercial, residential, and industrial streets, and the airport.

The Seward Ranger District of the Chugach National Forest maintains trailheads accessible along Herman Leirer Road during the non-winter months and generally takes a "hands-off" approach during the quiet winter season. During this time, trailheads are not cleared and parking areas are not plowed. Though a potential OTS service would not conflict with the Forest Management Plan, a special use permit would be required if such a service would provide access to U.S. Forest Service land and/or trailheads. In general, the U.S. Forest Service does not opposed the concept of an OTS service on Herman Leirer Road.

[*] National Resources Conservation Service. "About SNOTEL." http://ftp.wcc.nrcs.usda.gov/snow/about.html

Once the road is closed and snow has accumulated, the park does not plow the parking areas or clear snow to allow access to the Exit Glacier Nature Center. Park staff members do clear snow to provide access to the warming hut, public restrooms and the public use cabin. These efforts are often supplemented by user groups, such as IdidaRide Sled Dog Tours, which stops at the warming hut to provide guests a brief respite from the snow. This group often clears a snow 'staircase' from the snow level (at times five to eight feet above the ground) to ground-level in front of the entrance to the warming hut. Aside from these minimal accommodations for access to basic services, the park does not perform winter maintenance in and around the Exit Glacier Nature Center. Trails are not currently cleared or groomed, the Exit Glacier Nature Center is closed, and, aside from staff residing in one of the cabins, there are no park staff performing interpretation or other visitor-oriented tasks.

Winter use along the Herman Leirer Road

Local residents of Seward enjoy snowmachining, dogsledding, cross country skiing, snowshoeing, skijoring and mountain biking along the road after it is closed to vehicles. Although a few users do reach the Exit Glacier Area in the winter, they are usually dogsledders and snowmachiners, the only users with sufficient range to travel the entire length of the road beyond the closure point.

Recreationists share the use of the road. Most users who participated in the public meeting and individual interviews confirmed that despite little separation along the road, there were few user conflicts. Occasional reports of snowmachines passing close to dogsled teams were noted during the meeting; however, the prevailing opinion was that the road offered sufficient space to recreate without significant user conflicts. The available space provided by the open road allows for shared use and is one of the main attractions drawing people to the road for winter recreation.

Regular wintertime users of the road indicate use is highest during weekends, in part due to the lack of daylight during the winter in the evening hours when residents are off work. A Saturday or Sunday under good conditions may result in up to twenty users enjoying one of the various activities noted above, though average daily use for recreating near Exit Glacier is likely fewer than ten users on any given day.

The public use cabins, warming cabin, and winter rest rooms at Exit Glacier Area remain open for limited winter use by staff, a local dog-sled tour operator, and the small handful of independent visitors who are able to make the trek. Tour operators interested in expanding winter operations and those wishing to recreate near Exit Glacier during the winter months desire access to the Nature Center and improved access to bathrooms and warming facilities.

Herman Leirer Road recreational corridor project

In 2009 the National Park Service provided funds to re-visit a stalled 1999 multimodal trail project which would connect the city of Seward's waterfront to Exit Glacier and would be a shared use, non-motorized transportation corridor. The original project had run into funding shortages.[*]

The current project has three options for the trail, described in the draft environmental assessment for the Exit Glacier Recreational Corridor:[†]

- Separated pathway by the road
- Pathway on a widened road

[*] Ritchie, Cinthia, 'Exit Glacier multimodal trail a step closer to reality,' Alaska Dispatch, March 16, 2011.
[†] Exit Glacier Recreational Corridor, Pre-Design, Phase I Submittal; RIM Architects with Corvus Design, URS & Alta Planning and Design, 2009.

- Separated pathway by and away from the road

During the public meeting held to discuss OTS transportation, attendees expressed interest in learning the status of the multimodal trail project, with some indicating the successful completion of a shared-use recreational corridor would alleviate potential use conflicts during winter.

The project is active and the new recreational corridor will likely be implemented in a phased approach as funding becomes available. While completion of the recreational corridor is a long term goal that will lessen use conflicts, the park has stated it need not preclude a study of more immediate means of winter access to the Exit Glacier Area.

Natural resources

The absence of large volumes of motorized transport in the winter results in a pristine quiet that is valued by winter visitors, park staff, and wildlife that roams within the park's boundaries. In particular, moose are drawn to the Exit Glacier Area in the winter by food and shelter. Park staff indicated that any activities that would scare or drive the moose further away must be evaluated, as the moose would utilize more energy to find shelter and food and have decreased chances of surviving the winter.

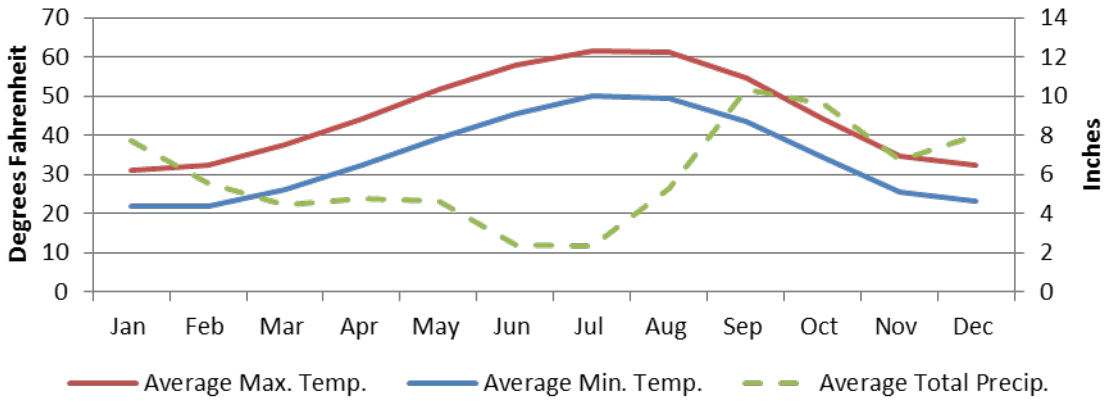
The Exit Glacier Area Plan states Kenai Fjords National Park must monitor and evaluate the trade-offs between vehicle noise and visitor access and develop thresholds for allowable noise. The park is in the preliminary phases of developing a plan to monitor decibel levels during both normal operations of the road and the winter season. Existing use of snowmachines and potential snowcoach operations would be required to conform to noise thresholds.

Park staff note that additional impacts beyond moose wintering and soundscapes, such as effects on air quality, water quality, viewsheds, or any other unanticipated impacts, may need to be considered in the future as well.

Climate and daylight

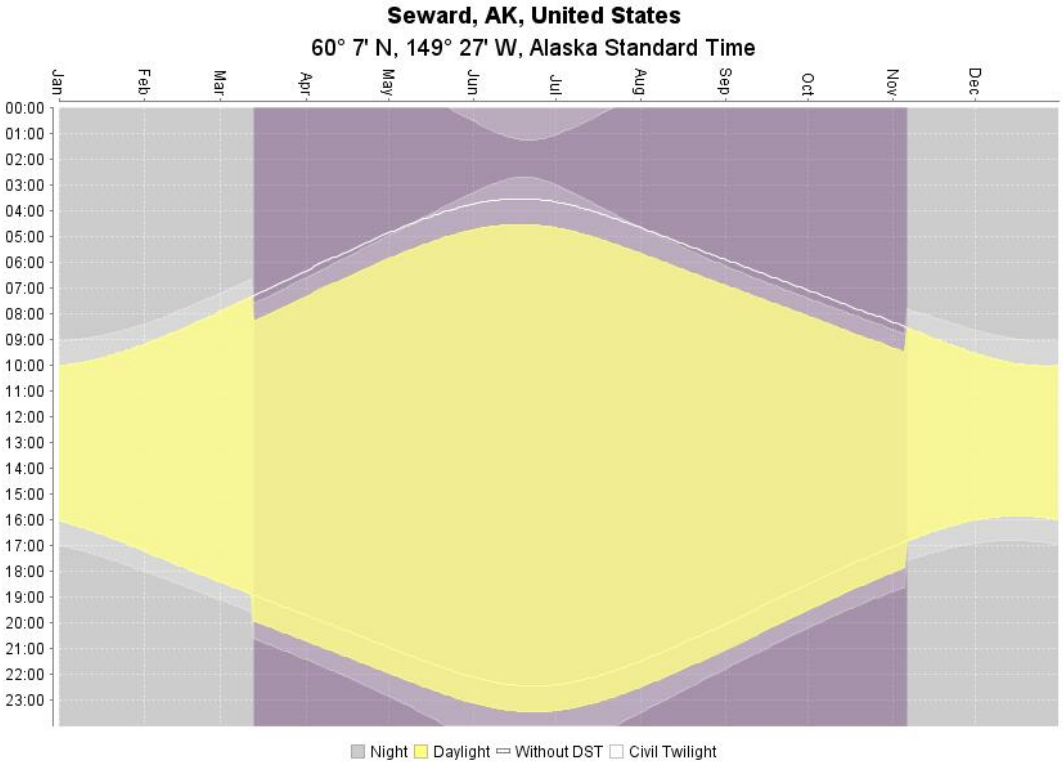
Located along the southern coastline in south central Alaska, the Kenai Peninsula is among the more temperate parts of the state. Warming from the Pacific Ocean currents and protection from the mountains allows summer temperatures to sometimes reach the high 70's[v]. Warm temperatures and low summer humidity also contribute to making the Kenai Peninsula a popular vacation destination during the warmer months. Figure 7 depicts average temperatures and precipitation in Seward. The rainy season begins in late August and lasts through November. The snow season lasts from December through early May. Freezing temperatures begin between October and November and last until early May. The Exit Glacier Area and points west on Herman Leirer Road are likely to be colder, wetter, and see more snow accumulation than those reported in Seward.

Figure 7
City of Seward average temperatures and precipitation
Source: Weather station at Nash Woods Seward Alaska, Seward



Hours of daylight decrease dramatically during the winter months. As shown in Figure 8, during January and February there are as few as six hours of daylight, and steeply pitched mountains cast shadows over the valley in which Herman Leirer Road approaches the Exit Glacier Area. Darkness decreases the appeal and practicality of recreational or scenic opportunities during core winter months, though by March light conditions begin to improve.

Figure 8
Available daylight in Seward
Source: Volpe Center

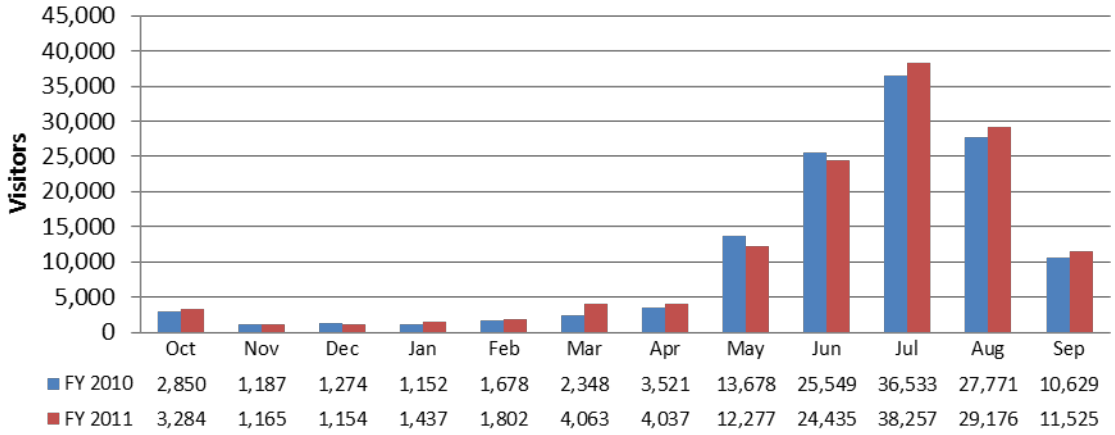


Visitation

Neither the city nor the local Chamber of Commerce monitors Seward tourism. This study uses the SeaLife Center visitation as a proxy for Seward tourism overall, recognizing that actual tourism may be higher because not all visitors to Seward go to the SeaLife Center.

Monthly visitation to the SeaLife Center in 2010 and 2011, shown in Figure 9, suggests an annual pattern of heavy tourism in June, July, and August, moderate tourism in May and September, and comparatively little tourism in the winter months of October through April.

Figure 9
SeaLife Center monthly visitation
Source: SeaLife Center



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY 2010	2,850	1,187	1,274	1,152	1,678	2,348	3,521	13,678	25,549	36,533	27,771	10,629
FY 2011	3,284	1,165	1,154	1,437	1,802	4,063	4,037	12,277	24,435	38,257	29,176	11,525

Largely a product of seasonal climate patterns, these numbers correlate with the availability of tourism opportunities. Marine tours are one of the most popular tourist activities in Seward. One of the large boat tour operators in the area serves roughly 1,600 passengers per day (48,000 passengers per month) in June, July, and August. But the whales and birds of the fjords depart for better climates during the winter months, and marine tour operators cease operations in September and resume in April of the following year.

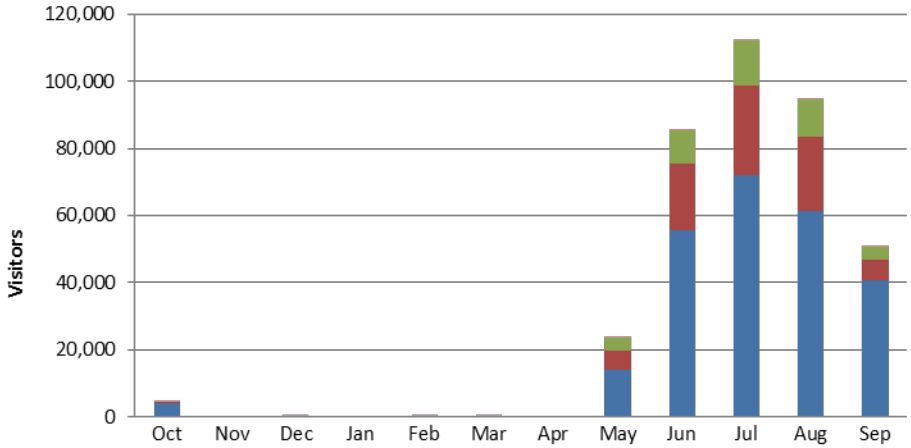
Similar seasonal patterns are found in the public use statistics for Kenai Fjords National Park, shown in Figure 10. In the summer, many of the marine tourists visiting the fjords are captured in the statistics of Kenai Fjords National Park. These visitors also likely visit the Exit Glacier Area and the Kenai Fjords Visitor Center in Seward.[*]

In the winter, the road to Exit Glacier is closed to cars and buses (starting in 2005), the Seward Visitor Center is closed (starting in 2005), and park boat tours are not offered. Thus these counts are zero from October through April. National Park Service focuses its staff resources on the Exit Glacier Area during winter months, so in winter months, much of the reported visitation of day use visitors, backcountry visitors, public use cabin visitors, and snowmachiners is that which occurs at or near the Exit Glacier Area.

[*] The Kenai Fjords National Park visitation statistics likely double-counts many visitors because counts are done at various places and there is no way to track individual visitors. For more information, see "Kenai Fjords National Park Public Use Counting and Reporting Instructions" at http://www.nature.nps.gov/stats/CountingInstructions/KEFJCI1999.pdf.

The distinction between public use statistics at the Exit Glacier Area and the number of winter users on Herman Leirer Road is important. Most winter, non-motorized users utilize only the first two to three miles of the road beyond the gate closure. These users do not reach the Exit Glacier Area and are not included in the Kenai Fjords National Park public use statistics. Locals and stakeholders estimate the number of winter, non-motorized users on Herman Leirer Road may be between three and ten times greater than the number of visitors to the Exit Glacier Area, although specific counts of road users have not been made.

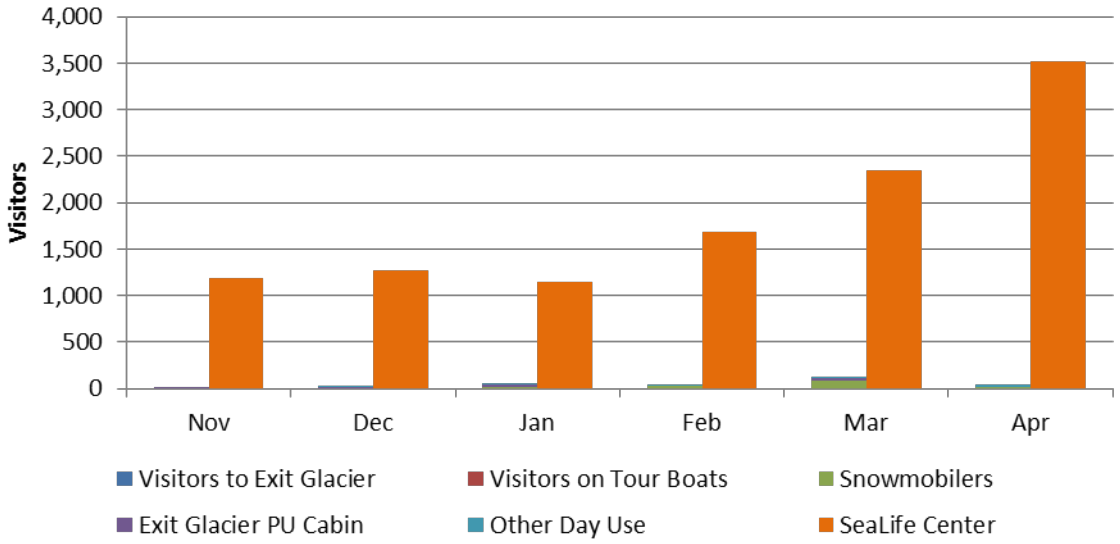
Figure 10
Average monthly visitation by use at Kenai Fjords National Park, FY2001 through FY2011
Source: National Park Service



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Bus Passengers	0	0	0	0	0	0	0	0	0	0	0	0
Visitors at Exit Glacier Public Use Cabin	0	3	4	11	6	12	1	0	0	0	0	0
Snowmachiners	0	6	32	76	109	117	54	0	0	0	0	0
Backcountry day users	2	4	254	10	15	24	11	8	64	77	41	2
Visitors at North Arm Cabin	0	0	0	0	0	0	0	1	2	6	4	1
Visitors at Holgate Cabin	0	0	0	0	0	0	0	6	30	29	29	7
Visitors at Aialik Bay Cabin	0	0	0	0	0	0	0	5	33	27	28	6
Backcountry overnight visitors	0	0	49	0	0	1	0	15	90	121	73	5
Visitors at Seward Visitor Center*	0	0	0	0	0	0	0	3,874	10,076	13,025	10,824	3,761
Park boat tour visitors	261	0	0	0	0	0	0	5,489	19,734	26,866	22,122	6,286
Visitors to the Exit Glacier Area*	4,204	0	0	0	0	0	0	14,121	55,542	72,016	61,416	40,637

Because a potential snowcoach would only be used in winter months, Figure 11 below shows 2010 visitation to the SeaLife Center and to the Exit Glacier Area for these months only. The difference in visitation indicates that most visitors to Seward in winter months are not visiting the Exit Glacier Area, and that there may be unmet demand or potential target markets for an OTS service. This point is discussed further in Chapter 5.

Figure 11
SeaLife Center visitation compared to Kenai Fjords National Park, selected months, 2010
Source: SeaLife Center, National Park Service



When considered alongside climate and economic existing conditions, the visitation statistics suggest a possible opportunity for a winter transportation service to Exit Glacier in March and April. Local stakeholders report snow conditions are generally inconsistent until December. Prior to December, snow may be inconsistent or give way to rainy or icy conditions. In December through February, daylight, shown in Figure 8, is present for as little as four to six hours, and even less in some parts of the approach to the Exit Glacier Area due to the steep mountains on either side of the valley. Visitation to both the SeaLife Center and the park during these cold and dark winter months is particularly low, as evidenced in Figure 9 and Figure 10.

But during March and April, visitation to the SeaLife Center increases substantially relative to that of Kenai Fjords National Park as conditions in Seward improve. Daylight is available for eight to ten hours each day, and outdoor recreation becomes more appealing to a wider group of individuals. Daytime temperatures are warmer, yet snow remains on the ground.

Also the Alaska Travel Industry Association (ATIA) has identified February 1st through April 15th as winter peak season. This timeframe was selected for a variety of reasons:

- Many successful events are currently scheduled during this time
- Daylight hours are extended and temperatures can be less extreme
- Snow levels are generally more advanced
- These months coincide with many spring break schedules

The ATIA seeks to concentrate arrivals of visitors during this period and suggests that new businesses and visitor centers be open during this time.[*] Along these lines, resorts and large conference facilities in Anchorage and Alyeska concentrate marketing efforts on the shoulder seasons of March through May and September through October. During these months prices are low enough and weather is hospitable enough to attract organizations in the contiguous United States that want an "Alaska" experience but not the high prices of the peak-season. Shoulder season visitors want to participate in activities, and according to Seward tour operators, these resorts call them looking for activities to recommend to their conference guests during March and April.

Existing transportation services

Transportation services from Anchorage to Seward are limited during the winter time. Seward Bus Lines offers daily service Monday through Saturday. The Alaska Railroad, which offers daily service during the warmer months, does not offer service between Anchorage and Seward during the winter. Aside from the daily Seward Bus Lines bus, visitors must rely on private transportation to reach Seward from Anchorage including private bus or shuttle charters, personal cars, or rental vehicles.

In the summer months, a cruise tax subsidizes a free trolley that circulates in Seward but does not visit the Exit Glacier Area or Herman Leirer Road. There are no public transportation services offering transportation from Seward to the Exit Glacier Area in the winter, though private taxi services are available.

Kenai Fjords National Park owns a passenger van and five snowmachines that are used by the park staff for winter access to the Exit Glacier Area and for maintenance and operations tasks.

Analysis of existing conditions

The above existing conditions inform planning and design considerations for an OTS service to the Exit Glacier Area.

