



Kenai Fjords National Park: Exit Glacier Area *Summer Transportation Feasibility Study*

FINAL REPORT



Exit Glacier from Herman Leirer Road

Source: NPS Alaska Regional Office (August 2019)

PMIS No. 220697A
October 10, 2019



U.S. Department of Transportation
Federal Highway Administration

Volpe The National Transportation Systems Center

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE October 10, 2019		3. REPORT TYPE AND DATES COVERED Final Report
4. TITLE AND SUBTITLE Kenai Fjords National Park: Exit Glacier Area Summer Transportation Feasibility Study			5a. FUNDING NUMBERS VXU7A1/SE293 VXU7A1/SE294	
6. AUTHOR(S) Quinn Newton, Erica Simmons, Emma Vinella-Brusher, Rachel Galton, Scott Lian, Kirsten Van Fossen			5b. CONTRACT NUMBER	
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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Kevin Doniere National Park Service Alaska Regional Office 240 W 5 th Avenue Anchorage, AK 99501			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Public distribution/availability			12b. DISTRIBUTION CODE	
13. ABSTRACT The purpose of the Exit Glacier Area summer transportation feasibility study for Kenai Fjords National Park (KEFJ) is to understand the current transportation conditions at the Exit Glacier Area and evaluate the feasibility of a range of potential actions to improve transportation conditions. This study is not a plan and will not result in a decision or project without further planning and community engagement. However, this study will provide KEFJ and the National Park Service (NPS) Alaska Region (AKR) with information and analysis to better understand the current state of transportation access to the Exit Glacier Area and the feasibility of potential enhanced access. NPS and KEFJ are not considering an NPS-owned or operated transit system to provide park access, and are instead interested in identifying options for the park to support business opportunities for private entities. The specific goals of this study are to understand current conditions and demand for transit service to the Exit Glacier Area; identify short-term strategies to improve transportation access for visitors; and consider visitation and transportation trends and anticipate future needs.				
14. SUBJECT TERMS National Park Service, congestion management, parking, multimodal transportation, pedestrian, bicycle, transit, transit feasibility study, business models alternatives, data, intelligent transportation systems, partnerships			15. NUMBER OF PAGES 76	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)

Prescribed by ANSI Std. Z39-18

298-102

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Report notes

This report was managed by the Federal Highway Administration's Western Federal Lands Division Office (WFL), in Vancouver, Washington, and it was prepared by WFL and the U.S. Department of Transportation John A. Volpe National Transportation Systems Center (Volpe), in Cambridge, Massachusetts. The project manager was Quinn Newton (WFL). The Volpe team was led by Erica Simmons, of the Transportation Planning Division, and included Rachel Galton and Emma Vinella-Brusher, of the Transportation Planning Division, and Scott Lian and Kirsten Van Fossen, of the Energy Analysis and Sustainability Division.

This effort was undertaken in fulfillment of PMIS 220697A, *Exit Glacier Area Summer Transportation Feasibility Study* and funded through Reimbursable Agreement VXU7A1 between Volpe and the NPS Alaska Region.

Acknowledgments

The authors wish to thank the numerous organizations and individuals, who graciously provided their time, knowledge and guidance in the development of this report, including:

Kenai Fjords National Park

Eric Veach, Superintendent

Kirk Desermia

Sharon Kim

Lisa McClure

Doug Olds

Shauna Potocky

Rob Wissinger

National Park Service Alaska Regional Office

Kevin Doniere

Paul Schrooten

Federal Highway Administration- National Park Service Partner

A.J. Nedzesky

Pamela Ziesler

Adventure 60 North

Rick Brown

City of Seward

Brennan Hickok

Karin Sturdy

Jackie Wilde

Alaska Sealife Center

Tara Reimer

Alaska Railroad/Port of Seward

Christy Terry

Exit Glacier Guides/Liquid Adventures

Brendan Ryan

Seward City Tours

Jonah Swiderski

Definitions

The following terms are used in this report:

5311	Formula Grants for Rural Areas
ADA	Americans with Disabilities Act
ADOT&PF	Alaska Department of Transportation and Public Facilities
AKR	Alaska Region
ARRC	Alaska Railroad Company
CUA	Commercial Use Authorization
DNR	Department of Natural Resources
E-bike	Electric Bike
FHWA	Federal Highway Administration
FLAP	Federal Lands Access Program
FLHP	Federal Lands Highway Program
FLTP	Federal Lands Transportation Program
FLREA	Federal Lands Recreation Enhancement Act
GPS	Global Positioning System
ITS	Intelligent Transportation System
KEFJ	Kenai Fjords National Park
NPS	National Park Service
RV	Recreational Vehicle
Volpe	U.S. Department of Transportation Volpe National Transportation Systems Center
WASO	Washington Support Office
WC	Wheelchair
WFL	Western Federal Lands Highway Division

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Executive Summary

The purpose of the Exit Glacier Area Summer Transportation Feasibility Study for Kenai Fjords National Park (KEFJ) is to evaluate the current transportation conditions at the Exit Glacier Area – including parking lot congestion and multi-modal access – and evaluate the feasibility of a range of potential infrastructure, operations, or traveler information actions to improve transportation conditions. This study is not a plan and will not result in a decision or project without further planning and community engagement. However, this study will provide KEFJ and the National Park Service (NPS) Alaska Region (AKR) with information and analysis to better understand the current state of transportation access to the Exit Glacier Area and the feasibility of potential enhanced access.