Winter management of Herman Leirer Road is an important, but separate, issue

Improving winter management of Herman Leirer Road is often cited as an issue. In place of prescribed closure dates and locations, local users seek a more flexible management regime based on weather conditions. Suggestions include leaving the road open until the first snowfall and closing the road at a location where the snow suitable for winter recreation begins, perhaps at the second gate. Though changes to management of the road would affect operations of an OTS vehicle, addressing winter management of the road requires a broader analysis of policies and regional funding priorities and is not within the scope of this OTS feasibility study. This study is based on the current winter management regime of the road, documented in Appendix B: Herman Leirer Road Memorandum of Understanding.

Plowing Herman Leirer Road in its entirety is undesirable and potentially unfeasible

Herman Leirer Road is a valuable and active winter recreation corridor. Although there are plans to build a grade-separated recreational path, construction of the path will likely be completed in phases and may not begin for at least several years. Until that time, plowing the entire road to the Exit Glacier Area would eliminate an important recreational resource and meet public opposition.

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[*] ATIA. "The Peak Season Concept." http://www.alaskatia.org/Tourism-Development/Winter-Tourism/Guidelines%20for%20Businesses/Developing%20Your%20Product/When%20to%20Offer%20Your%20Product.aspx

Plowing the entire road may also be unfeasible under current policy and funding conditions. The Seward Maintenance Branch of AKDOT&PF reports it is using all available labor and funding resources to plow residential, commercial, and industrial roads and the airport.

Winter use and associated OTS service must conform with the Exit Glacier Area Plan

The Exit Glacier Area Plan, for which initial environmental compliance has already been completed, describes appropriate winter use at the Exit Glacier Area. Potential OTS service and associated winter uses must conform to this plan, particularly with respect to restrictions placed on approved activities in management zones. The Visitor Facility management zone is the only zone which allows non-administrative use of motorized vehicles.

Impacts to soundscape and moose wintering need to be evaluated

Kenai Fjords National Park is working on a sound monitoring and management regime. Because OTS service to the Exit Glacier Area may begin before the park is able to develop noise thresholds, any potential operating agreement granted in the near-term should incorporate language to address the developing policies on noise and its impact on the natural soundscape. A recent study has examined the impact of snowcoaches on soundscape at Yellowstone National Park and found the factors that have the most impact on sound level are speed, trail conditions, snow accumulation on the track mechanism, and presence of snow berms/obstructions.[*] An operating agreement could, for example, require snowcoach operators to operate under specific speeds, groom the trail, keep the track mechanism clean, and construct snow berms in strategic locations.

Park staff note that additional impacts beyond moose wintering and soundscapes, such as effects on air quality, water quality, viewsheds, or any other unanticipated impacts, may need to be considered in the future as well.

Potential issues raised by partner agencies include changes in use and safety

All agencies acknowledge that the distance to the Exit Glacier Area currently helps to prevent visitors who are physically and mentally unprepared from exceeding the limits of their abilities. An OTS service might contribute to a false sense of security by less-prepared visitors who could then become stranded or lost in an unforgiving winter environment. Potential OTS services must address what steps they will take to maintain a high degree of winter safety. Examples include communicating risks, suggesting and or requiring visitors have specific equipment, collecting visitor contact information, and providing a method for emergency contact.

The Seward Ranger District of the Chugach National Forest expects few issues to arise from use of an OTS vehicle, although the U.S. Forest Service will require a permit of the operator if the vehicle stops at forest parking areas or overlooks. The Seward Ranger District provides no winter operations and maintenance along the Herman Leirer Road. If OTS service increases use along the corridor so much that winter operations and maintenance are required, the Seward Ranger District may address the issue using its permitting process. Potential operators of an OTS service should check with the Seward Ranger District on permitting requirements.

The Seward Maintenance Branch of AKDOT&PF is primarily concerned about driver safety and devising a method of restricting private vehicles from Herman Leirer Road while allowing a snowcoach to pass. Failing to prevent drivers on the Herman Leirer Road can result in damaged or stuck vehicles and/or potential for injuries or fatalities.

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[*] Exterior Sound Level Measurements of Snowcoaches at Yellowstone National Park. April 2010. http://www.nps.gov/yell/parkmgmt/upload/exterior_sound_level_measurements_final.pdf

The Alaska Department of Natural Resources (DNR) neither attended the public meeting nor returned telephone calls to the study team. Discussions with stakeholders in the area suggested Alaska DNR allows a wide range of activities and use on its land, including cutting down trees and blazing trails. Potential operators of an OTS service should check with Alaska DNR on possible use restrictions.

The public has raised few concerns related to anticipated use conflicts

No individual at the public meeting or individual interviewed during the site visit expressed concerns about safety conflicts with use of a snowcoach on Herman Leirer Road. The general consensus appears to be that there is ample room on the road to add a groomed lane for a snowcoach. An OTS service would need to be respectful of travel trails for non-motorized users, and there may even be opportunities for a snowcoach to assist with grooming for cross-country skiers and dogsledders. These sentiments may change if snowcoach use becomes too frequent, although the threshold for intolerable service is not understood at this time.

March and April are the most promising months for initiating OTS service

Existing conditions such as temperature, precipitation, daylight conditions, visitation trends in Seward, a push by the ATIA to create a "hidden" winter peak season between February 1st and April 15th, and seasonal marketing for conference facilities in south-central Alaska suggest the best opportunity for initiating OTS transportation to the Exit Glacier Area is in March and April. If successful, limited service in subsequent years may be extended to February or even January.

Snowcoach operation will necessitate a new method of road closure

Jersey style barriers fail to concurrently allow passage of a snowcoach and prevent passage of personally owned vehicles, so an alternate method to manage winter use of the road would have to be devised. One possibility is using a traditional gate with a lock that can be opened by the snowcoach operator. The gate and locking device should be strong enough to resist vandalism.

3. Comparable OTS transportation services

Across the country, public and private lands with winter recreation opportunities provide OTS services. These services vary with respect to market conditions, operating conditions, operational decisions (e.g., vehicle type, service frequency, visitor demand, fares), and business models. The following is an analysis of comparable OTS services, how they might compare to an OTS service at Kenai Fjords National Park, and subsequent lessons learned to consider when examining potential OTS service to the Exit Glacier Area.

Private snowcoach tours at Yellowstone National Park

Yellowstone National Park has over 50 years of experience managing OTS transportation within the park and the most experience of any national park or federal land with OTS operations. Currently during the winter months there is only one road through the park, between Gardiner, Mammoth Hot Springs and the Northeast Entrance/Cooke City, that is plowed and open to the public. A number of other roads within the park are open only for snowcoaches and snowmobiles between December 15 and March 15, weather and snow-permitting. The park maintains these roads and provides for the grooming of the roads which is required in order for most snowcoaches to operate. Visitors to these roads are required to travel by commercial snowcoach or accompany a commercial snowmobile guide. Private snowmobiles or snowcoaches are no longer allowed.

Use of snowmachines peaked in the early 1990's when up to 90,000 visitors explored the park by snowmachine and 10,000 reached the park via organized snowcoach tours. However, the park then began an extensive process to monitor and mitigate the environmental impact of snowmachine activities and revise winter use policies. Since then the park has gained extensive knowledge on the operations, environmental considerations, and supporting activities that provide for winter access while limiting the environmental and resource impacts of OTS vehicles. The park maintains websites containing sound monitoring and wildlife impact studies, environmental impact statements, and other documents related to OTS operations.[*]

In 2004, the park issued a new temporary winter management plan limiting the number of snowmachines to 720 and confined to guided-tours only (no personal use or private machines) and stipulated those machines must utilize best available technology (BAT). This plan effectively banned 2-stroke and older 4-stroke powered machines in favor of newer, more efficient 4-stroke models with lower emissions. This policy not only aimed to reduce the environmental impact of snowmachine operations within the park, but limited the park's liability in connection with irresponsible private snowmachine operations. The plan also limited snowcoach operations to approved operators and a total of 78 snowcoaches in operation on any given day.

The 2004 plan and temporary plans for subsequent years have been challenged in court and ordered to be revised with subsequent assessments.[†] A temporary 2008 plan further limited the use of BAT and the number of guided snowmachines was reduced to 318 in 2009. A final plan for winter use at Yellowstone National Park is expected ahead of the 2012 winter season. The final plan is anticipated to include similar stipulations for BAT snowmachines and revised limitations on the total number of snowmachines and snowcoaches allowed to operate within the park during future winter seasons.

Ten different tour operators offer snowcoach tours under concession contracts with the park:

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[*] http://www.nps.gov/yell/parkmgmt/winter_monitoring.htm and http://www.nps.gov/yell/parkmgmt/winterusetechnicaldocuments.htm

[†] http://www.nps.gov/yell/parkmgmt/timeline.htm

- Xanterra Parks and Resorts
- Yellowstone Snowcoach Tours
- Rocky Mountain Snowcoach Tours
- Scenic Safaris
- Togwotee Snowcoach Adventures
- Triangle C ranch
- Buffalo Bus Touring Company
- See Yellowstone Tours Inc.
- Yellowstone Alpen Guides
- Yellowstone Expeditions

Tour companies utilize a variety of equipment including a purpose-built 1950's Bombardier vehicle featuring tracks in the rear and skis at the front; passenger vans and shuttle buses equipped with various retrofitted track systems in the rear and skis in the front; passenger vans or shuttles equipped with various retrofitted track systems on all four wheels; and purpose-built vehicles with tracks such as those used at alpine ski resorts for trail grooming.

Each operator offers their own tours with varying attractions, fares and packaged experiences; however, fares typically range from less than $100 to $300. Excursions can last from a few hours to an entire day, and tour operators are designated based on the entrance(s) they are permitted to depart from including the East Entrance, the South Entrance and the West Entrance. Some operators utilize their own guides, and some utilize guides contracted from the park for interpretation. Tour duration, attractions and services vary among operators, leaving them to decide which visitation experience works for them and their customers.

Xanterra Parks & Resorts

Xanterra Parks and Resorts is a large tour and resort company operating in and around Yellowstone National Park as well as six other national parks and numerous state parks and resorts. They operate lodging facilities, restaurants and offer packaged vacations to various parks and resort destinations nationwide. As part of the commercial operating agreement between Xanterra and Yellowstone National Park, they provide transportation to and from their facilities and offer guided transportation tours of the park and its attractions during both summer and winter operations. During the winter, they operate the Mammoth Hot Springs Hotel, the only accommodations in Yellowstone National Park accessible by automobile, and the Old Faithful Snow Lodge, which is accessible only by OTS vehicle.

In order to provide transportation to their lodges and the attractions within Yellowstone, Xanterra operates a fleet of OTS vehicles. Their fleet includes purpose-built Bombardier snowcoaches as well as passenger vans and cutaway shuttle buses retrofitted with Mattracks systems (described in Chapter 4). Xanterra reports that operations and maintenance of all their OTS vehicles is extremely expensive and that their vehicles with retrofit track systems cannot operate on an un-groomed road, on ice, or in deep snow conditions.[*]

Mt. Washington snowcoach

Located in the White Mountains of New Hampshire, the Mt. Washington Auto Road is a famous destination for New England travelers. Opened in 1861, the Auto Road brings visitors to the summit of Mt. Washington along a 7.6 mile toll road climbing 4,618 feet and featuring numerous overlook pull-outs, trailheads with parking, hairpin turns and scenic views. During the spring, summer and

[*] Telephone conversation with Xanterra's Yellowstone operations transportation director Rob Love, December 2011.

fall seasons visitors can drive their personal vehicles up the oldest man-made tourist attraction in the country. Cars completing the trip receive a bumper sticker which reads, "This Car Climbed Mt. Washington." The Auto Road maintains operating hours typically between 8:00 AM and 5:30 PM, varying by season, and is subject to weather. The road is closed in harsh weather conditions.

Like the Herman Leirer Road at Kenai Fjords National Park, the Mt. Washington Auto Road is closed to private vehicles for the winter season. The Auto Road is closed in late October and reopens in early May. During the winter season, Great Glen Trails (GGT), the owner and operator of the Auto Road, offers guided tours aboard the Mt. Washington snowcoach pictured in Figure 12. GGT has been offering snowcoach trips since 1998. The vehicle is a nine-passenger, all-wheel drive van equipped with a Mattracks system and converted to four wheel drive with a Quigley Motor Company conversion kit. The snowcoach takes passengers to the tree line, where they can enjoy views and have the option of hiking, snowshoeing or skiing back down the road. The round trip lasts 1.25 hours and costs $40 for adults or $25 for kids. Great Glen Trails sees average monthly ridership of between three and four hundred riders during the months of December, January and March; and roughly eight hundred during the month of February, due to the winter holiday for New Hampshire schools occurring during the second week of the month.

Figure 12
Mt. Washington Snowcoach
Source: Great Glen Trails

Unlike Kenai Fjords National Park, the Mt. Washington area receives steady, high visitation throughout the winter months. The Auto Road offers spectacular views for the duration of the trip, culminating with a view from the tree line providing a 180 degree vista of snow covered New Hampshire.

Exit Glacier, on the other hand, is hard for some to distinguish from its snow-covered surroundings in the winter. According to some, the matte white views during the winter are less spectacular than the blue glacial ice visible during the late summer and fall. For a service similar to that of the snowcoach on the Auto Road to be successful at Kenai Fjords, more than views of the glacier may be required as an attraction. Activities, interpretation, and recreation opportunities should be developed to supplement the natural resource as the main draw for winter visitation. A successful service should build on existing demand for wintertime activities, such as ice climbing, dog sledding, skiing or snowshoeing.

GGT has operated vans equipped with three generations of Mattracks' systems since 1998, and indicated the latest generation of tracks available is much more robust and reliable. Despite the improvements, GGT indicated a Mattracks-equipped passenger van might be unsuitable for

operating conditions varying from glare ice to deep snow along Herman Leirer Road. GGT stressed that potential Mattracks operators should be aware of a few key considerations:

- The 12-person passenger van when carrying 8-10 passengers is unable to move on glare ice and Mattracks' tracks may not be studded for use on ice.
- Operation along the Auto Road, or in general, requires a packed, groomed path. Should the operator stray from the groomed surface into deep snow, even in a flat field, the vehicle will get stuck and require assistance from another vehicle.
- Average yearly maintenance of the tracks systems runs between $6,000 and $8,000 in replacement parts alone, and the rubber drive belts should be replaced at the first sign of cracks at a cost of $2,400 each.
- The estimated fuel economy of the van with wheels is 8 to 9 miles per gallon. With the tracks system fitted, fuel economy is estimated at 4 miles per gallon at most.
- GGT estimates total operational costs including driver, fuel, maintenance, etc. at roughly $40-50 per hour of operations, compared to an estimated cost of roughly $150 per hour of operations for a snowcat-type vehicle, citing the figure as a 'rule of thumb' among alpine snowcoach operators.

Despite the expense and level-of-effort demanded by maintaining a tracks system for OTS transportation, GGT has been able to operate their winter snowcoach tours at a profit. Their customers also love the experience and are satisfied with their snowcoach tour despite the $40 fare for adults, and they experience routine repeat visitation and visitation due to word-of-mouth recommendations. Due to this high demand, and in spite of the cost and effort required to maintain operations, their snowcoach operation has endured.

Chugach Powder Guides snowcat ski trips

Chugach Powder Guides (CPG) operates helicopter skiing trips in and around Winner Creek. In 1998, CPG began a supplemental service featuring two 11-seat Bombardier snowcats, shown in Figure 13. The snowcat is a versatile and less expensive alternative to the helicopter and operates on an exclusive 1,500 acre area in the upper Girdwood Valley adjacent to the Alyeska Resort. CPG serves roughly 500 passengers per year on their snowcats as snow conditions and weather permit, and during good snow they will serve 24 passengers on a given day, 12 in each snowcat. Advance reservation rates are $325 for the day or $285 for a standby reservation. The snowcat operates from the beginning of February through mid-April.[*]

CPG operates their snowcats in harsh, off-road, alpine conditions, which causes accelerated wear and tear of their equipment. Maintenance costs range between $6,000 to $8,000 per year, per snowcat, or roughly between $120 and $170 per hour. A full-day's operations, between eight and nine hours, will consume roughly 40 gallons of diesel fuel. Their operators are seasoned snowcat operators; however, they are not specially licensed. Most have experience operating heavy-equipment.

[*] Telephone conversation with Geoff Gross, CAG Head of Operations. December 12, 2011.

Figure 13
Chugach Powder Guides' Bombardier Snowcat
Source: Chugach Powder Guides

While Kenai Fjords National Park does not have similar alpine conditions to draw visitors for downhill skiing or snowboarding, it may be similar to an OTS on the Herman Leirer Road in that it serves recreational demand. Chapter 5 discusses potential opportunities to partner with the Nordic ski club or the Ididaride Sled Dog Tours. By leveraging existing activities and local business partners, an OTS service serving the needs of existing recreational user groups improves its likelihood of success.

With regard to vehicle selection, CPG speculated that if they operated their vehicles on flatter terrain and for the relatively light duty cycle expected on the Herman Leirer Road, operations and maintenance would cost significantly less than $120 per hour, and the vehicle would require less-frequent servicing and replacement of tracks systems or major components.

Chena Hot Springs Snowcoach tours

Chena Hot Springs Resort in Fairbanks, Alaska is the most developed hot springs resort in the state and owns six purpose-built snowcoaches, shown in Figure 14, that take visitors on viewing tours of the Aurora Borealis.

Each snowcoach consists of a power unit capable of carrying three passengers in addition to the driver and a passenger unit capable of carrying ten passengers, for a total capacity of thirteen passengers per vehicle.

Fares for the snowcoach service are between $37.50 per person for a sunset tour and $75 per person for an Aurora Viewing tour. Tours consist of a thirty minute trip from 1100 feet to 2600 feet in elevation to a viewing area which consists of a 30-foot heated yurt with restroom facilities where passengers can warm up, get a hot beverage, and enjoy the views.

An OTS service to the Exit Glacier Area may require expanded winter visitor facilities. Facilities may include a place to warm up, use the restroom, and stage for activities. Visitor facilities could also provide interpretation and would serve as another opportunity for visitors to develop their experiences, particularly those visitors that do not or cannot participate in physical winter activities.

Figure 14
Aurora borealis snowcoach tour at Chena Hot Springs
Source: Chena Hot Springs

Interviews with Kenai Fjords National Park staff members and local users also suggested expanding access to the public use cabins at the Exit Glacier Area. Overnight visitors to the cabins could experience a deeper sense of place and spend more time exploring the lower trails at Exit Glacier. The park could consider limited, group-focused interpretive tours in conjunction with a stay at the rustic cabins as a unique, rustic wintertime educational experience.

Analysis of comparable services

The comparable services described above reveal several common themes that may inform plans for an OTS on Herman Leirer Road.

A Winter Use Plan can help guide OTS operations within the park

Similar to the concession operations at Yellowstone National Park, Kenai Fjords National Park may develop a Winter-Use Plan or include language within any contracts or commercial use authorizations that limit the use, technology types and number of OTS vehicles allowed to operate within the park's boundaries. Such restrictions can ensure that those vehicles allowed to operate within the park during the winter are modern, efficient, have low environmental and resource impacts and in general, are limited to help preserve the resources, natural environment and soundscape present during winter at the Exit Glacier Area.

OTS service must be tailored to activities

The comparable services studied cater to specific activities, from providing sightseeing tours to accessing recreation opportunities. These OTS services would not exist without these activities, and plans to initiate OTS service at Kenai Fjords National Park should be clear about what activities it will support. The Exit Glacier Area Plan broadly suggests a snowcoach operation may "bring groups, such as school children and Elder Hostel, to the Exit Glacier area in winter to participate in educational programs at the Nature Center and improve access to the Exit Glacier area for individuals and families to participate in winter recreation activities and educational programs." National Park Service and Seward stakeholders should continue to sharpen the vision of winter use at the Exit Glacier Area.

OTS service must be tailored to user groups

The comparable services studied cater to specific user groups, most of which are primarily non-local visitors. There are many existing and potential visitor use types and patterns at Kenai Fjords National Park. The needs and preferences of snowshoers, for example, may differ among locals and non-locals. The needs and preferences of visitors who arrive as part of organized tours may differ from those of independent travelers. To be successful, an OTS service at Kenai Fjords National Park should be tailored to one or more specific target groups. While a single OTS service may not be able to meet the needs of all users, there may be a combination of user groups that an OTS service could successfully serve at first, and services could expand to additional groups in future years. Chapter 5 analyzes potential user groups in more detail.

OTS service often requires non-transportation investments

Several of the comparable services are successful because of investments beyond the transportation system. The nature of the investments depends on the supporting activities and targeted user groups. For example, the snowcoach tours at Chena Hot Springs are supplemented by the yurt which the resort pays to heat and maintain. The Chugach Powder Guides snocat trips require backcountry ski guides, ski trails, and support facilities at the bottom of the mountain. Depending on the winter activities and user groups, Kenai Fjords National Park and its stakeholders will likely need to make investments beyond the transportation system. For example, investments may include keeping the visitor center open and minimally staffed year-round, or on select days or weekends; maintaining trails and other recreational areas near Exit Glacier and the outwash; and generally working with operators and local user groups to address their specific needs and desires.

OTS service tends to be privately owned and operated

Each of the OTS services analyzed is commercially owned and operated. The study team has found no OTS services owned and/or operated by NPS or by any other federal land management agency (FLMA) in the United States. Two possible reasons for this include i) the high capital and operating costs of such services coupled with FLMAs' unwillingness or inability to charge fares that recover these costs and ii) the divergence of an OTS service from a unit's central mission. National parks are increasingly focusing their limited budgets on deferred maintenance backlogs and repairing or rehabilitating assets they already have. Chapters 6 and 7 explore these points further.

4. Vehicle Options

As demonstrated in Chapter 3, there are a variety of vehicle options for OTS transportation ranging from single passenger transport to those capable of carrying large groups. Options include the following:

- Snowmachines or all-terrain vehicles
- Snowmachine with passenger sled
- Van, shuttle or bus with aftermarket tracks system
- Purpose-built snowcoach
- Three-axle off-road buses

A summary of these options are included in Table 1 and are described in detail below. Analysis of vehicle options suggests a purpose-built snowcoach or snowmachine with sled are the most viable OTS vehicle options for Herman Leirer Road.

Table 1
Summary of vehicle options

OTS Technology or Vehicle Type	Passenger Capacity	Operating Conditions and Capabilities	Capital Purchase Cost (thousands)	Estimated Operational Cost (per hour)
Three-axle, all-terrain bus	Up to 56	All (Ice, hard-pack snow, snow, moderate snow, deep snow, pavement and packed dirt/gravel)	$300+	$75 - $100
Purpose-built (tracks only)	6-15	Ice, packed snow, snow, groomed snow, moderate snow, pavement, dirt/gravel, grass	$150-200	$80 - $100
Shuttle Bus with Tracks System	20 - 30	Groomed snow (required), limited packed snow dirt / grass and pavement	$100-150 + vehicle	$50 - $70
Purpose-built (tracks w/ skis)	9-15	All (Ice, hard-packed snow, packed snow, moderate snow, pavement and packed dirt/gravel)	$100-150	$40 - $60
Passenger Van with Tracks System	8-12	Groomed snow (required), limited packed snow dirt / grass and pavement	$60-80 + vehicle	$30 - $50
Snow-machine with sled	12	Ice, packed snow, snow, groomed snow, moderate snow, limited pavement/grass	$48	$15 - $30

Snowmachines and all-terrain vehicles

Personal OTS transportation options include snowmachines and all-terrain vehicles, or ATVs. Commonplace in Alaska, both are capable of traversing surfaces including, asphalt, grass, ice, hard-packed snow, and depending on configuration, deep snow. Snow and ice are snowmachines' primary surfaces for operation while asphalt, dirt and grass are primary surfaces for ATV operation. Both typically carry one driver and a passenger.

Advantages

Snowmachines have the capability to traverse varying conditions from ice to deeper snow, and limited stretches of pavement. They are relatively inexpensive to purchase, operate and maintain.

Disadvantages

Snowmachines provide transport for only one or two people and do not provide protection from the elements. Certain older machines and 2-stroke machines create harmful emissions and negatively impact local air quality, though there are newer engine choices which are less harmful and are stipulated for operation in some protected areas as best available technology (BAT). Operators of snowmachine rental programs cite irresponsible use and excessive wear and tear from inexperienced drivers amongst their justifications for ceasing rental operations. The Seward Military Recreation Camp continues to offer snowmachine tours with a tour-guide accompanying visitors at all times and limiting speeds and areas where visitors are allowed to travel.

Snowmachine with passenger sled

A low-cost solution for wintertime OTS transportation may be a snowmachine towing a passenger sled, such as the Alpina snowmachine and sled shown in Figure 15. Passengers must be equipped with sufficient outdoor gear to protect themselves from cold temperatures and the elements. The Seward Military Resort operated an Alpina snowmachine and sled briefly to take guests on cross-country skiing trips, but there was insufficient interest amongst their military-derived guests. The resort reports its guests prefer to operate snowmachines themselves via the resort's guided snowmachine tours, though it speculates a snow transit service may be successful with a more diverse audience. The Seward Military Resort transferred its snowmachine and sled to another Alaska military recreation camp. Unlike a traditional single-track snowmachine, the Alpina snowmachine utilizes an automotive-derived engine which is more reliable than traditional snowmachines and requires less-frequent servicing requirements.[*] The Alpina is heavier and slower than traditional snowmachines, but it is designed to tow large loads of people or cargo.

Figure 15
Alpina snowmachine with passenger sled
Source: Alpina

Advantages

A snowmachine-towed sled would be a low-cost vehicle option to provide OTS service on Herman Leirer Road. The operation and maintenance of a snowmachine is straightforward and inexpensive compared with aftermarket track systems or purpose-built snowcoaches. This option would not require robust infrastructure and supporting equipment; it would take up less storage space than a

[*] Harry Roberts, owner of HJ Roberts & Associates (the North American Alpina importer), noted during a phone interview that the Alpina Sherpa utilizes the same basic engine as the current Ford Fiesta car.

snowcoach, and serve purposes beyond passenger transport as it may be reconfigured to haul cargo or supplies instead of passengers by removing the seats from the passenger transport sled.

Disadvantages

A passenger sled towed by a snowmachine would require passengers to be outfitted with appropriate clothing and may be more uncomfortable in harsh weather conditions than an enclosed vehicle with typical passenger vehicle accommodations such as cushioned seating and a heating system.

Van or bus with aftermarket track system

On-road passenger vehicles ranging from light-duty trucks to full-size, heavy-duty vehicles may be suitable for retrofitting an aftermarket track systems, as shown in Figure 16.

Figure 16
Aftermarket track systems, clockwise from top left: American Truck Company's Dominator, Mattracks, Snowbuster, GripTrac
Sources: American Track Truck, Volpe Center, Yellowstone Expeditions, GripTrac

Tracks systems can cost anywhere from $20,000 to over $100,000 depending on brand and vehicle application. Pricing and vehicle applications vary between manufacturers and do not include the cost of the vehicle. Generally the installation cost is not included and would need to be carried out by a knowledgeable mechanic.

Track systems replace the wheels of a highway vehicle with a self-contained track system, or in some applications, skis are used in lieu of tracks for the front wheels. The drive wheels of the vehicle must utilize the track system for propulsion. All-wheel drive (AWD) or 4-wheel drive as standard is not required for tracks installation; however, AWD vehicles are recommended for

improved performance and vehicles without AWD may be converted to AWD prior to tracks installation.

Snowcoaches featuring aftermarket track systems operate at Mt. Washington and Yellowstone National Park. These operators report that although track systems allow passenger vehicles to traverse packed or groomed snow and maintained snow roads, they are not suitable for deep snow applications or to traverse glare ice. Track systems also reduce fuel economy to two to four miles-per-gallon.

Advantages

Track systems may facilitate year-round use of the primary vehicle at a low capital cost; systems cost between $40,000 and $100,000 and are typically installed and uninstalled at the beginning and end of the winter season, respectively. Tracks may be operated on pavement and dirt roads year-round; however, operators warn of premature tread wear as a result of extended operations over pavement. Track systems may also offer environmental and local air quality benefits when compared to purpose-built or off-road vehicles as the vehicles, such as vans and buses, to which track systems are retrofitted are already subject to current EPA emissions regulations and are more environmentally friendly than most off-road vehicles.

Disadvantages

Tracks systems operating on bare pavement for long periods of time will experience accelerated wear of the rubber tracks. Tracks do not offer sufficient grip to propel a passenger vehicle safely up mild or moderate grades over glare ice. In snow, tracks systems require a groomed and packed surface in order to operate and often get stuck in deep snow. Tracks are expensive to operate and maintain. High maintenance costs can be attributed to the numerous specialized wear and tear parts including bearings, rubber drive belts and the tracks themselves. These parts must be replaced frequently and often must be purchased from the tracks system manufacturer. The limited availability of alternate sources for these parts coupled with the need for specialized maintenance personnel contribute to high costs.

Purpose-built snowcoaches

A purpose-built, track-drive vehicle for OTS transportation is often referred to as a snowcoach. Manufacturers of snowcoaches include Tucker-Terra, Thiokol, KRISTI, Snow Trac, Bombardier, SnoBear, PistenBully and other companies. Of these, passenger versions identified by the study team include Tucker-Terra, Bombardier and SnoBear models. Examples are shown in Figure 17.

Tucker-Terra's 15-passenger model is available for purchase through the General Services Administration (GSA) for roughly $193,000.[*] The SnoGrizz, manufactured by SnoBear, costs between $100,000 and $150,000 depending on configuration and passenger capacity. Modern or vintage Bombardier snowcoaches like those in operation at Yellowstone National Park may not be available for purchase new; however, pre-owned models may be available.

[*] GSA Website: https://www.gsaadvantage.gov/advantage/catalog/product_detail.do?contractNumber=GS-07F-0132K&itemNumber=DI-1643E-26-6-173

Figure 17
Passenger purpose-built snowcoaches, clockwise from top left: Tucker-Terra snowcoach, Snowgrizz snowcoach, vintage Bombardier snowcoach, modern Bombardier snowcoach
Source: General Services Administration, Snobear, National Park Service, Adventure 60 North




A purpose-built snowcoach offers go-anywhere capabilities and a unique passenger experience, which may serve as an attraction in itself. In applications where proposed routes and duty cycles require performance on a variety of surface conditions and along a route that is not frequently groomed or maintained, a purpose-built snowcoach may offer desired performance characteristics.

Advantages

Purpose-built snowcoaches offer the most capable performance in winter conditions and are designed to operate in a wide variety of conditions from sheer ice to packed snow. They do not require a groomed trail on which to operate.

Disadvantages

Purpose-built snowcoaches may be noisy and, unlike passenger vehicles, are not designed to be quiet in the cabin. Snowcoaches are not subject to the same emissions requirements as highway vehicles, and may emit higher levels of local air quality pollutants and greenhouse gas emissions than vehicles with aftermarket track systems. Purpose-built snowcoaches are expensive to purchase and maintain, and though operations and maintenance costs may be as high as $120-150 per hour, a snowcoach operating along the Herman Leirer Road would probably cost much less because the terrain is relatively forgiving compared with back-country conditions. Maintenance of purpose-built OTS vehicles requires a familiarity with track-based systems as well as access to specialized parts and tools.

Three-axle off-road buses

Large, three-axle buses fitted with oversized, all-terrain tires offer transport for up to 56 passengers. Vehicles such as the Foremost Terra Bus pictured in Figure 18 are in operation in remote locations in Canada and the Antarctic due to their ability to traverse conditions ranging from asphalt and dirt roads to ice, packed snow, and moderate snowfall. The Terra Bus costs roughly $300,000 and is designed to require minimal maintenance, particularly when compared to track-based alternatives.

Figure 18
Foremost Terra Bus
Source: Foremost

Advantages

Large 3-axle buses offer year-round use and simple operations and maintenance, largely due to the use of oversized wheels instead of tracks. They are designed for operation in harsh climates and remote locations on surfaces ranging from pavement and dirt to ice, packed snow and moderate accumulated snow. The Terra Bus can carry up to 56 passengers.

Disadvantages

These immense all-terrain buses require large, open spaces for operation. They would not be suitable for transportation along a small, shared use road corridor and would likely offer passenger capacities that would exceed the anticipated demand at Exit Glacier.

Analysis of vehicle options

The vehicles detailed above have unique qualities, characteristics, and advantages and disadvantages that vary depending on user groups, operating conditions, and supporting infrastructure. The analysis and conclusions below are the result of analyzing each vehicle option above within the context of the existing conditions of Herman Leirer Road. This analysis does not represent conclusions for OTS operations beyond Herman Leirer Road or the Exit Glacier Area.

A purpose-built snowcoach or snowmachine with sled are the most viable OTS vehicle options for Herman Leirer Road

Due to requirements stemming from changing weather conditions and surface conditions (glare ice, deep snow, bare pavement) along the road, lack of a well groomed trail, the need to share the road with recreational users, and the desire to transport more than one or two people over the snow, the snowmachine and sled or purpose-built snowcoach are the most viable OTS vehicle options for Herman Leirer Road. The primary trade-off between these vehicles is one of passenger comfort versus cost.

Typical snowmachines provide personal transportation and recreation, not transit service

While snowmachines on their own, or without a passenger sled, offer the capability to traverse a wide range of surface conditions, snowmachines themselves do not provide transportation services for groups of visitors and require a minimum of one operator or driver for each passenger. Operators with experience renting snowmachines cite the need for a guided escort to ensure safe and responsible operation of the vehicles in order to avoid excessive wear and tear from improper use which negatively impacts maintainability and maintenance costs. Due to these factors, snowmachines for individual operation/transport are not recommended for use along the Herman Leirer Road.

OTS vehicles with aftermarket tracks may have trouble operating on Herman Leirer Road

Operators who have experience with aftermarket tracks systems report the need for a groomed surface on which to operate. When these vehicles stray off maintained roads, they frequently get stuck and require passenger evacuation and/or a secondary vehicle to assist with a rescue. The Herman Leirer Road is not currently groomed for snowcoach use and there are no plans by any party to do so. Operators also communicated that across glare ice, a condition frequently present on the lower portions of the road, aftermarket tracks systems are unable to provide sufficient grip and traction to safely traverse across the ice. Due to these considerations, aftermarket tracks systems are not recommended for OTS transportation along the Herman Leirer Road.

Size and capacity of three-axle vehicles exceed anticipated demand

The large three-axle vehicles with all-terrain tires offer capabilities similar to those desired for operations along the Herman Leirer Road; however, the sheer size of the vehicles limit their potential for OTS transportation services to the Exit Glacier Area. They would have difficulty sharing the road with non-motorized users, and they may be difficult to maneuver along portions of the road, including turning around or maneuvering within potential turn-outs, observation or parking areas. Due to these considerations, large three-axle buses with all-terrain tires are not recommended for OTS transportation along the Herman Leirer Road.

A flatbed trailer is required to transport an OTS vehicle among the winter trailhead, a fueling station, and overnight storage

Regardless of the desired vehicle option, tracked vehicles operating across bare pavement for extended periods of time may negatively impact vehicle maintenance costs. The tracks, whether rubber, steel or a combination thereof, are designed for operation over snow, and while they function on bare pavement and other surfaces, use of such a vehicle outside its designed application may result in higher maintenance costs. Frequent passage of steel-tracked vehicles over pavement may also result in wear and tear of the pavement itself. When possible, OTS vehicles should be operated within their designed constraints and over snow or ice.

5. Market demand

Introduction

Analysis of comparable OTS services indicates that an OTS service on Herman Leirer Road should focus on providing a specific experience to a specific target market. The Alaska Travel Industry Association (ATIA) generally agrees, noting that the Fairbanks Convention and Visitors Bureau has found success "matching products with appropriate target markets."[*] ATIA makes the following suggestions regarding new winter products:[†]

- Instead of embracing "if you build it, they will come," develop a diversified marketing plan;
- Know your target visitor. Demographics of winter visitors to Alaska are as follows:
    - Winter visitors are more likely to be male
    - Average age is 45, while average summer age is 52
    - One out of five winter visitors is retired or semi-retired
    - One-third reported children living in their household
    - Six in ten have graduated from college
    - The average income is $103,000, identical to the summer visitor average

ATIA reports findings from a 2011 online survey of Alaska-interested adult travelers to learn about their winter travel habits and behaviors, to understand current perceptions of Alaska as a winter travel, and to explore key motivators for traveling to Alaska in the winter.[‡] Key findings include:

- Type of winter trip to Alaska desired
    - 48.0% - Combination guided group tour or cruise and independently planned days
    - 31.0% - Independently planned vacation
- Motivations for Taking a Winter Trip to Alaska
    - 77.0% - Enjoy nature and the outdoors
    - 65.1% - Have a new experience or visit a new place
- Activities of Interest for a Winter Trip to Alaska (unaided)
    - 28.6% - Dog sledding
    - 27.4% - Sightseeing

Building on these general findings and suggestions, this chapter describes potential target markets for an OTS service, identifies submarkets of desired user experience, and roughly estimates the size of each submarket when possible. Analysis of existing conditions at the Exit Glacier Area suggests that March and April are the best months to pilot an OTS service, and this demand analysis focuses on those months.

Potential target markets

There are four target markets for OTS service:

- Local users

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[*] ATIA. "Lessons learned from Alaska's Interior and Far North." http://www.alaskatia.org/Tourism-Development/Winter-Tourism/Destination%20Strategies/Three%20Key%20Strategies/Lessons%20Learned.aspx
[†] ATIA. "Marketing Winter Products." http://www.alaskatia.org/Tourism-Development/Winter-Tourism/Guidelines%20for%20Businesses/Marketing%20Winter%20Products.aspx
[‡] ATIA. "Alaska Winter Travel Survey, 2011." http://www.alaskatia.org/~/media/ATIA/PDFs/Research%20and%20Reports/General%20Reports/2011%20Alaska%20Winter%20Travel%20Survey.pdf

- Independent travelers
- School groups
- Park staff

Package tourists were also initially considered, but because the predominant package tourist group in Seward is cruise ship visitors and cruise ships do not begin to arrive in Seward until May, the effect of packaged tourists on demand for an OTS service is estimated to be marginal or nonexistent.

Each target market is further divided into submarkets which are defined by three factors.

- **Individual or organized trips.** Some people prefer to engage in a recreational activity by themselves. These people generally have proper equipment, more experience, and/or are less willing to pay for a tour than those who prefer to participate in an organized tour group. Often, but not always, organized tour groups appeal to visitors from outside the area who have neither local knowledge nor the proper equipment for some activities.
- **Active, casual, or work trips.** Some people seek experiences that are physically demanding, or active. Others seek experiences that are easy-going, or casual. National Park Service employees work at the Exit Glacier Area and seek transportation to work.
- **Submarkets that exist already (existing) or would be created (new) by an OTS service.** Some people are already engaged in recreational activities on Herman Leirer Road and/or at the Exit Glacier Area. These people represent existing target markets for OTS service. Other people may be drawn to Herman Leirer Road and/or the Exit Glacier Area by a novel OTS service or new activities an OTS service would enable. These people represent new target markets for OTS services.

Each submarket describes a set of individuals and the type of experience they would seek from an OTS service. These submarkets are summarized in Table 2 and described in detail below.

Table 2
Estimated OTS trip potential for March and April by target submarket
Source: Volpe Center

	Independent		Organized				
	Active		Active		Casual	Work	
	Existing	New	Existing	New	New	Existing	New
Local users	150	60	-	60	120		
Independent travelers	-	?	50	?	2,900		
School groups					170		
Park staff						60	120

Cells marked with an '-' represent estimates that are included in other cells to avoid double-counting. A cell marked with '?' indicates there is no reasonable basis on which to create an estimate.

Local users

Though there are over 57,000 residents on the Kenai Peninsula, many live over 100 miles from Seward. There are over 3,000 residents in the greater-Seward area, 2,500 of which reside in the City of Seward. People who live closer to Seward are likely to visit Herman Leirer Road in the winter with more frequency than those who live farther away.

Local users will likely not be willing to pay more than a nominal amount to visit a place they are familiar with or can experience for free at other times of year. To attract members of this group, fares of the OTS service must be cost-competitive with other extracurricular activities in the area, several of which are shown in Table 3. The table shows "cost per 60 minutes," which is useful to compare with activities that may last for one or more hours. The field "cost per 20 minutes" may be

useful to compare with transportation-only service options. Hourly costs of the Seward activities identified below range from $3.50 to over $13.

Table 3
Costs of recreational and leisure activities in Seward, Alaska

Seward Activities	Cost (Adults)	Estimated Average Time (minutes)	Cost per 60 minutes	Cost per 20 minutes
Movies at Liberty Theatre	$7.00	120	$3.50	$1.17
SeaLife Center General Admission	$20.00	120	$10.00	$3.33
Yoga classes and gym classes at Resurrection Bodyworks	$12.50	60	$12.50	$4.17
Snowmachine Tours at Seward Military Recreation Camp	$60.00	270	$13.33	$4.44

Local users can be divided into five submarkets:

- Independent-active-existing
- Independent-active-new
- Organized-active-existing
- Organized-active-new
- Organized-casual-new

There are no organized-work-existing or organized-work-new local users.

Local users: independent-active-existing

Independent-active-existing local users are those who currently utilize Herman Leirer Road for outdoor recreational activities including snowshoeing, cross-country skiing, and mountain biking. These users have their own gear and transportation to and from the winter trailhead. They utilize the road by themselves or in small groups as opposed to with organized tours or activity groups. They are most interested in exercise and recreation, and they value transitioning quickly from their vehicles to their activities at the winter trailhead. Local users are more likely to come on the weekend than on weekdays because traditional business hours conflict with available daylight. Because they can experience scenery and quietude along Herman Leirer Road, they do not need to visit the Exit Glacier Area to have a fulfilling experience.

Still, some may wish to use an OTS service to enable one-way recreation options or to take advantage of the public use cabin at the Exit Glacier Area. If these users were to consume OTS service to the Exit Glacier Area they would be willing to pay only what they believe is a fair price for the trip. The trip to the Exit Glacier Area is expected to take roughly 45 minutes. Comparative costs of other recreational activities of similar duration in and around Seward, shown above in Table 3, range between $2.63 and $10.00.

NPS public use statistics, shown in Figure 10 of Chapter 2, report an average 153 visitors at the Exit Glacier Area in March and 66 in April. In March, 117 of these arrive by snowmachine. In April, 54 arrive by snowmachine. Unless snowmachine use is restricted at the Exit Glacier Area, these users would not be likely to switch to an OTS service. In total, on average, 49 people visit Exit Glacier Area without a snowmachine during these months. Kenai Fjords National Park staff and attendees

at the public meeting estimate that use of Herman Leirer Road is three to five times larger than that of the Exit Glacier Area, so a rough estimate of members of this group on Herman Leirer Road in March and April is 150.

Because public use statistics do not differentiate between local user and independent travelers, this estimate includes users from both local and independent travelers within the active-existing submarkets. The cell for independent-active-existing independent travelers in Table 2 is omitted to avoid double-counting.

Local users: independent-active-new

Independent-active-new local users consist of two groups:

- Individuals who currently participate in outdoor winter recreational activities near Seward, but not on Herman Leirer Road
- Individuals who do not currently participate in outdoor winter recreational activities at all

Members of these groups may be drawn to recreate on Herman Leirer Road and/or at the Exit Glacier Area by an OTS service itself. Members of the first group would use an OTS service on Herman Leirer Road as a novelty, adding variety to their normal recreation routine perhaps once every one or two seasons. Members of the second group are likely small in number.

The number of Independent-active-new local users cannot be estimated with certainty, though a rough estimate may be based on the 3,000 existing local residents in the greater Seward area. If one percent of residents fall in this category per month, the size of the total market would be roughly 60 people in March and April.

Local users: organized-active-existing

Organized-active-existing local users are those who are currently using Herman Leirer Road for winter recreation in organized groups. In the months of March and April these users include members of the Nordic Ski Club. This group may seek OTS service between the winter trailhead and the starting location of snow conditions conducive to skiing. This group would be willing to pay only for the transportation they use, likely only ten to twenty minutes of travel over one to three miles of road. This demand would be highly dependent on snow conditions along the road and future management policies of Herman Leirer Road. If five skiers ski on the road two times a week, this results in a possible 80 trips during March and April.

Because these users may have already been included in the broad estimate calculated for independent-active-existing local users, they are not included in Table 2 to avoid double-counting.