This report is a result of the study, which is a partnership between KEFJ, NPS AKR, the Federal Highway Administration (FHWA)'s Western Federal Lands Highway Division (WFL), and the U.S. Department of Transportation's Volpe National Transportation Systems Center (Volpe).

The primary challenges faced in the Exit Glacier Area are as follows:

- *Nature Center Parking Lot:* Current capacity of the Exit Glacier Nature Center parking lot is not sufficient to handle peak demand for visitors.
- *Transit:* Development of a transit service requires funding allocation, operations and maintenance agreements, route development, scheduling and system infrastructure.
- *Multi-modal Transportation:* Residents and visitors would like to use Herman Leirer Road for non-motorized transportation such as bikes, but peak vehicle traffic makes this unsafe.
- *Transportation Data:* Additional vehicle and visitor information is required to determine current impacts and understand demand for parking and transit both now and in the future.
- *Information:* Changes to the parking, operations, or development of a transit system must be marketed and shared appropriately and consistently.
- *Partnerships:* Managing parking congestion and providing transportation access between Seward and Exit Glacier Area requires collaboration with a variety of public and private partners.

The primary findings and recommendations from this report are summarized below:

Existing Conditions

- **Existing Transportation Options:**
 - Visitors can access the Exit Glacier Area by travelling northwest of Seward about 12.2 miles, or 20-30 minutes, via Herman Leirer Road and Highway 9. This road is closed seasonally from approximately mid-November to early May.
 - The Exit Glacier Nature Center and parking lot serve as the terminus of Herman Leirer Road. The parking lot contains 71 spaces for passenger vehicles, 24 spaces for recreational vehicles (RVs), 6 short-term parking spaces for tour buses and shuttles, 4 passenger vehicle spaces reserved for Americans with Disabilities Act (ADA) accessibility and two 10-minute passenger loading and unloading spaces. The parking lot typically experiences congestion between 10 am to 3 pm in the summer months.

- The privately-run Exit Glacier Shuttle provides transportation service between downtown Seward and Exit Glacier from late May to September. This primarily serves visitors who arrive via cruise ship and do not have access to a vehicle. Shuttle trips are \$15 round trip and must be pre-booked.
- Other transportation options to the Exit Glacier Area include local taxis and private bus tours.
- **Use and Visitation:**
 - Kenai Fjords attracts approximately 300,000 visitors annually, with the large majority visiting between May and September. Approximately 100,000 of these visitors arrive in the month of July.
 - The Exit Glacier Nature Center parking lot received approximately 58,000 vehicles in 2018. This averaged to about 490 vehicles per day from June-Aug, though peak days would have substantially more vehicles. As the parking lot overflows, passenger cars and RVs tend to park along the road shoulder or circle to find a spot.
 - The City of Seward expects to see an increasing number of visitors arriving by cruise ship in the future; this could increase visitation to the Exit Glacier Area, primarily by tour bus.

Potential Considerations to Improve Transportation Access

- **Infrastructure and Parking Management**
 - A redesign could combine bus and RV circulation to eliminate conflict points and reduce confusion.
 - Traffic calming via striping and signage could help slow entering vehicles.
 - Small, phased changes to the parking lot configuration could achieve additional parking capacity.
 - Parking attendants can continue to help manage parking congestion by directing vehicles.
 - A more substantial expansion of the parking lot could increase the size of the lot by about 2.5 acres but would require substantial planning, investment, and long-term maintenance commitments.
- **Transit**
 - Two potential service concepts could provide access to the park for those without a personal vehicle and reduce vehicle congestion:
 - Concept 1: A shuttle service to move visitors between downtown Seward and the Exit Glacier Area.
 - Concept 2: A park-and-ride service to transport visitors to the Exit Glacier Area from an overflow parking lot along Herman Leirer Road.
 - A shuttle service would operate similarly to the existing shuttle service. KEFJ could continue to work with the existing operator, and could consider ways to support or enhance service.
 - A park-and-ride service could operate at one of four sites along Herman Leirer Road. Service would ideally be continuous during peak hours, and operate on a more leisurely schedule during off-peak times. However, a park-and-ride system would entail considerable operational challenges. For example, the utility of a park-and-ride service decreases as the frequency decreases, given that visitors will likely not want to wait for a significant period of time.