Local users: organized-active-new

Organized-active-new local users are those who do not currently recreate on the Herman Leirer Road but may do so, if organized activities are available at an acceptable price. Activities might include cross-country skiing, snowshoeing, or winter-mountain biking. More strenuous activities, such as ice climbing, may appeal to a small percentage of this group.

The number of organized-active-new local users cannot be estimated with certainty, though the number is certain to be less than the 3,000 existing local residents and likely to be far less. If one percent of Seward residents fall in this category each month, an operator might expect demand from 60 people.

Local users: organized-casual-new

Organized-casual-new local users are those that do not and would not participate in winter recreation activities, but may occasionally participate in casual, sightseeing organized tours. Tours might involve riding a snowcoach to the Exit Glacier Area, stopping at scenic overlooks on the way, enjoying interpretation from a park ranger, and stopping at the Nature Center to learn more, warm up, or use the restrooms. Members of this group might be inclined to participate in a casual OTS trip with visiting friends and relatives.

Again, the number of organized-casual-new local users cannot be estimated with certainty, though a rough estimate may be based on the 3,000 existing local residents. There are likely to be more people interested in casual experiences than physical experiences. If two percent of Seward residents fall in this category, an operator might expect demand from 120 people.

Independent travelers

Independent travelers are those who visit Seward from outside the immediate area. Many travelers come from Anchorage, which may be their place of residence or their point of entry to Alaska from other states or countries. They may come to Seward in the winter to visit friends or relatives, visit the SeaLife Center, or take a day or weekend trip away from Anchorage. Independent travelers are likely to be willing to spend more than local users for an OTS service if they think it is novel and would positively contribute to their "Alaska" or "Seward" experience.

Similar to local users, this group can be divided into five submarkets:

- Independent-active-existing
- Independent-active-new
- Organized-active-existing
- Organized-active-new
- Organized-casual-new

There are no organized-work-existing or organized-work-new local users.

Independent travelers: independent-active-existing

Closely related to independent-active-existing local users, independent-active-existing independent travelers are those who currently engage in winter recreation on Herman Leirer Road. They have their own transportation to and from the winter trailhead. They have their own equipment. They prefer to use the road independently rather than with an organized tour or activity group.

The number of independent-active-existing independent travelers cannot be estimated with confidence separately from independent-active-existing local users, thus the estimate for the former groups is left blank in Table 2 to avoid double-counting.

Independent travelers: independent-active-new

A novel OTS service may draw independent active travelers to Seward and the Herman Leirer Road. Similar to independent-active-new local users, independent-active-new independent travelers consist of two groups:

- Individuals who independently participate in outdoor winter recreational activities in other places besides Seward
- Individuals who do not currently participate in outdoor winter recreational activities at all

Members of the former would use an OTS service on Herman Leirer Road as a novelty, adding variety to their normal recreation routine perhaps once every one or two seasons.

Members of the latter, inspired by a new OTS service to take part in winter activities by themselves, may comprise a small group that may over-estimate its skills or come ill-prepared in terms of knowledge and/or equipment.

There is no known basis for estimating the market size of independent-active-new independent travelers that might be interested in OTS service. The cell in Table 2 contains a '?' to represent this unknown demand.

Independent travelers: organized-active-existing

Organized-active-existing independent travelers are those who already take part in organized, physical activities on Herman Leirer Road and at the Exit Glacier Area.

This group includes guests of the Seward Military Recreation Camp who participate in snowmachine tours at the Exit Glacier Area. The camp suggests that it is unlikely these snowmachine tourists would rather ride a snowcoach.

This group also includes guests of Ididaride Sled Dog Tours who take winter tours December through March. Similar to the Nordic Ski Club, Ididaride Sled Dog Tours may seek OTS service between the winter trailhead and the starting location of snow conditions conducive to dogsledding. Ididaride Sled Dog Tours would be willing to pay only for the transportation they use, likely only ten to twenty minutes of travel over one to three miles of road. Their demand would be highly dependent on snow conditions along the road and future AKDOT&PF management policies of Herman Leirer Road.

Ididaride Sled Dog Tours accommodates roughly 250 guests per season. Monthly visitation is not available, but if trips are even distributed from December through March, this accounts for 50 trips in March. Total estimated demand for March and April from organized-active-existing independent travelers is 50 trips (assuming no demand from current snowmachine riders from the Seward Military Recreation Camp).

Independent travelers: organized-active-new

There are three groups of organized-active-new independent travelers that comprise this submarket:

- Guests of the Seward Military Recreation Camp who do not currently participate in the recreation camp's snowmachine tours but might participate in other recreational activities
- Independent travelers who come to Seward in March or April and may be inclined to join an organized activity at the Exit Glacier Area
- Independent travelers who would specifically come to Seward in March or April to join an organized activity at the Exit Glacier Area

The average number of guests of the Seward Military Recreation Camp on March and April weekends is unknown but likely in the hundreds.

The number of independent travelers who already come to Seward in March or April and would be inclined to join an organized activity is unknown and may overlap with the number of non-local visitors to the SeaLife Center, described in the organized-casual-new submarket.

The number of independent travelers who would specifically come to Seward in March or April on account of new service and new activities at the Exit Glacier Area may include people temporarily working in Alaska, people on vacation, and attendees of conferences and conventions in Anchorage and Alyeska. As discussed in the existing conditions, conference facilities in Alaska market heavily to attract visitors in the shoulder seasons, including March and April, and these visitors are looking for winter activities. The number of temporary workers, vacationers, and conference attendees is unknown and there is little basis for estimating the market size of this group.

Thus the size of the submarket is unknown.

Independent travelers: organized-casual-new

Organized-casual-new independent travelers are can be divided into two groups:

- Independent travelers who already come to Seward in March or April and may be inclined to join an organized, casual tour of the Exit Glacier Area
- Independent travelers who would specifically come to Seward in March or April to join an organized, casual tour of the Exit Glacier Area

There are already independent travelers who come to Seward in March or April, as evidenced by the visitation statistics of the SeaLife Center, presented in Figure 9 in Chapter 2. The SeaLife Center estimates approximately 50 percent of the 2,300 and 3,500 visitors in March and April, respectively, are non-local, representing a total estimated market size of 2,900 trips.[*]

It is reasonable to assume a marginal number of these visitors are also already recreating on Herman Leirer Road during their visit to Seward, though the SeaLife Center suggests the market for casual, sightseeing trips is significantly larger than for physically active, recreation-oriented trips because many SeaLife Center visitors are traveling with their families, which have members of varying ability levels.

The number of independent travelers who would come specifically to Seward in March or April to join an organized, casual tour of the Exit Glacier Area also includes temporary workers, vacationers, and conference attendees, though the numbers of these groups is unknown and there is no basis for even a rough estimate.

Thus the minimum size of the submarket can be estimated as 2,900 based on SeaLife Center visitation, and the actual size may be larger due to additional demand from temporary workers, vacationers, and conference attendees.

School groups

One of the primary purposes of Kenai Fjords National Park is to provide educational opportunities to the public, and inviting school groups to witness the Exit Glacier Area in the winter has long been a desire of park staff. Regardless of who runs an OTS service, school trips must have a strong educational component and involve park educational staff.

State restrictions prevent school groups from traveling further than 50 miles for winter field trips. There are four elementary and middle schools within fifty miles of Herman Leirer Road, shown in Table 4.

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[*] Conversation with Kimberley Helmer, Sales Manager at the SeaLife Center, on December 7, 2011.

Table 4
Schools within 50 miles of the beginning of Herman Leirer Road
Source: Volpe Center

School	Grades	Students	Students per grade (approximate)	Distance (miles) from Herman Leirer Road
Seward Elementary	K-6	318	45	2
Seward Middle	7-8	97	48	3
Moose Pass	K-8	18	2	30
Cooper Landing	K-12	10	1	45

If the entire schools of Cooper Landing and Moose, two grades from Seward Elementary, and one grade from Seward Middle School took winter field trips to the Exit Glacier Area, the market for student groups would be roughly 170 students.

Park staff members

NPS currently sends staff members to the Exit Glacier Area on snowmachines. It is likely that growth in winter visitation associated with new OTS service will expand operations at the Exit Glacier Area and require additional NPS staff. NPS may wish to utilize a snowcoach for transportation to reduce noise and air quality impacts caused by individual snowmachines. Thus NPS demand can be categorized as follows:

- Organized-work-existing
- Organized-work-new

If an OTS service were operated by a private operator, the desire by NPS to provide transportation for its staff may present payment-in-kind opportunities. For example, NPS may be willing to trade interpretive services, storage for a snowcoach, or additional winter visitor services at the Exit Glacier Area in return for staff transportation.

Organized-work-existing

At least one NPS staff member makes a round trip each day to the Exit Glacier Area by snowmachine. It is possible that an OTS snowcoach could replace some or all NPS snowcoach trips. Over a period of two months, NPS takes roughly 60 round trips to the Exit Glacier Area.

Organized-work-new

NPS expects that as a result of OTS service it will need to increase its staff presence at the Exit Glacier Area and therefore increase the number of daily round trips to two on days the snowcoach runs, making a total of 120 round trips for the two-month period.

Analysis of market demand

The review of market demand leads to several conclusions related to target markets for initial OTS service.

Estimates of submarket size indicate opportunities but do not suggest actual demand

The submarkets discussed above and summarized in Table 2 represent audiences to which potential OTS services could market. The number of people who actually utilize the service will depend on the number of individuals within a submarket that receive the marketing message, are interested in the service, and find the price of the service to be reasonable. The number of consumers of a service will likely be smaller than the submarket sizes shown in Table 2.

Casual sightseeing trips represent most promising OTS service opportunity

There are already established visitors to the SeaLife Center in March and April. This group is an order of magnitude larger than any of the other potential submarkets summarized in Table 2, and the SeaLife Center reports these visitors are looking for other winter activities in Seward. They don't have a lot of time or gear, and they are likely traveling with their families. A sightseeing trip via snowcoach to the Exit Glacier Area would be a unique experience that, if marketed and priced appropriately, may provide a more stable core offering than either active winter recreation tours or transportation for winter recreation enthusiasts. Providing activities in addition to providing transportation to the Exit Glacier Area may allow a service provider to bundle transportation costs with activity costs and help subsidize OTS service operations and maintenance.

Winter recreation activities may provide additional OTS service opportunities

Although casual sightseeing trips may be the most promising core business for an OTS service, the demand analysis suggests there may be both locals and independent travelers who are interested in winter recreation activities at the Exit Glacier Area. The market size for these activities is estimated to be an order of magnitude smaller than that of casual trips, but an OTS service operator may gain a better sense of demand after providing a season or two of casual OTS services. Similar to casual sightseeing trips, bundling activities with a transportation service would allow a service provider to help recover OTS service operations and maintenance costs.

An OTS service operator can partner with other visitor services in Seward

Restaurants, hotels, tour operators, and even other transportation services represent opportunities to cross-market, partner, or package services. For example, tour operators offering wildlife viewing, ice climbing, mountain biking, snowshoeing, or cross country skiing could partner with the OTS service operator to provide transportation for their customers. The cost of the transportation and the activity could be bundled into a single fare that ensures both operators at least break even on their respective services.

Another partnership model with local businesses is described in Chapter 6.

Transportation-only OTS services will likely face many challenges

Unlike participants in sightseeing or organized recreation trips, people who recreate independently will only be willing to pay for the transportation service they use. Whether these individuals want OTS service to access good snow conditions or to do a one-way recreational trip, charging the breakeven fare may be prohibitively expensive. Another challenge is that demand from these individuals may be highly dependent on weather conditions. If good snow is available at the winter trailhead, there might be very little demand for OTS transportation from these individuals. While there may be opportunities to provide one-way service for recreationists, these opportunities may best be evaluated while providing sightseeing or recreational tours and tested on a trial basis.

OTS service should begin as a demand-based service

While this analysis attempts to estimate market sizes, actual demand for service is quite uncertain, and running a snowcoach is generally expensive. A potential operator should attempt to limit deadhead and low-volume runs by initially offering demand-based services. Customers could call and reserve seats in advance. Once the number of reservations reaches a threshold, the operator could confirm the trip and market it to other potential customers. As the demand for OTS services and transportation on Herman Leirer Road becomes better understood, limited regularly scheduled service could be added in the future at high-use times, such as weekends.

6. NPS transit owner-operator models

This chapter provides an overview of owner-operator models for NPS transit systems as well as funding sources that may pertain to each. An overview of available funding sources is provided first.

Funding sources

There are at least seven potential funding sources for NPS transit systems. Although there are exceptions, two sources, FTA's Transit in Parks Program and the Park Roads and Parkways Program Category III, primarily fund capital expenses while the other sources primarily fund operations and maintenance expenses.

Paul S. Sarbanes Transit in Parks Program

The Federal Transit Administration's Paul S. Sarbanes Transit in Parks (TRIP) Program is a competitive program to which eligible public lands and partners may apply to fund implementation and planning projects. Projects should further the resource protection and visitor access goals of public lands by introducing and improving upon alternative transportation systems that reduce visitor dependence on personally owned vehicles. The TRIP program can fund capital expenditures.

Park Roads and Parkways Program Category III

Federal Lands Highway, part of the Federal Highway Administration, jointly manages the Park Roads and Parkways Program (PRPP) with NPS. PRPP is currently divided into three categories. Category III funds capital expenses for alternative transportation projects.

Federal Lands Recreation Enhancement Act fees

The Federal Lands Recreation Enhancement Act of 2004 (FLREA) authorizes NPS and other federal land management agencies to collect three types of fees: passes, entrance fees, and expanded amenity fees. Of the three, expanded amenity fees, which are charged when a visitor uses a specific or specialized facility, equipment, or service, would apply to an OTS service at Kenai Fjords. Eighty percent of FLREA fees remain at the unit at which they are collected.

Transportation fees

16 USC 79 § 5981 authorizes NPS to impose a "reasonable and appropriate charge to the public" for the use of transportation services. Services may be operated by a unit or by another entity under service contract, cooperative agreement, or other contractual arrangement. All transportation fees remain at the unit at which they were collected and are to be used only to cover the costs of the transportation systems. They can be used for capital, operating, or maintenance expenses.

Transportation fees require approval of a regional director and of the Washington Support Office (WASO). In many parks where transportation fees are collected with entrance fees, the entrance fees and the transportation fees are subject to an entrance fee cap. In Alaska, where there are no entrance fees, there are no entrance fee caps or limits to transportation fees. Costs of comparable services are used to justify transportation fees for approval.

Partner sources

Non-profit organizations and private companies can contribute money in support of transit systems. A notable example is L.L. Bean providing a large operating subsidy to the Acadia Island Explorer; however, arrangements like this are uncommon.

Base funds

NPS units can fund transportation capital, operations, and maintenance out of unit base funds.

Fares or cross-subsidies

Private entities operating transportation systems for which NPS is not liable commonly charge fares. In at least one case, a concessionaire at Yosemite provides a variety of visitor services and subsidizes transit service with profits from the other services. However, there are few such concessionaires with this ability, and cross-subsidies are uncommon.

Franchise fees

NPS units may collect franchise fees from private operators under concessions contracts. The franchise fee must be agreed upon by both NPS and the private operator. Franchise fees are paid from the fares private operators charge visitors.

Cost recovery

NPS units may recover costs from private operators for management and monitoring under commercial use authorizations. Both a unit and a private operator must agree to the amount recovered. These costs must be spent on tasks directly related to managing and monitoring the private operator in question. As a best practice the park should carefully document the costs it requests to recover. Cost recovery is paid from the fares private operators charge visitors.

Owner-operator models

NPS commonly employs several owner-operator models for its transit systems. Each owner-operator model may be characterized by who is ultimately liable for providing service and covering associated costs, by available funding sources, and by allocation of control, risk, and costs among NPS and private entities. In general, park units should seek to minimize their liabilities. Making investments in vehicles or other infrastructure, committing to pay for operations, committing to operate service, managing agreements, and monitoring impacts to resources are all examples of potential liabilities and associated risk.

A summary of liability and available funding sources is provided in Table 5. Descriptions of owner-operator models and their applicability to OTS service on Herman Leirer Road are described below.

Table 5
Summary of NPS alternative transportation owner-operator models
Source: Volpe Center

Descriptors of owner-operator models				Funding sources								
Primary liability holder	Owner	Operator	Agreement type	TRIP	PRPP Category III	FLREA	Transportation Fees	Partner sources	Base funds	Fares or cross subsidies	Franchise fees	Cost recovery
Non-NPS	Non-NPS	Non-NPS	Commercial use authorization							X		X
Shared	Non-NPS	Non-NPS	Concessions contract							X	X	
Shared	Non-NPS	Non-NPS	Cooperative agreement	X	X	X	X	X	X	X		
NPS	Non-NPS	Non-NPS	Service contract	X	X	X	X	X	X			
NPS	NPS	Non-NPS	Service contract	X	X	X	X	X	X			
NPS	NPS	NPS	None	X	X	X	X	X	X			

Non-NPS-owned, non-NPS-operated commercial use authorization

Commercial use authorizations (CUAs) are owner-operator models in which a unit approves a private entity to operate within park boundaries. The park may limit the private entities use with respect to location, time, and intensity, and the park may recover park costs directly attributable to the private entity's operations. CUAs may not limit the number of private operators in a park, and the park has no responsibility to demonstrate that the operation is a viable business opportunity.

Setting up a CUA is simpler than setting up a concession contract. The private operator submits an application and a $250 application fee (plus $50 for each additional unit in which the operator is requesting a CUA), and the unit(s) and the private operator agree on terms of use and cost recovery. Many parks choose not to recover costs from CUAs, but if they do, they should document NPS costs resulting from the private operations.

Advantages of the CUA are that the park makes no representation of a viable owner-operator model; the park is not liable for any costs other than its own; the park can recover its costs related to the private operation; the CUA is relatively easy to set up; and the CUA allows the park to limit use within the bounds of the natural resource capacities. The CUA does not allow a unit to limit the number of private operators.

Non-NPS-owned, non-NPS-operated concessions contract

Units seek concessions contracts when they want to limit the number of private operators. Concessions contracts are usually long-term, lasting ten or more years, and parks may require concessionaires to compensate NPS with franchise fees for use of public resources in their business ventures.

Entering into concessions contracts requires a great deal of time and effort on the part of NPS, thus this owner-operator model is considered to have a shared liability. A unit must write a business prospectus that makes the case that a business opportunity is viable. Private entities submit competitive proposals, and NPS employees from other units and offices review and select the applications. After a concessionaire is chosen, the concessionaire must create a park-approved operating plan, and concessionaire operations are subject to annual evaluation. The operating plan

affords the park a great deal of control over how the concessionaire operates within park boundaries, as long as both parties agree to the terms.

From the NPS perspective, the advantages of concessions contracts are that they can limit private operators in the park; they generate franchise fees for the park; and they create no capital or operating liabilities for the park.

The disadvantages of concessions contracts are that they are complex and costly to set up and they are only applicable to viable business ventures.

Non-NPS-owned, non-NPS-operated cooperative agreement

This owner-operator model exists when a park unit enters into a cooperative agreement with a not-for-profit partner such as a regional transportation authority, a municipal government, a public transit system, or other partner to provide transportation to visitors. Under this model, NPS shares liability with the partner for providing and/or paying for service. Cooperative agreements often involve the park helping fund capital, operations, and maintenance costs of the partner in exchange for transportation service. This owner-operator model is highly site specific, requiring partners in close proximity with closely aligned objectives.

Examples of cooperative agreements with regional transportation authorities, public transit systems, or other not-for-profit partners include Glacier National Park, Colonial National Historical Park, Acadia National Park, and Cape Cod National Seashore.

Non-NPS-owned, non-NPS-operated service contract

Under this owner-operator model, also known as a "turn-key" contract, a unit takes responsibility for providing and paying for transportation service and contracts out ownership and operations. Large park units or park units with heavy demand for transportation service commonly enter into turn-key service contracts with transit providers.

Advantages to this owner-operator model for a park are that the park can continue to focus on its mission rather than on operating a transit system. Transit operators are experienced and can often run transportation systems more efficiently than a park unit. Disadvantages are that the park may not cover capital vehicle costs as from other fund sources; the park is responsible for entering into and enforcing an often complex service contract; and the drivers of the vehicles are not park staff and may not interact with visitors in the same way as do park staff.

Rocky Mountain National Park, Grand Canyon National Park, and Point Reyes National Seashore are examples of units that have turn-key service contracts with private transportation providers.

NPS-owned, non-NPS-operated service contract

This owner-operator model is very similar to the NPS-owned and operated model except that NPS owns the vehicles and contracts out operations under a service contract. Under this owner-operator model, a unit is liable for providing and paying for transportation service.

The advantages of this model are similar to the NPS-owned and operated model because capital investments may be funded from other funding sources. In addition, the unit does not need to make time, labor, and training investments in becoming a proficient transit operator. The disadvantages to this model are that the unit must craft and enforce a contract that protects public interest. Also, private contractors (transit drivers, for example) may not have the same interaction with visitors as park staff, though a member of the park's staff could travel with the vehicle to provide interpretation.

Zion National Park is one example of a unit that owns its vehicles but contracts out operations and maintenance.

NPS-owned, NPS-operated

Common among NPS transit systems are services which are owned and operated by units themselves. Under this owner-operator model, a unit is entirely liable for providing and paying for transportation service. NPS sources the capital investment for vehicles, infrastructure, and related equipment, and operates, fuels, maintains and administers the service. This owner-operator model gives the park the most direct control over the visitor experience and the most flexibility in tailoring the service to fulfill the mission of the park and to meet individual needs of unique user groups.

A park unit may fund capital expenses using Category III, TRIP, congressional appropriations, or base funds. Although not limited by FHWA, NPS traditionally has not used Category III for operations and maintenance.

A park unit may fund operations and maintenance activities using entrance fees or expanded amenity fees authorized under the Federal Lands Recreation Enhancement Act (FLREA), transportation fees, partner funding sources, or base funds.

WASO has begun examining the funding impacts of park-owned systems on other park operations. Operations and maintenance costs for transit systems are often higher than expected and have the potential to consume funds from the fee program or base funds which might otherwise be used on non-transportation related assets and services.

This type of owner-operator model is most common among units with limited transit systems having a few small vehicles. Eugene O'Neill National Historic Site, Kennesaw Mountain National Battlefield, Pinnacles National Monument, and Scotts Bluff National Monument are a few examples of units that own and operate their own system.

Analysis of owner-operator models

The review of owner-operator models leads to several conclusions related to OTS service on Herman Leirer Road.

Kenai Fjords National Park should seek to achieve its goals while minimizing liability

An approach to minimizing liability, shown in Figure 19 below, may help Kenai Fjords National Park continue to focus on its primary mission, expand winter access, and avoid taking on excess financial or management risk.

The approach begins by assuming that improving low-cost winter access to the Exit Glacier Area is central to the mission of the park. If one or more private operators are willing to provide OTS service and can do so within the natural limits of park resources, the park should pursue a CUA.

If the park would like to offer less expensive service, or service of a different quality or nature, or if the number of private operators operating under CUA cannot operate within the limits of the natural resources, the park should consider pursuing a concession contract. Concessions contracts can be used to limit number of operators. Although NPS would take on no ownership or operations liabilities under a concession contract, NPS would invest a great deal of resources in establishing the contract.

If a concessions contract cannot meet the transportation needs of the park and operate as a viable business, the park could consider sharing ownership and/or operations liability with a partner, such as a regional transit authority. However, there are no readily apparent partners in Seward.

Finally, the park could consider taking on greater liability for providing transit service by choosing one of three additional business models.

A non-NPS-owned, non-NPS-operated under service contract model (a turn-key service contract) has the least impact on park operations. The park may continue to fulfill its resource and visitor experience missions while leaving operations of a transportation system up to an expert. The disadvantages of this model are that it is more expensive than other models, high costs are passed on to riders and NPS, and the park will need to carefully manage a turn-key service contract.

If a turn-key service contract is too expensive, undesirable, or impossible, the park could then consider purchasing vehicles itself and contracting out service. By using non-unit fund sources such as Category III or TRIP, the park may focus on recovering only the costs of operations and maintenance from riders. Fares would be significantly lower and operations and maintenance would not be the responsibility of the park. Disadvantages are increased uncertainty regarding vehicle recapitalization and the park's responsibility for carefully managing a service contract.

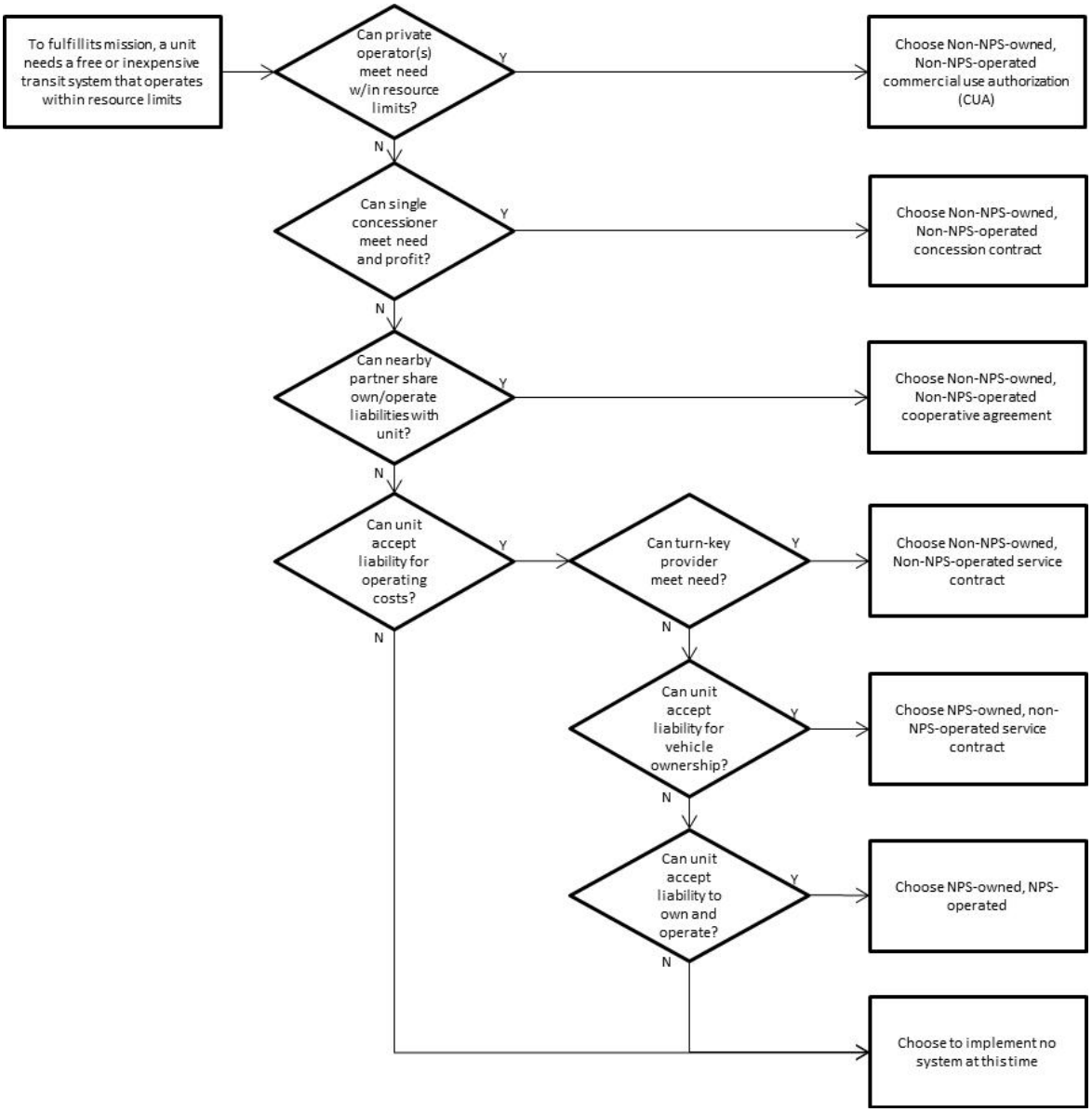
Finally, if the NPS-owned, non-NPS-operated under service contract model is undesirable, the park could investigate an NPS-owned, NPS-operated model. This model carries the greatest amount of liability and risk for the park. Although other parks having small, van or shuttle-based transit systems choose to own and operate them, an OTS vehicle is much more expensive to purchase, operate, and maintain than, for example, a fourteen-passenger van. Park management will have to invest resources in operating a transit system and will have to be ready to absorb operations costs if costs rise or demand drops.

Partnership opportunities with the Seward business community should be explored

Regardless of which owner-operator model is chosen, Kenai Fjords National Park should explore opportunities to work with the Seward business community. As documented in Chapter 2 and in Appendix A, businesses in Seward have been seeking ways to increase winter tourism for years. Winter access to the Exit Glacier Area is commonly thought to be a unique and popular attraction that could influence visitors to stay for a weekend rather than a day, thus supporting hotels, restaurants, and other local businesses.

In addition to capital, operations, and maintenance costs related to an OTS service, additional winter use at the Exit Glacier Area will require increased winter management by NPS at additional cost. If local businesses are going to benefit from an OTS service, they may consider supporting the park's winter management activities and/or the operator's operations costs. One way to do this could be to set up a not-for-profit 'friends' organization which collects nominal contributions from Seward businesses. This concept is further explored in the Chapter 7.

Figure 19
Proposed method for selecting an owner-operator model
Source: Volpe Center



7. Business models

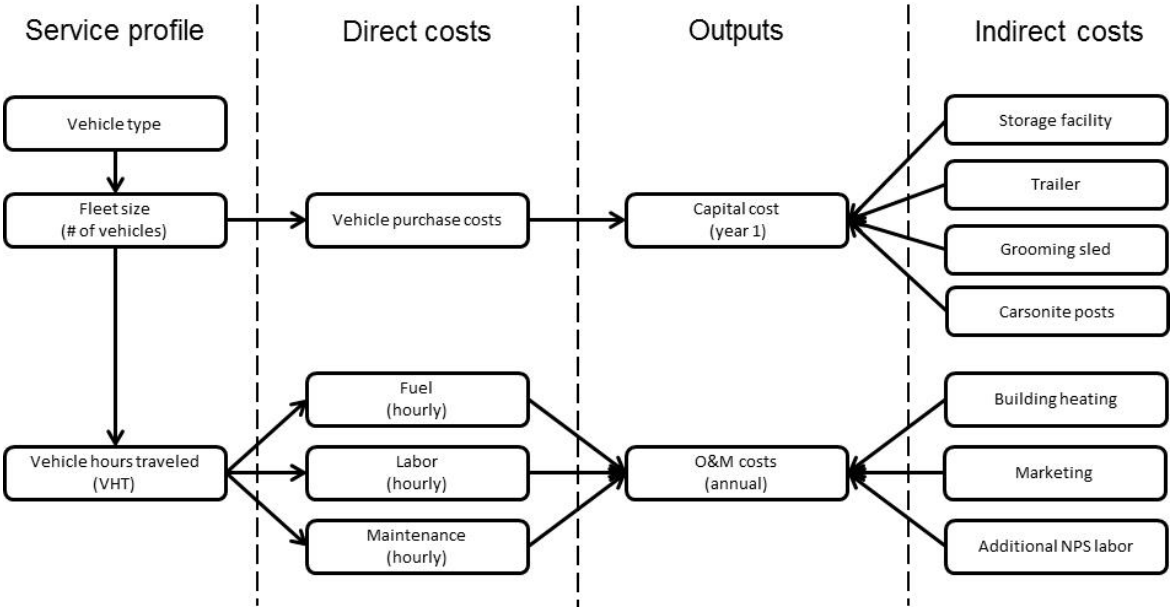
Overview

This chapter suggests three business models built on assumptions derived from analyses and conclusions from previous chapters on existing conditions, comparable OTS services, vehicle options, market demand, and owner-operator models. Two scenarios for each of the three business models are modeled using a spreadsheet tool. Each model estimates annual capital, operations, and maintenance costs, as well as maximum passenger capacity and breakeven fares under various ridership scenarios. Results of the scenario model runs are analyzed and compared to identify which models for OTS service make the most sense for Kenai Fjords National Park.

OTS lifecycle cost model

Six scenarios based on three business models (two scenarios for each business model) were modeled using a spreadsheet lifecycle cost model.[*] The spreadsheet model, originally developed to estimate the lifecycle costs of bus fleets based on hourly and per-mile costs, was modified to estimate OTS service costs. A system diagram of the modified cost model is shown in Figure 20 below.

Figure 20
OTS lifecycle cost model
Source: Volpe Center



The cost model accepts three types of inputs that are combined to calculate capital, operating, and maintenance costs and other outputs:

- Service profile inputs
- Direct cost inputs

[*] Volpe Center. 2011. Bus Lifecycle Cost Modeling Tool. Available online at http://www.volpe.dot.gov/coi/ppoa/publiclands/projects/busandferrycost.html

- Indirect cost inputs

Tables describing these input values and spreadsheet model outputs are below.

Service profile inputs

The service profile inputs describe the OTS service with respect to schedule and frequency. Service profile inputs, their values, and the rationalization and assumptions for those values are described in Table 6. Several inputs have multiple values that reflect the variations in the six scenarios introduced below. The model does not consider the labor or equipment costs of providing activities not related to OTS transit operations, such as snowshoeing, cross-country skiing, or ice climbing.

Table 6
Service profile inputs
Source: Volpe Center

Model inputs	Value	Rationalization
Number of vehicles	1	Based on the results of the demand analysis, one vehicle is thought to be sufficient to provide the initial level of service required on Herman Leirer Road. While a second vehicle may help allow for continuous service in the case of mechanical break downs, the park and others own snowmachines that may be used in case of emergency.
Average roundtrip time	90	Roundtrip travel time is estimated to be 90 minutes and to account for loading and unloading of passengers, and transportation between the start of the winter trailhead at Box Canyon Bridge and the Exit Glacier Nature Center. The estimate includes time for interpretation en-route and assumes a safe speed of roughly 10-20 miles per hour as conditions allow. Actual travel time for the round-trip under this scenario would be between forty and sixty minutes. OTS vehicles such as the purpose-built snowcoach and snowmachine are capable of speeds in excess of 30 miles per hour. This estimate does not include additional time spent at the Exit Glacier Area.
Daily trips	2	Trips to the Exit Glacier Area are expected to take 90 minutes plus 45 to 60 minutes for activities in or near the Exit Glacier Nature Center. Total roundtrip times could be as much as three hours. Given constraints on daylight of 8 hours, the snowcoach will make no more than two trips a day for the first season.
Annual service days	16	Based on the results of the demand analysis, weekends have the greatest potential to capture winter out-of-town visitors to Seward. Sixteen service days, two days per weekend day for eight weeks, are examined. If weekend service reaches capacity, an operator might consider increasing the number of annual service days.
Inflation rate	2.5 percent	An inflation rate of 2.5 percent was calculated by averaging annual changes to the Anchorage consumer price index (CPI) over the 10-year period 2000 to 2010.

Direct cost inputs

Direct costs, shown in Table 7, include all costs which are directly related to capital expenditures, operations, and maintenance of an OTS service. These costs would ideally be recovered by fares collected during operation of the service. Depending on the business model, some costs typically considered direct may be considered indirect, and vice versa.

Table 7
Direct cost inputs
Source: Volpe Center

Model inputs	Value	Rationalization
Vehicle price	$193,000, $48,200	A purpose-built snowcoach is estimated to cost $193,000 new, which can vary by model or brand desired, optional equipment specified and the source chosen for procurement. The cost of $193,000 represents the cost of a purpose-built, Tucker-Terra 15-passenger snowcoach through the GSA.[*] The snowmachine with sled option retails for $39,335 for the snowmachine itself, plus the following options required to achieve 12-passenger capacity: 3-seat kit with safety belts and roll-over protective structures for snowmachine rear deck ($1,606.50) and towing-sled bus (3+3+3 seat-kit with safety belts and three rollover guards - $7,254.00). These values and considerations including age, condition, and features may be used to estimate purchase prices of used snowcoaches and snowmachines. In some scenarios described on the following pages, estimated values for used equipment are included in the scenario descriptions.
Passenger capacity	15, 12 per vehicle trip	The purpose-built snowcoach can carry up to 15-passengers, while the snowmachine with sled (when properly configured) can carry up to 12-passengers.
Driver hourly wage	$42, $16, $45 per hour	Driver wage for a non-NPS owned service was derived from published sources current with the date of this report.[†] For safety of the driver and passengers, purpose-built snowcoach vehicles require advanced operator training including either a commercial-driver's license (CDL) or a heavy-equipment operator's license or equivalent. Wages for individuals with this training are $42 per hour. Snowmachine operation is considered to require minimal training, particularly given their widespread use in Alaska and is represented by a default value of $16 per hour. An hourly wage of $45 for a grade scale level 9, permanent employee was provided by the park. For an NPS-owned vehicle, this staff person would operate the vehicle and host visitors at the Exit Glacier Nature Center. For a privately-owned service this staff person would not be required.

[*] GSA website, https://www.gsaadvantage.gov/advantage/catalog/product_detail.do?contractNumber=GS-07F-0132K&itemNumber=DI-1643E-26-6-173.
[†] Wisconsin State Department of Natural Resources, Equipment and Labor Rates for 2010-2011 Season, http://dnr.wi.gov/org/caer/cfa/Grants/Forms/SnoEquipandLaborRates.pdf.

Model inputs	Value	Rationalization
Annual maintenance costs	$800, $100 per year	Maintenance costs vary depending on conditions, treatment of equipment, duty cycles, operating environment, preventative maintenance practices and several other factors potentially beyond an operator's control. Default values for maintenance costs are derived from industry guidelines, interviews conducted by the study team with operators or industry product specialists, and anecdotal 'rules of thumb' as communicated by experienced operators and maintenance personnel interviewed by the study team. Initial attempts to establish a per-hour maintenance cost yielded a cost contingent upon regular use and would not be representative of such a limited service and operating season as is anticipated for a service along Herman Leirer Road. In order to account for modest use over a short period followed by a long storage period, the model assumes each vehicle type will require an annual, pre-season service. This service ensures the vehicle is ready for operation after a long idle period and entails the changing of fluids (oil, hydraulic fluid, transmission fluid, etc) and filters. This method alleviates any issues that may arise from storage, particularly condensation build-up within the engine, transmissions, hydraulic systems or other mechanical systems which require lubrication. Such a service for a purpose-built snowcoach was quoted by Tucker SnoCat as an $800 service including a labor rate of $135 per hour. In addition to this basic annual service, a full service including disassembly, inspection and reassembly of the tracks and associated sub-systems (steering, axles, etc) as well as a full service of the engine and chassis of the vehicle should occur, at minimum, after 500 hours of use. A full service was quoted by Tucker SnoCat at an average cost of $4,400 including all parts ($1,160) and labor ($3,240) and is estimated to take 3-days for completion. The full service may cost anywhere between $1,500 and $8,000 depending on wear and tear. Improper operation of the vehicle can significantly impact the cost of ownership. Costs may vary depending on vehicle type and manufacturer's service recommendations. Performing equivalent services, such as those quoted above, with in-house or local mechanical professionals experienced with servicing similar equipment may help achieve cost savings. Annual service for the Alpina snowmachine with passenger sled is estimated to cost $100 and include oil, filter and labor. The Alpina snowmachine is unique in its use of an automotive-derived engine and current models utilize an engine similar to that found in the current Ford Fiesta. Due to the use of an automotive engine, the required maintenance is significantly less intensive compared to a traditional 4-stroke snowmachine engine and the cost associated with an annual basic oil change and service is predicated upon this distinction.

Model inputs	Value	Rationalization
Fuel economy	4.5, 1.3 gallons per hour	Due to the large variation of operating conditions (including on-road, off-road, groomed, non-groomed, wet snow, and powder snow) it is very difficult to estimate fuel economy or operations and maintenance costs by the mile. Instead, costs for OTS vehicles are usually reported by the hour. Fuel economy for purpose-built snowcoaches is based on estimates provided by operators of OTS services. An operator, Chugach Powder Guides[*] communicated during an interview conducted by the study team, that an 8-9 hour service day would consume 40 gallons of diesel fuel, or roughly 4.5 gallons per hour. Fuel economy for the snowmachine and sled combination was provided as a flow-rate by the North American importer of Alpina snowmachines, HJ Roberts and Associates, based off his customer's feedback. A fuel use rate of 5 liters-per-hour was provided to the study team for a snowmachine pulling a heavy sled, and was then converted to 1.3 gallons per hour for unit-consistency within the model.
Fuel cost	$4.20, $4.00 per gallon	The price of fuel, both diesel and gasoline are highly variable and the default value for fuel cost considerations should be updated often.[†]
Trailer	$25,000, $7,500	The OTS vehicle will be transported among a storage area, a fueling station, and the winter trailhead on a flatbed trailer because tracked vehicles are not suitable for traversing paved roads for long distances. The cost of a large flatbed trailer is estimated to cost $25,000. The snowmachine and sled will be transported to and from the storage area for similar reasons and is due to its smaller size and lighter weight, requires a smaller, less-expensive trailer.
Storage facility	$60,000	A storage facility may be required to house an OTS vehicle near the proposed route and beyond the start of the winter trailhead at Box Canyon Bridge. Kenai Fjords National Park provided an estimated cost for a pole barn of $60,000.
Equipment facility	$20,000	An equipment storage facility would be required to house snow-clearing equipment, grooming equipment as well as equipment and supplies for future winter visitation including first-aid kits, warm blankets and potentially snowshoes and shovels, etc. Kenai Fjords National Park provided an estimated cost for an unheated equipment storage facility of $20,000.

Indirect cost inputs

Indirect costs shown in Table 8 include capital, operations, and maintenance investments required by Kenai Fjords National Park which are not directly related to operations of an OTS service. These costs are anticipated by the park to accommodate the additional winter use enabled by an OTS service. Because they are not directly related to the service itself, they would not need to be recovered by fares. Depending on the business model, some costs typically considered direct may be considered indirect, and vice versa.

[*] Chugach Powder Guides company website, http://www.chugachpowderguides.com/snowcat.html.
[†] Alaskagasprices.com website, http://www.alaskagasprices.com. Accessed December 22, 2011.

Table 8
Indirect cost inputs
Source: Volpe Center

Model inputs	Value	Rationalization
Trail grooming sled	$8,000	Kenai Fjords National Park provided an estimated cost for a trail grooming sled of $8,000.
Road/trail markers for low visibility conditions	$5,000	Markers for low visibility conditions may be used to line the sides of Herman Leirer Road within the boundary of Kenai Fjords National Park. The markers need to be visible above the highest snow accumulations in the winter. NPS quoted the posts at $100 each for 100.
Building heat	$50 per day	The park provided an estimate of $50 per day to heat the Exit Glacier Nature Center for winter use.
Marketing costs	$2,500 per year	Marketing costs are estimated to be $2,500 per year and include the cost of developing marketing materials including printed schedules, routes and winter trail maps, dissemination of those materials and targeted advertising of the anticipated OTS transportation service.
GS-9 Interpretive staff (driver)	$45.00 per hour	Kenai Fjords National Park provided wages for a grade scale level 9, seasonal employee. For NPS-operated OTS service, the GS-9 driver would also work at the Exit Glacier Nature Center and help with janitorial duties and maintenance. For privately owned service, this employee would not be required.
GS-7, step 1, Interpretive staff (seasonal)	$23.31 per hour	Kenai Fjords National Park provided wages for a grade scale level 7, seasonal employee. This employee would provide interpretive service and staff the Exit Glacier Nature Center for eight hours every day a privately-owned service runs. This staff would not be required for NPS-owned services because the driver of the vehicle would also be the host at the Exit Glacier Nature Center.
GS-9, step 5, Law Enforcement Ranger	$43.20 per hour	Kenai Fjords National Park provided wages for a grade scale level 9, step 5 law enforcement ranger. This employee would be required for eight hours every day that an OTS service runs. This employee would patrol the winter trails and provide for the safety of recreational visitors within the park.
WG-5, step 3, Janitorial staff (seasonal)	$24.58 per hour	Kenai Fjords National Park provided wages for a wage-grade level 5 employee. This staff person would spend two eight-hour days maintaining the outhouses, warming hut, and nature center for every week a private OTS service operates. This staff person would work one eight-hour day for every week an NPS OTS service operates because the GS-9 driver would be able to help with some of the maintenance.

Spreadsheet model outputs

Outputs from the spreadsheet model are described in Table 9.

Table 9
Spreadsheet model outputs
Source: Volpe Center

Model outputs	Explanation
Cost summary	This output section contains a summary and details of direct and indirect capital, operations, and maintenance costs. Different business models may account for capital costs as either direct or indirect differently. For purposes of this model, direct costs are attempted to be recovered by fund sources generated from fares. Indirect costs are those paid by the park and recovered from other funding sources not related to fares.
Vehicle hours traveled (VHT)	This output is annual vehicle hours traveled. This output only represents hours the vehicle is in motion and does not include additional time visitors may spend at the Exit Glacier Area. This value is calculated by multiplying roundtrip travel time by service trips per-day by total annual service days.
Direct cost per service hour, 12-year capital life	This output is the cost per service hour. This is also the required hourly breakeven cost for operating the system. It is calculated by summing the capital, operations, and maintenance inflation-adjusted cost streams over a twelve-year period and dividing by the total VHT for this same period.
Direct cost per vehicle trip, 12-year capital life	This output is the cost per vehicle trip (as opposed to passenger trip). This is also the required breakeven cost per vehicle trip for operating the system. It is calculated by summing the capital, operations, and maintenance inflation-adjusted cost streams over a twelve-year period and dividing by the total number of vehicle trips for this same period.
Passenger capacity	This output is the service's annual passenger capacity. This output is calculated by multiplying the maximum seating capacity of the vehicle type selected by the total number of annual vehicle trips.
Breakeven fares, direct costs only	This section contains a summary of breakeven adult roundtrip fares. It is calculated by summing the capital, operations, and maintenance inflation-adjusted cost streams over a twelve-year period and dividing by the total number of expected passengers for this same period. Thus the breakeven year for these fares is always Year 12. Four estimates of expected passenger volume are calculated based on 100, 75, 50, and 25 percent utilization of maximum capacity.
Cumulative profit / loss, 75% capacity, $35 fare	This section shows the profit or loss assuming 75 percent of seats are filled and tickets cost $35 per person. Fares of $35 for an estimated three-hour trip are comparable with tickets to the SeaLife Center. Cumulative profit and loss is shown for years one, six, and twelve. The year in which a service becomes profitable is shown as well. While annual inflation is considered for capital, operations, and maintenance costs, this output assumes a constant fare of $35 in today's dollars. In practice, an operator would likely raise fares to adjust for inflation.

Assumptions

Several assumptions are made based on the analyses of the existing conditions, comparable services, vehicle options, market demand, and owner-operator models. The assumptions are as follows:

- OTS service will target casual, independent travelers seeking organized tours and activities.
- OTS service will enable tours and activities such as wildlife and glacier viewing, cultural interpretation, visiting the Exit Glacier Nature Center, and/or limited snowshoeing at the

Exit Glacier Area. These tours and activities may be led by the OTS service operator or by other tour operators in the area.

- OTS service will be demand-based and will only make the trip to the Exit Glacier Area if the number of reservations exceeds a given threshold that exceeds the cost of the vehicle trip.
- OTS service will run in March and April, two days a week on Saturdays and Sundays, and make two vehicle trips per day for a total of sixteen annual service days and thirty-two vehicle trips.
- OTS service will be provided by either a purpose-built snowcoach or a snowmachine towing a passenger sled.
- The OTS operator will use a flatbed trailer to transport the vehicle among the winter trailhead, a fueling station, and an overnight storage location.
- The park will heat and staff the Exit Glacier Nature Center, groom non-motorized trails at the Exit Glacier Area, increase the law-enforcement ranger presence, and clean and maintain restrooms and public use cabins in accordance with expected additional visitation. If OTS service is provided by a purpose-built snowcoach, the park will install road/trail markers to mark the road in deep snow. Trail grooming activities are assumed to be covered by the law-enforcement ranger.

Business Models

This study examines three business models which vary based on how, if at all, capital costs are recovered by operations of an OTS service. For each business model, two scenarios representing low-cost and higher-cost vehicle options are presented.

A description for each scenario is provided below. Each scenario was run using the OTS lifecycle cost spreadsheet model. Model inputs not explicitly described for each scenario use the values provided in Table 6, Table 7, Table 8, and Table 9. Resulting outputs for each spreadsheet model run are summarized in Table 11. Analyses of the results are provided below.

Table 10
Summary of business models, owner-operator models, funding sources, and scenarios
Source: Volpe Center

Business model	Owner-operator model	Funding sources	Scenarios
Business Model A: Private operator recovers all costs	Non-NPS-owned, non-NPS-operated commercial use authorization Non-NPS-owned, non-NPS-operated concessions contract Non-NPS-owned, non-NPS-operated service contract	Potential fares Franchise fees (paid to park from concessionaire) Cost recovery (paid to park from commercial use operator) Partner sources (for indirect expenses)	Scenario A1: Private operator buys used snowmachine with passenger sled and recovers all costs Scenario A2: Private operator buys used purpose-built snowcoach and recovers all costs
Business Model B: NPS recovers only operations and maintenance costs	NPS-owned, non-NPS-operated service contract NPS-owned, NPS-operated	TRIP PRPP Expanded amenity fees Transportation fees Partner sources Base funds	Scenario B1 – NPS buys new snowmachine with passenger sled and recovers only operations and maintenance costs Scenario B2 – NPS buys new purpose-built snowcoach and recovers only operations and maintenance costs
Business Model C: Private operator recovers all costs attributed to two months	Non-NPS-owned, non-NPS-operated commercial use authorization Non-NPS-owned, non-NPS-operated concessions contract Non-NPS-owned, non-NPS-operated service contract	Potential fares Franchise fees (paid to park from concessionaire) Cost recovery (paid to park from commercial use operator) Partner sources (for indirect expenses)	Scenario C1 – Private operator buys used snowmachine with passenger sled and recovers all costs attributed to two months of operations Scenario C2 – Private operator buys used purpose-built snowcoach and recovers all costs attributed to two months of operations

Business Model A: Private operator recovers all costs

Under Business Model A, a private owner-operator operates under concession contract, CUA, or service contract. All annual costs directly related to OTS operations are recovered through fares. These costs include all operations and maintenance costs directly related to the vehicle as well as capital costs including the vehicle, the flatbed trailer, a storage facility for the vehicle, and a storage facility for equipment. The vehicle is only used at Kenai Fjords National Park. Indirect costs required by Kenai Fjords National Park, such as labor, heating, and infrastructure improvements, are summarized but not included in cost recovery calculations. Indirect costs would be funded by other sources.

This model is most applicable to private operators because they must recover their capital expenses.

Scenario A1: Private operator buys used snowmachine with passenger sled and recovers all costs

A private operator sources a pre-owned snow machine with passenger sled for $30,000 and a trailer for transporting the machine for $2,500. The private operator has an existing storage facility for the vehicle and equipment.

Scenario A2: Private operator buys used purpose-built snowcoach and recovers all costs

A private operator sources a pre-owned purpose-built snowcoach for $75,000 which includes a trailer for transporting the machine. This purpose-built snowcoach is perhaps among the less-expensive pre-owned options but is purchased with the intent to use it only for operations on Herman Leirer Road during the proposed two-month season. The private operator stores the machine outside and has an existing storage facility for other miscellaneous equipment. The operator invests $5,000 in marketing the service and intends to provide gear such as snowshoes for a guided trek to Exit Glacier.

Business Model B: NPS recovers only operations and maintenance costs

Under Business Model B, the park owns the vehicle and contracts operations under a service contract or owns a vehicle and operates the service. In the case of either owner-operator model, vehicle costs are considered indirect and are not recovered for two reasons. First, for many park units with transit systems, capital vehicle costs are typically funded from non-unit sources such as Category III funding or the TRIP program. Thus, from the perspective of a unit, these capital vehicle costs do not need to be recovered from fares or unit base funds. Second, even units who might wish to cover capital vehicle costs themselves have no funding mechanism to do so. They have no way to either borrow the capital cost of a vehicle against expected future funding or to save funding over the lifespan of an existing vehicle to pay for recapitalization.

All things being equal, the total costs of Business Model B should equal those of Business Model A, and the difference between the models is how direct capital costs are accounted for and recovered.[*] Under Business Model B, all capital costs including the vehicle, the flatbed trailer, a storage facility for the vehicle, and a storage facility for equipment are considered indirect costs and are not recovered through operations. These costs along with other indirect costs, such as such as labor, heating, and tangential infrastructure improvements, are summarized. All indirect costs are funded by other sources.

Scenario B1 – NPS buys new snowmachine with passenger sled and recovers only operations and maintenance costs

The park, having less flexibility than a private operator to purchase used vehicles, sources a new $48,200 snow machine with passenger sled using Category III or TRIP funding. The park already owns a trailer for transporting the snowmachine and sled. In an effort to charge the lowest possible fee to users, the park plans to store the vehicle outside rather than build a vehicle storage facility. The park employs a GS-9 seasonal interpretive staff to operate the service and provide interpretation while at the Nature Center.

[*] In reality all things are not equal. A private operator has a wider range of new and used vehicle options and may have access to labor costs lower than the park.

Scenario B2 – NPS buys new purpose-built snowcoach and recovers only operations and maintenance costs

The park, having less flexibility than a private operator to purchase used vehicles, sources a new $193,000 purpose-built snowcoach using Category III or TRIP funding. The park already owns a trailer for transporting the snowcoach. To protect its investment, the park builds and plans to store the vehicle in a new storage facility. The park trains a GS-9 employee to operate the service and provide interpretation at the Nature Center.

Business Model C: Private operator recovers all costs attributed to two months

Under Business Model C, a private operator owns and operates under concessions contract, CUA, or service contract, and attempts to recover only the direct capital costs that may be attributed to the months during which the service operates on Herman Leirer Road. Business Model C assumes the private operator pursues other business opportunities with the vehicle during the remaining months of the year and is profitable.

Business Model C is applicable to private operators because they have more latitude than a park unit in where they operate and what types of services they offer. For example, there are numerous glaciers and icefields in Alaska at which a private operator may operate during months besides March and April. A park unit, on the other hand, is most likely to share a vehicle only with other public lands, and the logistical and administrative challenges in doing so may be difficult to overcome.

Scenario C1 – Private operator buys used snowmachine with passenger sled and recovers all costs attributable to two months of operations

A private operator operates a snowcoach on Herman Leirer Road during March and April and operates elsewhere the remaining ten-months of the year. Only the capital, operations, and maintenance costs accrued during the two months on Herman Leirer Road are factored into recovery calculations.

The private operator either already owns, or has sourced, a pre-owned snowmachine with sled valued at $30,000 and a trailer valued at $4,000. Assuming a 12-year capital lifespan and a 12-year heavy equipment loan of 10.0 annual percentage rate, monthly costs for these investments are estimated to be $717 and $96. The private operator has an existing equipment storage facility and will transport the vehicle to the Herman Leirer Road prior to the first weekend of service and would park it outside for the two-month service duration.

Scenario C2 – Private operator buys used purpose-built snowcoach and recovers all costs attributable to two months of operations

A private operator operates a snowcoach on Herman Leirer Road during March and April and operates elsewhere the remaining ten-months of the year. Only the capital, operations, and maintenance costs accrued during the two months on Herman Leirer Road are factored into recovery calculations.

The private operator either already owns, or has sourced, a purpose-built snowcoach valued at $100,000 and a trailer valued at $12,000. Assuming a 12-year capital lifespan and a 12-year heavy equipment loan of 10.0 annual percentage rate, monthly costs for these investments are estimated to be $2,390 and $287. The private operator has an existing equipment storage facility and will transport the vehicle to the Herman Leirer Road prior to the first weekend of service and would park it outside for the two-month service duration.

Table 11
Outputs for business model scenarios
Source: Volpe Center

	Scenario A1	Scenario A2	Scenario B1	Scenario B2	Scenario C1	Scenario C2
1. Cost summary						
Direct costs						
Capital costs						
Vehicle	$30,000	$75,000	$0	$0	$0	$0
Trailer	$2,500	$0	$0	$0	$0	$0
Vehicle storage facility	$0	$0	$0	$0	$0	$0
Equipment storage facility	$0	$0	$0	$0	$0	$0
Total capital costs	**$32,500**	**$75,000**	**$0**	**$0**	**$0**	**$0**
Operations and maintenance costs						
Vehicle 2-month cost	$0	$0	$0	$0	$717	$2,390
Trailer 2-month cost	$0	$0	$0	$0	$96	$287
Vehicle storage 2-month cost	$0	$0	$0	$0	$0	$0
Equipment storage 2-month cost	$0	$0	$0	$0	$0	$0
Driver	$768	$2,016	$2,160	$2,160	$768	$2,016
Fuel	$250	$907	$250	$907	$250	$907
Marketing	$2,500	$5,000	$2,500	$2,500	$2,500	$2,500
Maintenance	$100	$800	$100	$800	$17	$133
Total operations and maintenance costs	**$3,618**	**$8,723**	**$5,010**	**$6,367**	**$4,347**	**$8,234**
Total direct costs	*$36,118*	*$83,723*	*$5,010*	*$6,367*	*$4,347*	*$8,234*
Indirect costs (NPS)						
Capital costs						
Vehicle	$0	$0	$48,200	$193,000	$0	$0
Trailer	$0	$0	$0	$0	$0	$0
Vehicle storage facility	$0	$0	$0	$60,000	$0	$0
Equipment storage facility	$0	$0	$0	$0	$0	$0
Trail grooming sled	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000
Road/trail markers	$0	$5,000	$0	$5,000	$0	$5,000
Total capital costs	**$8,000**	**$13,000**	**$56,200**	**$266,000**	**$8,000**	**$13,000**
Operations and maintenance costs						
Building heat	$800	$800	$800	$800	$800	$800
Interpretive staff person (GS-9)	$0	$0	$3,600	$3,600	$0	$0
Interpretive staff person (GS-7)	$2,984	$2,984	$0	$0	$2,984	$2,984
Law enforcement ranger (GS-9)	$5,530	$5,530	$5,530	$5,530	$5,530	$5,530
Janitor (WG-5)	$3,146	$3,146	$1,573	$1,573	$3,146	$3,146
Total operations and maintenance costs	**$12,460**	**$12,460**	**$11,503**	**$11,503**	**$12,460**	**$12,460**
Total indirect costs	*$20,460*	*$25,460*	*$67,703*	*$277,503*	*$20,460*	*$25,460*
Total costs, Year 1	**$56,577**	**$109,183**	**$72,712**	**$283,870**	**$24,806**	**$33,693**
2. Vehicle hours traveled (VHT)	48	48	48	48	48	48
3. Direct cost per service hour, 12-year capital life	$143	$347	$120	$160	$104	$205
4. Direct cost per vehicle trip, 12-year capital life	$215	$520	$180	$240	$156	$307
5. Annual passenger capacity	384	480	384	480	384	480
6. Breakeven fares, 12-year capital life						
100% capacity	$17.88	$34.68	$15.00	$16.01	$13.01	$20.48
75% capacity	$23.84	$46.24	$20.00	$21.35	$17.35	$27.31
50% capacity	$35.77	$69.35	$30.00	$32.03	$26.03	$40.97
25% capacity	$71.53	$138.71	$59.99	$64.05	$52.06	$81.93
7. Cum. profit/loss, 75% cap., $35 fare						
Year 1	-$26,038	-$71,123	$5,070	$6,233	$5,733	$4,366
Year 6	$4,872	-$55,122	$28,480	$34,928	$32,713	$23,007
Year 12	$38,553	-$48,541	$51,850	$58,961	$60,992	$33,214
Breakeven year (if 12 or less)	Year 6	n/a	Year 1	Year 1	Year 1	Year 1

Scenario A1: Private operator buys used snowmachine with passenger sled and recovers all costs
Scenario A2: Private operator buys used purpose-built snowcoach and recovers all costs
Scenario B1: NPS buys new snowmachine with passenger sled and recovers only operations & maintenance costs
Scenario B2: NPS buys new purpose-built snowcoach and recovers only operations & maintenance costs
Scenario C1: Private operator buys used snowmachine with passenger sled and recovers all costs, two months
Scenario C2: Private operator buys used purpose-built snowcoach and recovers all costs, two months

Analysis of business models

Winter use resulting from OTS service will cost NPS roughly $750 per day

An OTS service will expand winter use at the Exit Glacier Area. Park responsibilities resulting from expanded winter use, estimated by park management, will cost between $720 and $780 per day, depending on whether the service is park operated or not. The park may be able to achieve some labor cost savings by having its GS-9 driver also staff the Exit Glacier Nature Center and help perform some janitorial and maintenance duties.

If the service runs 16 days, annual costs are expected to be between $11,500 and $12,500. These estimates are expected to scale linearly as long as the maximum number of passengers per day remains at the modeled levels. For example, if an operator wanted to run 24 days, the costs would rise to between $17,300 and $18,700, respectively.

Capital indirect costs (for all scenarios except those of Business Model B) are either $8,000 or $13,000 depending on whether or not a purpose-built snowcoach is operating and road/trail markers are required. For scenarios under Business Model B, vehicle and equipment costs that are indirect are assumed to be paid by other funding sources such as Category III or TRIP.

An operator is unlikely to recover annual capital costs during only a two-month period

Business Model A scenarios, under which a vehicle is bought and used for only two months out of the year, would make it difficult for a private operator to break even. Assuming ridership at 75 percent of annual capacity, scenarios A1 and A2 require breakeven fares of $24 and $46, and the breakeven year under these prices is Year 12. A small or medium-sized private operator is unlikely to wait 12 years to breakeven. Even with fares of $35, breakeven does not occur until Year 6 under Scenario A1 and never occurs under Scenario A2.

A private operator would likely offer an added experience at the Exit Glacier Area such as snowshoeing or cross-country skiing that would allow it to raise fares; however, specific activities and higher prices may decrease the potential market.

A private operator may also seek to increase the number of days or number of runs per day, although demand for service may be insufficient to recover the costs of additional runs or to improve profitability. Expanding service would best be considered following initial pilot service.

Complementary use of an OTS vehicle can enhance profitability for a private operator

Scenarios under Business Model C overcome the challenges of Business Model A by assuming the private operator finds complementary uses for the vehicle during the other ten months of the year. Under these scenarios, operations revenues only need to cover the portion of capital, operations, and maintenance costs attributed to March and April. The breakeven thresholds for scenarios under Business Model C are accordingly much lower than for Business Model A. The breakeven fares for Scenario C1 and C2 are $17 and $27, respectively (compared with $24 and $46 for Scenarios A1 and A2). If 75 percent of seats are filled annually, fares of $35 allow profitability for both scenarios in Year 1.

The primary risk to the operator is that it may not be able to find complementary uses that also breakeven the remaining ten months of the year. Still, the private sector has a comparatively greater ability to do this than the park. While a private operator can take a snowcoach to many places and provide a variety of public or for-profit uses, the park would be limited to sharing a vehicle only with other federal lands for public uses.

If park management considers OTS service to the Exit Glacier Area as mission critical, the primary risk to the park is that the operator may find greater profitability elsewhere and discontinue service on Herman Leirer Road.

Park-owned OTS service may be feasible but carries financial risk and management challenges

The park may choose to own and operate its own service to maintain year-on-year consistency and to provide as low-cost winter access to the Exit Glacier Area as possible. The park would choose to do this if it considers winter access critical to its mission, if it believes a private operator may not be able or willing to consistently provide this access, and if it believes it can cover the cost of operations and maintenance with fees and other funding sources.

Of the six scenarios modeled, scenarios B1 and B2 under Business Model B provide the lowest break even fares of $20 and $21, respectively, because this model does not recover capital costs. If the park were to recover all capital costs, the breakeven results would be similar to Business Model A. The Washington Support Office (WASO) of NPS will be releasing a financial analysis of NPS transit systems which considers total cost of facility ownership (TCFO) much like Business Model A and examines whether the method of accounting under Business Model B should be permissible.* One of the main concerns with the Business Model B method is whether funding for recapitalization will be available at the end of vehicles' useful service lives.

Other major risks with park ownership and operations are financial risk and management challenges. In addition to the indirect annual costs of roughly $12,000 to cover additional winter use, the park would be liable for recovering operations and maintenance costs. Any costs not recovered from operations would most likely come from the park's base funds, thus redirecting those funds from other park needs. Rising fuel or labor costs, unexpected accidents or maintenance, or declining ridership could all diminish the park's ability to cover annual costs. In addition to financial considerations, the logistics, marketing, and administrative overhead required to run a transit system would create new management challenges for the park.

A service-contract model may help spread risk among public and private interests

If the park considers part of its mission to provide access to the Exit Glacier Area (as opposed to simply enabling access), it may consider a non-NPS-owned, non-NPS-operated service contract model to combine the benefits of, and help offset risks between, Business Models B and C. This hybrid approach would have the park contract with a service provider for a multi-year period for transportation along Herman Leirer Road for March and April. The service provider would have its own vehicle and would use it elsewhere for ten months out of the year.

The benefits to the park are that it would fulfill its mission to provide winter access and achieve consistency of service over a multi-year period without risking the possibility that the service provider will find a more desirable location. Although the park would have to provide contract oversight, it would avoid taking on additional management challenges related to running a successful transit system. The park would take on financial risk similar to Business Model B and would be responsible for paying the service contract using one or more funding sources such as enhanced amenity fees, transportation fees, or least desirably, base funds.

The private operator, who would be assured a guaranteed amount of revenue, can focus on recovering costs associated only with March and April and operate elsewhere during the remaining ten months of year.

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* Expected publication in third quarter of FY2012.

8. Conclusions and recommendations

This study has analyzed existing conditions, comparable services, vehicle options, market demand, owner-operator models, and business models for OTS service on Herman Leirer Road. These analyses have been presented and documented in previous chapters of this report. This chapter incorporates the conclusions from these analyses into guidance for park management as it decides how to proceed in improving winter access to the Exit Glacier Area. It then provides some suggestions for next steps.

The conclusions of this report are based on the following assumptions:

- Kenai Fjords National Park seeks to improve (but not necessarily provide) winter access to the Exit Glacier Area
- AKDOT&PF winter operations on Herman Leirer Road will not change in the near future
- The recreational trail along Herman Leirer Road will not be constructed in the near future
- All potential business and owner-operator models and associated winter uses would conform to the Exit Glacier Area Plan
- All breakeven fares are calculated based on achieving 75 percent seating capacity utilization

Winter use facilitated by OTS service will cost the park roughly $750 per day

Annual indirect operations costs are expected to be $750 per day, or $12,000 for 16 days of OTS service. One-time capital expenses of $8,000 to $13,000 are required to purchase a grooming sled and trail markings. Total first year indirect costs are expected to be between $20,000 and $25,000.

Capital costs could be paid for from base funds or from Category III but might be too small a request relative to the effort for the competitive TRIP program. Indirect operations costs could be offset by base funds or perhaps a partnership with the local business community.

These cost estimates do not include costs related to monitoring OTS service impacts to natural resources such as the soundscape, moose wintering, or water and air quality.

OTS service on Herman Leirer Road is feasible under three private owner-operator models. Kenai Fjords National Park should select a model that achieves its goal to improve access to the Exit Glacier Area while assuming minimal additional liability

The OTS owner-operator models that best allow the park to meet its goal while limiting liability are as follows, in order of least to greatest NPS liability:

- Non-NPS-owned, non-NPS-operated commercial use authorization
- Non-NPS-owned, non-NPS-operated concessions contract
- Non-NPS-owned, non-NPS-operated service contract

Each owner-operator model above requires a private operator to own and operate the service. These models are advantageous because a privately-owned vehicle may be put to use at other locations when not in service on Herman Leirer Road. A park-owned vehicle would be limited to public locations and uses and may sit idle when not in use on Herman Leirer Road

If operating revenues need only to cover the capital and operating expenses of the months a vehicle operates on the road, breakeven fares are estimated to be between $17 and $27 depending on vehicle type and purchase price. Without the ability to use the vehicle and recover costs elsewhere during the year, breakeven fares on Herman Leirer Road would have to recover all capital costs and are estimated to be $24 to $48, depending on vehicle type and purchase price. This price range is thought to be too high to generate sufficient passenger demand.

CUAs and concession contracts assign most liabilities to private operators

CUAs and concession contracts assign all liability for operations, maintenance, and direct costs to the private operator(s). If for any reason demand drops, fuel costs escalate, or weather conditions in a given season are unfavorable, the park would not be liable for providing or paying for service.

The park would have limited liability for up-front administration and procurement and ongoing costs related to management and monitoring, but CUAs and concession contracts allow the park to recover some or all of these costs.

Of the two types of agreements, a CUA is much simpler for both private operators and the park to execute. CUAs allow smaller providers to offer services and are less expensive and complex for the park to procure. A concessions contract should only be considered if the park needs to limit the number of private providers. Demand for service is unlikely to exceed capacity of a single operator in the initial years of service.

Turn-key service contracts shift liability for service provision and cost recovery to the park

A turn-key service contract shifts liability to the park relative to a CUA or concession contract, but may provide more year-on-year consistency of operations (particularly over a CUA). Kenai Fjords National Park should only consider a service contract if it considers itself responsible for *providing* winter access as opposed to *enabling* winter access to the Exit Glacier Area.

A service contract more evenly shares the liability among the private operator and the park by requiring the park to pay the contractor to own and operate an OTS service. The park may use its transportation fee authority to collect fees from passengers to pay the cost of the service contract. The advantages of this owner-operator model are that the park guarantees a level of service for visitors, and an operator who otherwise may not have been willing to take on cost recovery risk is guaranteed a negotiated revenue stream. In addition, the operator may use the vehicle elsewhere during other months. The disadvantage for the park is that if it does not collect enough fee revenue to cover the cost of the service contract, it must supplement fee revenue from other sources such as base funds.

Two NPS-owned models should be considered as a last resort

If no private operator is willing to participate in a CUA, concession contract, or turn-key service contract, and if Kenai Fjords National Park considers itself responsible for *providing* winter access to the Exit Glacier Area as opposed to *enabling* winter access, then the park might consider one of two NPS-owned models, presented in order of least to greatest NPS liability:

- NPS-owned, non-NPS-operated service contract
- NPS-owned, NPS-operated

These models require the park to purchase and maintain an OTS vehicle. The park would not have the same flexibility as a private operator to operate the vehicle at other locations during the year, and the vehicle could remain dormant for as many as ten months of the year. An NPS-owned vehicle would require additional park-owned infrastructure such as a storage garage and a flatbed trailer, each accompanying additional capital and maintenance requirements.

The latter owner-operator model requires the park to do everything, from owning and maintaining the vehicle, to dispatching, operating, marketing, and administering the service. While not impossible for a park unit to succeed in fulfilling these responsibilities, they are in addition to the normal mission-oriented responsibilities of a park unit.

One advantage of NPS-ownership models is that park-owned transit vehicles are often procured using non-unit sources such as Category III and TRIP. In these cases, fares do not need to recover vehicle capital costs, and breakeven fare prices at Kenai Fjords National Park are estimated to be around $20, regardless of vehicle type or purchase price. A risk of this method for accounting for capital costs is that non-unit fund sources may not be available to recapitalize a vehicle after the end of its useful service life.

The park would fund a service contract or NPS-operated service with an authorized fund source

Under a service contract or NPS-operated service, NPS must use an authorized fund source to pay for direct capital, operations, and/or maintenance costs. Three sources are available: base funds, an expanded amenity fee, or a transportation fee. For 16 service days, these costs are estimated to range from $4,300 to $8,300, depending on the business model, vehicle type, and vehicle purchase price.

Base funds may be used at the discretion of park management and subject to availability to provide a fare-free OTS service for riders. Base funds are used to fund all park operations and may not be available to fund OTS operations.

The park may request permission from the regional office to charge an expanded amenity fee to passengers of the service. Eighty percent of the fees would be retained by Kenai Fjords National Park to pay for service operations. The remaining twenty percent would be contributed to a national NPS account and redistributed service-wide.

The park may request permission from the regional office to charge a transportation fee to passengers of the service. One-hundred percent of the fee revenue would be retained by the park to pay for service operations.

The Seward business community has an opportunity to support OTS service

In addition to Kenai Fjords National Park seeking to improve visitor access to the Exit Glacier Area, the Seward business community considers snowcoach to the Exit Glacier Area a possible draw for weekend visitors from Anchorage. Because businesses including hotels, restaurants, and retail shops would benefit from additional winter tourism to Seward, they may wish to partner with the park to make the system a reality.

One way businesses could help is by pledging a nominal amount to help the park offset its indirect operating costs. To encourage support from many businesses, the business community could set an all-or-nothing target. Businesses who participate would be listed as sponsors of the system on promotional materials for the service.

For example, the park would be annually responsible for $12,000 indirect operating expenses resulting from 16 days of OTS service. The business community could set a target to help the park offset 50 percent of its indirect operating expenses. If twelve businesses could each pledge to contribute $500, they could reach their goal and help the park. If they miss the target, none of the businesses would have to contribute anything.

If implemented, OTS service will require a novel method to restrict cars

The current access management tools will not allow passage for an OTS vehicle and private snowmachines but prevent passage by privately owned vehicles. A novel approach to access management is required but options were not addressed by this study.

If implemented, OTS service should initially be offered during March and April

Existing conditions including temperature, precipitation, daylight conditions, visitation trends in Seward, a push by the ATIA to create a "hidden" winter peak season between February 1st and April 15th, and seasonal marketing for conference facilities in south-central Alaska suggest the best opportunity for initiating OTS transportation to the Exit Glacier Area is in March and April. If successful, limited service in subsequent years may be extended to February or even January.

If implemented, OTS service should initially be targeted toward casual, sightseeing visitors

The largest target market consists of casual, sightseeing visitors traveling with families. The trip should accommodate people with a wide range of abilities so that the whole family can participate, and prices should be family friendly and comparable to those of the SeaLife Center. Fares around $30 are expected to be within a reasonable range for a unique service targeted to out-of-town casual visitors.

If popular, OTS service may be expanded to target additional markets

Another less understood and likely smaller target market consists of non-local visitors who are looking to take part in organized activities such as snowshoeing, cross-country skiing, or ice climbing. Fares for this target market may bundle the cost of transportation with the cost of an activity, though demand for these trips is thought to be smaller.

Appendix A: Site visit notes, September 26-29, 2011

Introduction

In late September 2011 a multiagency study team conducted a site visit to Kenai Fjords National Park as part of an effort to investigate the feasibility of OTS transportation service on the Herman Leirer Road to Exit Glacier. The project team included the following members:

- Jeff Mow, Superintendent, Kenai Fjords National Park, National Park Service
- Paul Schrooten, Regional Transportation Coordinator, Alaska Region, National Park Service
- Susan Law, Lead Community Planner, Western Federal Lands Highways Division
- Alex Linthicum, Operations Research Analyst, U.S. DOT Volpe Center
- Scott Lian, Operations Research Analyst, U.S. DOT Volpe Center

The following activities took place prior to the site visit:

- Phone calls with potential meeting attendees including tour operators, active winter-users of the road and representatives of federal and state agencies
- Background research and review of park-related materials

The following activities took place during the site visit (September 26-29):

- Multiple site visits to the Herman Leirer Road (also referred to as Exit Glacier Road) and the Exit Glacier Area
- A meeting with Kenai Fjords National Park staff members
- A public meeting with residential and commercial members of the Seward community
- One-on-one meetings with tour operators and representatives of federal and state agencies

Information learned during the site visits is incorporated into the review of existing conditions. The remainder of this appendix summarizes the proceedings of the meetings, and provides a comprehensive summary of their events and discussion that took place during individual interviews.

Meeting with NPS staff

On the afternoon of September 27, staff from Kenai Fjords National Park met with the project team to discuss their questions, concerns, and general thoughts on a potential OTS service along Herman Leirer Road.

The park's education coordinator was enthusiastic about the potential for a snowcoach to provide increased access for school and educational groups; however, she indicated the typical school group size is 24 students (not including teachers and chaperones), which is beyond the passenger capacity of many snowcoach options. Should an OTS service exist, she suggested starting with small, limited groups in a pilot program to gauge group reaction. Small groups would also benefit the park by requiring limited facility capacity and staffing.

Staff members described how several of the private marine (boat) tour operators contract with the park for interpretive staff. The contract includes the fully-loaded cost for the park staff's time, and the success of these tours demonstrates that visitors to Seward tend to value the knowledge and interpretation that only park personnel can provide. A later discussion with Tom Tougas indicated that the ticket sales from five to six paying visitors cover the cost of a park interpretive staff member on each Major Marine-operated tour.

Concerns were raised over increased wintertime vehicular activity along the road and its impact on wildlife, and park staff members pointed toward studies at Yellowstone National Park which examined snowcoach tour operations within the park and their impact on wildlife.

Staff members explained management of the road is logistically challenging. Weather conditions change rapidly over the seven mile distance. Portions of the road near Exit Glacier are generally colder, windier, snowier, and darker than portions of the road near Seward. The point at which the snow is deep enough to support snowmachines, dogsleds, and skiers changes from year to year. The point at which AKDOT&PF closes the road with a gate or jersey barriers is not always where the snow starts. In 2010, visitors drove their vehicles around the jersey barriers and over glare ice in order to reach snow. Park staff members remarked that jersey barriers spaced wide enough to allow passage of snowmachines but block passage of cars would also block passage of a snow coach.

After initial discussions, the project team posed the question: "What is the NPS vision for winter use of the Exit Glacier Area and potential associated OTS transportation?" The question yielded the following answers from staff members:

- An interagency agreement among National Park Service, U.S. Forest Service, Alaska Department of Natural Resources, and Alaska Department of Transportation and Public Facilities might facilitate better management of the road, whether or not a snowcoach operation is introduced
- A regularly scheduled shuttle service is preferable to a demand-based tour operation
- The ability to ride the coach either one-way or round trips is desirable, as is the ability to hop on or off at multiple stops along the road
- A winter service should serve all potential users and user groups. One challenge to achieving this goal is pricing, as local residents are expected to have a lower willingness-to-pay threshold than occasional or out-of-town visitors. The idea of marketing season-passes to frequent users was suggested
- An effort to preserve so-called "quiet times" or "quiet days" would be a way of preserving the peaceful feel along the road during the winter for some users. During these times, no motorized vehicles (including a snowcoach) would be allowed. Quiet times would be regularly scheduled and communicated to the community. Enforcement may be a challenge
- The lower loop trails should be groomed for non-motorized uses including dogsledding, snowshoeing, and cross-country skiing)
- Heated facilities (a place to get warm) would make sense at or near the Visitor Center, and costs and logistics of enhanced winter operations need to be studied

Park staff requested the study team include an analysis of direct costs (those associated with providing transportation) as well as indirect costs (those costs borne by the park in other program areas, such as interpretation, education, ranger services, and operations) if a new transportation service were to be initiated, either by Kenai Fjords National Park or a private operator.

Public meeting

On the evening of September 27, the study team hosted a public meeting in the Legends Building in Seward not far from the park's headquarters. The opening 90 minutes was an "open house" format, allowing visitors to arrive, meet and talk with members of the project team, and view the meeting posters, which included writing materials for comments and feedback. The next 30 minutes consisted of a presentation by the study team, followed by a 60-minute discussion period. The meeting was advertised in advance on the park's website, in the Seward City Newspaper, by email telephone invitations to members of the community, posters around town, and by word of mouth.

The presentation reviewed the goals of the meeting, introduced the study, reviewed comparable snowcoach operations, reviewed potential business models for snowcoach operations, and reviewed existing conditions at Kenai Fjords National Park. It then presented opportunities and challenges thought to accompany an OTS service and provided for a framework to guide group discussion and the question and answer period.

Group discussion continued to focus on opportunities and challenges, and centered around two topics, namely introduction of a snowcoach and improved winter management and operations of the road.

Discussion on OTS service

Attendees expressed neither outright support nor disapproval for a winter snowcoach and gave the impression that if a private operator were to begin such a service, they would not oppose it. Still, they did raise questions:

- Is there is enough demand to support a snowcoach?
- Who are the target markets for a snowcoach?
- What are riders going to do when they get to Exit Glacier?
- How would the snowcoach impact existing non-motorized uses?
- How would the road be shared among all user groups?

One attendee, a local dog sledding enthusiast, described the corridor's ease of accessibility, tranquility, and joked that during the winter, when visitation is at its lowest, "We [local residents] get our road back."

Attendees noted that snow coach service would be more of a novelty for locals. Locals visit the road primarily due to its tranquility, quiet, and lack of motorized vehicles, rather than the scenic qualities of Exit Glacier itself. They do not frequently get close enough to view the glacier.

Attendees suggested that locals use the road in winter primarily as a recreational corridor. Small numbers of regular users ride bikes, ski, and snowshoe on a daily basis. These users tend to park as close to the snow as possible (described in more detail below) and exercise along the first few miles of the road. They are unlikely to wait for a snowcoach to pick them up, and they would likely not be willing to pay the same rate as out-of-town visitors to ride an OTS service.

Local commercial tour operators described their experiences partnering with each other, as well as the growing market potential of out-of-town visitors, particularly conference-goers from the Anchorage and Girdwood conference centers. These conference facilities have been pushing to increase their business in the shoulder season between March and May, months that are not as cold, dark, and wet as December through February. In December through February there may be as few as four hours of light a day, and perhaps less in the valley near Exit Glacier, due to the steep faces of the mountains rising from the valley floor.

The operator of the Seward Military Resort, a Department of Defense-funded resort for active and retired military members and their families, was in attendance and shared his experience leading winter activities near the Exit Glacier. The resort's snowmachine rental operation ended quickly after its inception. Visitors damaged snowmachines, and the noise and pollution from two-stroke engines disrupted other users on the road. The resort has since converted its snowmachine rental operation to one of guided snowmachine tours, which are more controlled and acceptable to other users of the corridor.

The resort also attempted to use a snowmachine with a passenger trailer to transport guests to cross-country skiing opportunities. This offering failed due to low demand by military visitors. The

resort operator gave the snowmachine and trailer to another military resort in Alaska, though he believes that if another operator without military restrictions were to run a snowcoach, the demand from other market segments may make a snowcoach and tour package financially feasible. The resort has been speaking with other operators about how they might provide OTS service to military guests.

An attendee representing a small guesthouse / hostel suggested that snowcoach operations may expand winter visitation to Seward and would bring associated economic opportunities for tour operators, local businesses, hotels, and restaurants. In comments received following the meeting, however, the owner of another small guesthouse commented that the smaller operators cannot compete in the winter with the greatly reduced rates offered by the larger hotels, and that because it is too expensive to remain open for nightly lodging with competitive rates, bringing more business to Seward in the winter may do little to help small lodging businesses.

Tour operators sounded hopeful that a snowcoach could help expand their tour businesses, particularly winter activities such as ice climbing, snowshoeing, and cross-country skiing. Tours of the Exit Glacier Area could be offered, though operators expressed the need for NPS to introduce more winter amenities at the Exit Glacier Area, including warming areas, groomed trails, and perhaps indoor facilities that would allow operators to "stage" guests between a snowcoach and their activities.

Attendees noted that introduction of a snowcoach may provide improved access and recreational and educational opportunities for visitors with disabilities and school children. Associated challenges include appropriately sizing a snowcoach vehicle that can accommodate elder hostel groups or class sizes of 25 or more children and getting children to Kenai Fjords in the winter. An attendee of the meeting remarked that Alaskan school groups are limited to traveling no more than 50 miles for field trips in the winter time. Again, any additional winter use would require additional NPS amenities and investments at the Exit Glacier Area.

Attendees noted potential safety issues for winter visitors to Seward. Snowcoach riders who are not properly outfitted or underprepared for harsh or changing weather conditions would be at risk. Drivers unfamiliar with the Seward highway may put themselves at risk driving from Anchorage in winter months. A snowcoach operator would need access to additional OTS vehicles in case of a breakdown.

Asking whether there is enough demand for a snow-coach, several attendees suggested that the proposed ski and bike trail would help resolve user conflicts and have a smaller carbon footprint. Jeff Mow, superintendent of Kenai Fjords National Park, suggested that the ski and bike trail is moving forward but due to its large cost will likely consist of multiple phases. Completion of the entire trail is expected to be years away, whereas a snowcoach could be a shorter term activity.

Discussion on management of Exit Glacier Road

Management of the road was a popular topic of conversation and attendees cited plowing operations and policies as major issues related to winter access on Exit Glacier Road.

A local dog sled tour operator and longtime Seward resident suggested that if the goal is to get people to Exit Glacier the best course of action would be to plow the entire road.

Other attendees expressed support for active management of the road that would provide more consistency in the face of variable weather conditions. According to residents and those familiar with the road, the road spans several microclimates, and conditions may vary greatly from location to location. Recognizing this, the park has installed a weather station at Exit Glacier Visitor Center. In general, snow is deeper near Exit Glacier than near the Seward end of the road. Road conditions

also vary from year to year. In some years snow starts at Box Canyon Bridge, and in others such as 2010, it may not start for miles beyond the bridge.

The current policy of the state DOT is to close the road in the winter past milepost 1.2. To implement this policy, the DOT has closed a gate on the far side of Box Canyon Bridge in late October in some years. In 2010, reacting to parked cars that interfered with plowing operations, the DOT raised the gate and placed jersey barriers a few hundred feet past the bridge. The barriers were spaced wide enough to allow snowmachine access, but narrow enough to prevent cars from driving through. In this particular year, snow conditions near Box Canyon Bridge were poor. Despite the road being covered with glare ice, winter users drove their cars around the jersey barriers and up the road to the point at which there was enough snow to ski or snowshoe on.

Meeting attendees noted several issues with this policy:

- The policy does not account for seasonal variation. Sometimes the road is closed for weeks even though there is no snow on the ground
- The policy does not account for the location of the snow, and visitors want to park as close to the snow as possible
- The jersey barriers are ineffective. They do not prevent access as they are intended to, and use of cars on the road, even for a short distance, degrades conditions for non-motorized users

Attendees suggested that more active management of the road is required to account for the variation in weather conditions and the needs of users. One solution suggested was for DOT to instead plow to milepost 4.6, at which point there is a large parking lot, a second gate, and the beginning of U.S. Forest Service lands.

Improved winter management of the road via plowing may allow the introduction of additional activities, such as horse-drawn sleigh rides, by allowing them to get to the snow. An attendee commented on the mess created by the horses, the need for a separate "lane" for this activity, and the likelihood that snowmachiners would not respect the lane.

Other attendees were also doubtful about the willingness of other users, particularly snowmachiners, to participate in voluntary winter travel "lanes" on the road. The road and outwash are flat and are thought to be boring for experienced snowmachine riders. These riders concentrate their use in other places with hills and more interesting terrain. Many of the snowmachiners that do use the road in the winter time, thought to primarily consist of "kids," are disrespectful of the groomed trails used by skiers and mushers.

An attendee suggested a temporary bridge to provide access across the river so snowmachines and dogsleds could access the outwash plain, which is a large, open and generally flat area allowing for ample room to recreate provided there is sufficient snow cover.

An attendee suggested the National Park Service improve communication with winter visitors by establishing radio announcements of snow conditions at the Exit Glacier Area.

Attendees at the public meeting identified the following opportunities for improved winter access to Exit Glacier:

- Provide access to the Exit Glacier Area for personally owned vehicles (POVs) by plowing the entire Herman Leirer Road
- Provide consistent access to snow for POVs by plowing to the second gate (beginning of U.S. Forest Service right-of-way)
- Improve winter access via snowcoach for visitors with disabilities and school children

- Increase winter visitation to Seward and opportunities for economic development
- Leverage partnerships and tour packaging arrangements to help finance snowcoach operations
- Focus on spring shoulder season to capitalize on Anchorage and Girdwood convention visitors and to take advantage of snow and light conditions
- Increase and introduce new winter activities, including snowshoeing, cross country skiing, ice-climbing, dog mushing, and perhaps horse-drawn sleigh rides
- Improve access to the outwash, set up a bridge (temporary) across the river for snowmobiles to access the outwash and lessen conflicts on the road
- Improve communication with winter visitors by establishing radio announcements of snow conditions at the Exit Glacier Area

Attendees at the public meeting identified the following challenges to winter access to Exit Glacier:

- Demand for snowcoach operations is unclear
- Winter users, and in particular, snowmachiners, likely will not respect travel lanes or groomed areas along the road
- Winter driving conditions on the Seward highway may be dangerous for drivers who are unfamiliar with the road
- Removing attention from the ski and bike trail corridor project by focusing attention on snowcoach operations
- Not all visitors will be appropriately outfitted or knowledgeable of winter conditions;
- Back-up vehicles will be needed for snowcoach operations
- Older visitors and visitors with disabilities may not be able to participate in all winter activities
- Alaska limits winter field trip travel distances to 50 miles
- Limited light (4-6 hours) in December through February limits opportunities
- Weather conditions vary along the road. While there may be deep snow near the Exit Glacier Area, there may only be light snow, slush, or ice further down the road
- Weather conditions vary by season
- Management of the road and use of gates and jersey barriers will affect snowcoach operations

Stakeholder interviews

Interview and site visit with Danny Seavey, owner of IdidaRide Sled Dog Tours

On Monday September 26, the study team met with Danny Seavey of IdidaRide Sled Dog Tours. IdidaRide Sled Dog Tours offers winter tours in the Exit Glacier Area and along the Herman Leirer Road. Tours are three hours in duration, cost $250 per guest, and the operator accommodates roughly 250 guests during the winter season. IdidaRide Sled Dog Tours does not actively market its winter tours, and business is generated from the web and word-of-mouth. A large portion of visitor interest is generated from visiting friends and relatives (VFRs).

Mr. Seavey accompanied the study team on a drive up the road to the Exit Glacier Area and offered his thoughts and opinions of issues with the road and the park during the winter.

Mr. Seavey suggested the need for improved winter management of the Herman Leirer Road. The DOT does not plow past milepost 1.2 and closes the road to prevent access by POVs. Mr. Seavey indicated that his understanding was, the road is supposed to be closed on Nov. 1, but said the road was closed mid-October in 2010. The DOT places jersey barriers past the gate and bridge at Box Canyon Creek, just beyond Old Exit Glacier Road on which IdidaRide Sled Dog Tours is located.

The barriers proved ineffective, as visitors eventually drove around them and continued roughly two-and-a-half miles up the road to the second gate in order to access better snow conditions. Mr. Seavey explained there may be light snow at the first gate on the lower portion of the road, with much more snow at the second gate, and significantly more snow at the Exit Glacier visitor center.

Mr. Seavey questioned what winter visitors arriving by snowcoach would do once they get to the visitor center. He suggested a lack of maintained trails and facilities during winter months would provide little comfort or shelter to visitors should they desire to recreate closer to Exit Glacier within boundaries of the national park.

Mr. Seavey explained that another tour operator spends roughly $60,000 during the five-month spring/summer season to operate a transportation shuttle. Costs mostly include wages for the driver, fuel, and vehicle maintenance. The winter season is longer in duration and a winter operations require track systems that are expensive to own and maintain. Mr. Seavey suggested additional costs for winter operations may challenge the financial feasibility of an OTS shuttle service, and he mentioned a recent economic impact study by the Alaska Travel Industry Association (ATIA) which examined South-Central Alaskan tourism and demonstrated a stark lack of visitation during the mid-winter months.

Despite Mr. Seavey's concerns over winter service viability, he expressed support for a potential service and indicated he might like to partner with the operator to transport IdidaRide Sled Dog Tours customers to the second gate (or beyond) where snow conditions would allow for easier starting of tours. Mr. Seavey noted local users may desire a groomed surface along the road, and that the shuttle could potentially provide grooming services in-between runs.

Mr. Seavey mentioned he saw no issues as far as conflicts between his dog sleds and a potential snowcoach.

Interview with John Eavis, of Chugach National Forest, Seward Ranger District, U.S. Forest Service

The study team met with John Eavis of the U.S. Forest Service on Wednesday September 28. Discussion began on the topic of the management of the road.

Documentation for the Exit Glacier ski and bike trail indicates that U.S. Forest Service assumes the right-of-way during the winter months once the road had been closed.[*] Mr. Eavis refuted this point and indicated the state DOT retained the ROW and authority over the road year round.

Mr. Eavis observed that the DOT would be most likely to respond to requests for managing the gate and road closures if the request came from local constituents and local agencies. He noted that even if the DOT approved managing the road closures based on road conditions, the Seward DOT district may not obtain additional funding. The use of Federal Lands Highway Program monies for plowing was discussed; however, these funds are not available unless the plowing provides access to an ongoing construction project, of which there are none currently.

Mr. Eavis indicated that winter OTS service would not conflict with their Forest Management Plan. A short term special use permit would be required if the service impacted U.S. Forest Service land. For example, if a snowcoach were to make multiple stops, allowing passengers to get off and access trailheads on U.S. Forest Service land, a special use permit would be required. Mr. Eavis also indicated that, regardless of management of the gates, the current gate design needs to be improved

[*] Exit Glacier Recreational Corridor Pre-Design Phase I Submittal, November 30, 2009, p 12.

as a snowcoach would not be able to pass through the jersey barriers. A lock or chain securing a traditional gate may pose issues, as visitors would likely cut through such a lock or chain.

Phone interview with Ric Brown, owner of Adventure 60 North

The study team conducted a phone interview with Ric Brown of Adventure 60 North (A60N) prior to the site visit. Mr. Brown was unable to attend the public meeting or schedule a follow-up meeting while the study team was in Seward.

Mr. Brown explained that he had previously expressed interest in using a Mattrax system on one of his existing vans or using a snow coach to provide transportation within the park and indicated that he had been exploring the idea with some other local business owners who would be interested in partnering to provide or promote such a service. A60N is an outfitter who rents equipment, gear, snowshoes, etc. and has a commercial use authorization (CUA) to operate within the park. A60N also leases land next to the park within the Exit Glacier Area. Mr. Brown indicated that A60N is exploring the types of equipment that are out there but they are curious about any restrictions of using track vehicles on roads and what restrictions may exist, even if the roads are snow covered.

Mr. Brown raised issues with hard-packed snow that were confirmed by the dog sledders who attended the public meeting. Hard-packed snow or icy conditions aren't healthy for the dogs to run on, and Mr. Brown noted that near the second gate there are typically better snow conditions.

Mr. Brown also mentioned that he has received interest from existing customers who hike out in the Exit Glacier Area for a vehicle to provide access in emergency or visitor recovery operations. "Every once in a while, someone drives out there and gets stuck. At times I've had to head out there with my land rover and drag them out." Mr. Brown felt that a vehicle capable of providing OTS services could also facilitate a support role in recovery operations during harsh conditions.

For the most part Mr. Brown indicated he is looking for a way to create winter activities that help get people out to the glacier. Mr. Brown indicated that it is too far to snowshoe out there and back in a day and access the area is often limited for visitors who may be lacking appropriate gear. Providing for easier access to the area for visitors, tourists and those seeking recreation would help create a viable winter attraction to draw visitors from other areas in Alaska. Mr. Brown felt that developing an attraction centered on accessing the Exit Glacier Area is critical to help support local businesses (hotels, restaurants, etc.) through the winter.

Mr. Brown then expanded on this view, speculating that the dog sled tours which are already providing tours of the Exit Glacier Area during the winter might be able to provide storage space in order to keep the vehicle near the road. Mr. Brown proposed utilizing A60N's existing 15 passenger vans to transport visitors from the town center to the Exit Glacier road and then transferring visitors onto the over the snow vehicle to access the closed portion of the roads.

Mr. Brown conceded that visitation typically drops off once the snow begins to fall, but during the holidays and other key times, hotels will offer packages in an attempt to boost visitation during the late fall, winter and early spring and proposed these key visitation periods as an opportunity to expand visitation to Seward, particularly amongst VFRs.

Mr. Brown estimated that once snow begins to accumulate, A60N receives roughly 200-300 requests for snowshoes, despite not advertising snowshoe rentals much. He suggested that IdidaRide Sled Dog Tours may have more insight on potential visitation figures; however, Mr. Brown noted that he has hosted visitors from all over the world visiting who have rented snowshoes and speculated that there's probably a decent market for a few hundred people each month that would be interested in winter activities near Exit Glacier.

Mr. Brown continued to explain his prior research into the feasibility of outfitting one of his vans with a Mattrax system, including trips to Fairbanks, Alaska to evaluate two different types of snow-coaches. He also was previously involved with West Yellowstone, offering guided snow machine tours there before the snow machines were closed out from the park. According to his research, the Mattrax systems available to convert his 15 passenger all-wheel drive van into an OTS capable vehicle would cost between $40,000 and $50,000. While there are concerns over maintenance costs, Mr. Brown's experience and research into available options led him to believe the Mattrax systems were the most reliable.

Mr. Brown had looked into the use of purpose-built vehicles at Chena Hot Springs used to provide tours to view the Aurora Borealis. Mr. Brown noted that such a vehicle could operate further up the glacier, at Galvin Glacier, or in the icefield during the summer months, and transport the vehicle down to the Exit Glacier Area for winter operations. Mr. Brown clarified this thought, saying the only way he could see something like an OTS vehicle surviving or proving to be economically viable is to find ways to use and operate the vehicle year-round.

Interview with Ryan Fisher, owner of Kenai Adventure Tours

The study team met with Ryan Fisher mid-morning on Wednesday September 28. Mr. Fisher has been in contact with Kenai Fjords National Park about potentially operating a snowcoach tour service, to be packaged with ice climbing and perhaps other tours on Exit Glacier.

Mr. Fisher's business model caters toward individual travelers, and he fields many calls about ice climbing opportunities throughout the year, even during the winter months. He has worked with the Seward Military Resort to provide ice climbing tours to their guests, while the resort provided snowmachine transportation to the glacier. Mr. Fisher's vision of an OTS service is an "on demand" service focused around a scheduled group excursion to the glacier. In order to gauge demand for more regular service, he wishes to hear Kenai Fjords National Park's plans for special activities, such as school visitation numbers and anticipated frequencies.

Mr. Fisher suggested that before investing in an OTS service to expand his winter ice climbing operations, he would like a commitment from the park to provide modest staffing at the park and desired access to the Visitor Center. He acknowledged the park's concerns regarding the cost of heating and staffing the on-site facilities and suggested on-demand wood-stove heating and minimal NPS staffing could mitigate costs.

Interview with Tom and Paul Tougas, owners of Major Marine Tours

The study team met with Tom Tougas and his son Paul on the morning of Wednesday September 28. Mr. Tougas had shared his thoughts during the open house and discussion period of the public meeting and expanded upon these in more detail.

Mr. Tougas provided a narrative of how his company, Major Marine Tours, operates their marine tours during the summer season. Major Marine Tours caters toward cruise ship passengers, visiting friends and relatives, and international traveler demographics. From his historical visitation data, Mr. Tougas indicated ten times more people visit the fjords of Kenai Fjords National Park than Exit Glacier. He attributes this fact to two causes. First, the National Park Service does not actively market Exit Glacier, while many tour operators market their boat tours to the fjords. Second, much of the area's visitation comes from "packaged" trips, whether from Anchorage or other areas in southeastern Alaska or from the cruise ship industry. Many cruises begin and/or end their cruises in Seward.

Mr. Tougas suggested that cold weather access to Exit Glacier must be focused during the spring shoulder season from March through May. Conference facilities in Anchorage and Alyeska are

increasingly marketing their services to organizations in the lower 48 states during these months, and they have both expressed interest marketing activities in or around Seward to their guests. Lack of sunlight and poor snow conditions during the months of December through February also suggest a snowcoach might focus on the spring shoulder season.

Mr. Tougas posited that in order for an OTS service to be viable, it would have to be "on-demand" (as opposed to running on a fixed schedule) and would need to cater to multiple user groups to ensure the operation remains busy and solvent.

Interview with Scott Bartlett, manager of the Seward Military Resort

During the open house and after the public meeting, the study team spoke with Scott Bartlett, who runs the Seward Military Resort. The military resort is a Department of Defense-funded recreational facility, open to active and retired military personnel and their families. Operating year-round, Mr. Bartlett has experimented with snowbound tours of the Exit Glacier area in the past and is an enthusiastic supporter of a potential OTS service along the Herman Leirer Road or within the park in general.

Mr. Bartlett operated a snowmachine tour for groups of visitors, utilizing an Alpina snowmachine and sled, with seating capacity to accommodate a small group people. The military resort ceased 'group' tours last winter but currently offers guided tours on which visitors operate rental snow machines. He does not offer 'passenger' tours or group events, and does not currently retain the equipment to support group transportation over the snow.

Overall, Mr. Bartlett said the group tours were received well, but there was not sufficient demand within the limited military-only demographic his facility serves. He was enthusiastic about his opinion that an OTS service open to the general public would be successful; both in its reception by visitors and that such a service, if operated as an on-demand service, would be financially sustainable. An on-demand service as thought of by Mr. Bartlett, as well as other tour operators interviewed by the study team, would incorporate an OTS transportation service focused around group-tours. Groups may be park-generated outings such as school field trips, or in partnership with local businesses. Other tour operators, hotels, conference organizers or commercial partners could help provide set-timed, group-focused opportunities for which an OTS service could rely on for the sufficient ridership required to finance the labor hours and operating costs (including equipment amortization) the service would incur. During non-demand times, the equipment could be stored, maintained, or utilized for the park (or other user)'s operations, emergency response services, etc.

Interview with Benton Groom of AKDOT&PF

The project team met with Benton Groom on the afternoon of Wednesday September 28. After the study team provided a brief overview of the study and possible OTS service, Mr. Groom indicated the Seward branch of the AKDOT&PF is stretched thin on both financial and labor resources.

He expressed financial and logistical concerns about plowing to the second gate on Herman Leirer Road. Specifically, Mr. Groom suggested the priority assigned to this recreational corridor would be lower than that assigned to residential and commercial roads in Seward and the airport. He expressed concern for visitor safety along the road during times that, due to limited resources, the road could not be plowed frequently. He suggested scenarios wherein visitors might be out recreating at the time of a storm and would not be able to return to town until the road was plowed.

Mr. Groom indicated that the decision for how far to plow, what gates to close and when, and other management issues, are decided by the AKDOT&PF office in Soldotna.

Appendix B: Herman Leirer Road Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING
FOR
EXIT GLACIER ROAD
(Forest Highway 46)

FOREST SERVICE

NATIONAL PARK SERVICE

FEDERAL HIGHWAY ADMINISTRATION

and

ALASKA STATE DEPARTMENT OF
TRANSPORTATION AND PUBLIC FACILITIES

and

KENAI PENINSULA BOROUGH

and

CITY OF SEWARD

Dated 1981
Revised July 1988

#3801J

This MEMORANDUM OF UNDERSTANDING, by and between the USDA Forest Service, Region 10, hereinafter called Forest Service; and the National Park Service, hereinafter called Park Service; and the Federal Highway Administration, hereinafter called FHWA; and the State of Alaska Department of Transportation and Public Facilities, hereinafter called State; and the Kenai Peninsula Borough, hereinafter called the Borough; and the City of Seward, hereinafter called City, is entered into for the purpose of establishing responsibilities, participation, and intent of the aforementioned agencies in the construction and maintenance of an improved Exit Glacier Road along Resurrection River near Seward, Alaska. The road starts at a junction with SR 9 and extends approximately 7.3 miles to the Resurrection River Bridge where it becomes a Park Service road within the Kenai Fjords National Park.

The Forest Service agrees as follows:

1. Assist in completing a right-of-way map for the road corridor.

2. Support the use of Forest Highway funds to finance the project development activities for upgrading this road.

3. Aid in securing environmental clearances, right-of-way easements, and material sites for reconstructing this road.

4. Provide material sites on ~~Forest Service~~ National Forest land in the road corridor to assist State personnel in their maintenance activities after the road is upgraded.

The Park Service agrees as follows:

1. Support the upgrading of Exit Glacier Road to make it a safe, functional access to the Kenai Fjords National Park.

2. Aid in the development of contract plans by providing landscape/ architectural services as requested.

3. Support the use of Public Lands Highway funds for reconstructing the road through federal land.

The Federal Highway Administration agrees as follows:

1. Conduct hydraulic studies in cooperation with agencies signatory to this MOU to determine the most cost effective method of protecting the road from the continuing erosion of Resurrection River.

2. Subject to availability of Forest Highway and/or Public Lands funds, conduct project development and/or contract administration activities including construction management services as requested by other agencies signatory to this MOU.

3. Support the use of Forest Highway funds to finance project development activities on this road.

The State agrees as follows:

1. The road will be maintained at State expense subject to the same level as other system roads of a similar nature. Its priority for maintenance, and if it will be maintained all year or part, will depend on traffic volumes and need.

2. Right-of-way staff will be available to pursue acquisition of right-of-way, easements, etc.; such acquisition will be dependent on adequate project funds which the State will pursue through its Capital Improvement Program Budget Process.

3. Support the use of Forest Highway, Public Lands, Federal-Aid Secondary, State (General), and/or any other potential funding source to upgrade this road.

4. Accept ownership of this road after it is improved.

The Borough agrees as follows:

1. Support the concept of the Exit Glacier road improvements as a capital project with short-term and long-term economic benefits to the entire Kenai Peninsula Borough. The Borough strongly supports improved access to important attractions such as Exit Glacier as a component of a long-term strategy to increase the economic value of the visitor industry.

2. Pursue local funding for 50 percent of the cost of the road construction between the Seward Highway and the national forest boundary (MP 0.0 to MP 3.9). Local funding is expected to be a combination of State Municipal Grant monies, Kenai Peninsula Borough funding, and in-kind services. In-kind service contributions will include making available Borough-owned material sources to aid in construction of the road.

3. Support the upgrading of the road if other agencies and funding are being used to implement these improvements.

4. To maintain the existing Forest Service Special Use Permit to insure the right-of-way for the portion of the road; and to willingly relinquish interest in the permit to the State of Alaska for ownership and maintenance of the completed road.

The City agrees as follows:

1. Because of its regional and local importance in developing Alaska's visitor industry, the City will continue to support the Exit Glacier Road reconstruction project both politically and administratively by whatever means are available to the City.

2. To maintain the existing Forest Service Special Use Permit to insure the right-of-way for the portion of the road; and to willingly relinquish interest in the permit to the State of Alaska for ownership and maintenance of the completed road.

3. Subject to City priorities, make 2 foot minus riprap available at no cost at the City quarry at Fourth of July Creek; and to make other City lands available for material source development.

4. To advocate on behalf of the Borough and/or the State general legislative funding for reconstruction of the Exit Glacier Road.

IT IS HEREBY MUTUALLY AGREED THAT:

1. If Federal funds are being used for any portion of the total 7.3 mile project, an environmental clearance document will be cooperatively prepared by signatory agencies to this MOU. The agency conducting the project development activities will be the lead agency in the preparation of this document.

2. The Forest Service, Park Service, FHWA, State, and Borough will coordinate their requests for funds to upgrade Exit Glacier Road. This will include any program and budget requests for engineering, construction, right-of-way acquisition, and maintenance.

3. The agency conducting the project development activities will be the lead agency in establishing the geometric standards in cooperation with the other signatory agencies.

4. No member of or delegate to Congress, or resident commissioner shall be admitted to any share or part of this contract or to any benefit to arise therefrom.

5. In carrying out the terms of this agreement, there shall be no discrimination against any person because of race, creed, color, or national origin.

Modifications or termination of this agreement may be initiated by any party, and the modifications and terminations will become effective upon concurrence of the other parties. This agreement will become effective as of the date of the last signature by the executing parties.

USDA FOREST SERVICE

BY _____

TITLE Forest Supervisor

DATE 8/26/88

USDI NATIONAL PARK SERVICE

BY _____

TITLE Regional Director

DATE 8/22/88

FEDERAL HIGHWAY ADMINISTRATION

BY James N Hall

TITLE Division Engineer

DATE 7-22-88

KENAI PENINSULA BOROUGH

BY Donald E. Gilman

TITLE Mayor

DATE 8-15-88

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

BY _____

TITLE _____

DATE _____

CITY OF SEWARD

BY _____

TITLE City Manager

DATE 8-17-88

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
02-2012	Final Report	September 2011 - February 2012

4. TITLE AND SUBTITLE

Kenai Fjords National Park
Over-the-Snow Transportation Feasibility Study

5a. CONTRACT NUMBER

DTFH70-11-X-30048

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Linthicum, Alexander S., and Lian, F. Scott

5d. PROJECT NUMBER

HW9GA1

5e. TASK NUMBER

KT801

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

U.S. Department of Transportation
Research and Innovative Technology Administration
John A. Volpe National Transportation Systems Center
55 Broadway, Cambridge, MA 02142

8. PERFORMING ORGANIZATION REPORT NUMBER

DOT-VNTSC-NPS-12-02

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

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10. SPONSOR/MONITOR'S ACRONYM(S)

NPS

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

186/112423

12. DISTRIBUTION/AVAILABILITY STATEMENT

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Kenai Fjords National Park seeks to expand winter access to the Exit Glacier Area. Year-round access would better enable the park to accomplish its mission related to visitor experience, education, and research. The road to the area is inaccessible to cars November through April because of snow and ice. This report documents a feasibility study for over-the-snow (OTS) transportation that would carry passengers in a vehicle with treads up the snow-covered road. Through a site visit, interviews, and independent analysis, the report examines existing conditions, comparable services, vehicle options, market demand, owner-operator models, and business models. The report finds OTS service will increase winter use at the Exit Glacier Area and require NPS to make additional non-transportation-related investments. The park should seek an owner-operator model that improves access while minimizing additional NPS liability. The local business community has an opportunity to partner with the park in creating a new winter recreation destination. If implemented, OTS service should initially be offered in March and April to casual, sightseeing visitors.

15. SUBJECT TERMS

Alaska, Kenai Fjords National Park, Seward, winter, snow, transit, feasibility, snowmachine, snowcoach

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Linthicum, Alexander S.
None	None	None	N/A		19b. TELEPHONE NUMBER *(Include area code)* 617-494-2639

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As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

186 / 112423 / February 2012