- KEFJ is not considering a NPS-owned and NPS-operated model; the park is interested in supporting business opportunities for private entities rather than running a transit system.
- **Multi-modal Transportation**
 - Members of the public in Seward expressed strong support for an off-road multi-use path along Herman Leirer Road. This would provide safe, comfortable access to Exit Glacier by bike or foot, but it would require substantial investment, coordination along the multi-jurisdictional road corridor, and long-term maintenance commitments. KEFJ conducted a feasibility study for this potential project from 2010-2013, but there are no current plans for implementation.
 - Less costly strategies for enhancing multi-modal access along Herman Leirer Road include signage/wayfinding improvements and roadway safety enhancements (e.g., shoulder widening and lane demarcation).
- **Transportation Data**
 - The project team identified current data gaps related to parking lot utilization (e.g., mix of vehicle types, duration of stay, typical times when parking lot meets or exceeds capacity), transit use, and general tourism trends.
 - Community members in Seward expressed a strong interest in data, wanting to ensure that KEFJ makes data-driven decisions regarding the Exit Glacier Area.
 - The project team recommends collecting additional data and monitoring conditions at the Nature Center parking lot prior to undertaking substantial new projects.
- **Traveler Information**
 - Traveler information is a relatively simple way to increase traveler understanding of transportation options (including existing transit) and encourage visitors to take steps to avoid parking congestion. These options include disseminating information on the KEFJ website and working with local partners to provide consistent messaging throughout Seward.
 - KEFJ could pursue an Intelligent Transportation System (ITS) to provide real-time information to travelers on parking lot and transit conditions via variable message signs and/or website and app updates. However, the lack of cell phone and internet coverage in the Exit Glacier Area is currently a barrier to implementation.
- **Partnerships**
 - Given the multi-jurisdictional nature of the Herman Leirer Road Corridor and the importance of private partners such as transit providers and local outfitters in providing transportation services and information to visitors, partnerships are crucial to the successful implementation of many of the strategies in this report.

Conclusion and Next Steps

This report discusses a wide range of potential strategies for improving transportation access to the Exit Glacier Area of KEFJ. The conclusion arranges these strategies by their relative level of effort, to identify the strategies that KEFJ can implement in the short term and those that would require longer term studies or have substantial costs. KEFJ should pursue actions that are feasible in the short term (“quick wins”), while collecting data and monitoring conditions. Improving data on parking lot and transit use will be necessary

prior to undertaking more substantial potential projects, such as parking lot expansion or a new or expanded transit service. Community support and coordination with stakeholders will be crucial to the success of the strategies in this report. Therefore, KEFJ should discuss the strategies in this report with its partners and community stakeholders to identify strategies of mutual benefit and potential implementation approaches.

In addition, it is important to consider future uncertainty. KEFJ should monitor future visitation and parking conditions in the Exit Glacier Area and develop responses appropriate to demonstrated need. Where possible, KEFJ should also pursue “actions of no regret,” which will be effective under a range of future visitation conditions.

Introduction

Kenai Fjords National Park is located in south-central Alaska, just outside the City of Seward. KEFJ is home to the Harding Icefield, Exit Glacier, and nearly 40 other glaciers. The Exit Glacier Area is the only area of the park accessible by car, where visitors can witness the power of Exit Glacier up close. The Exit Glacier Nature Center and trailhead are located 8.2 miles northwest of the Seward Highway at the end of Herman Leirer Road. In 2016, the Exit Glacier Area received 167,000 visitors. Over the past ten years, an average of 51,000 vehicles per year have traveled to the Exit Glacier Area in cars, buses, or RVs. The road ends at the Exit Glacier Nature Center parking lot, the only lot available to accommodate vehicles arriving at the park.

The Nature Center parking lot does not have the capacity to accommodate growing demand and experiences parking congestion during the summer season. The parking lot is at or above capacity many days, particularly on weekends, around holidays, or on good weather days. On busy days, both visitors arriving by passenger vehicle or RV may find parking unavailable and either circle through the parking lot multiple times or park in undesignated locations along the parking lot's unpaved shoulders. This congestion can have negative impacts on visitor experience, safety, and natural resources. As a result, KEFJ is seeking potential strategies to manage parking congestion at this site.

This Summer Transportation Feasibility Study documents the existing conditions and trends affecting the Exit Glacier Area and considers the feasibility of a range of management strategies to manage congestion. The report includes following chapters:

1. **Introduction:** Explains the purpose of the study and KEFJ's transportation goals.
2. **KEFJ Overview and Setting:** Provides information on the park's location and planning context.
3. **Existing Conditions:** Documents the existing conditions and trends related to transportation to the Exit Glacier Area.
4. **Problem Statements:** Inventories the range of transportation challenges at the Exit Glacier Area.
5. **Potential Transportation Considerations:** Presents a range of potential management actions to improve transportation conditions at the Glacier area.
6. **Conclusion:** Presents a summary of the strategies that best meet KEFJ's transportation goals and a list of potential next steps.

Purpose of this Study

The purpose of the Exit Glacier Area Transportation Feasibility Study is to evaluate the current transportation conditions at the Exit Glacier Area – including parking lot congestion and multi-modal access – and evaluate the feasibility of a range of potential infrastructure, operations, or traveler information actions to improve transportation conditions. These may include parking lot reconfiguration, enhanced transit service, and other potential infrastructure or operational changes. The purpose of this study is to guide the park in determining the best options for managing congestion while meeting park goals and visitor needs at the Exit Glacier Area.

When KEFJ initially requested technical assistance, the intended task was to conduct a transit feasibility study with the aim of alleviating congestion at the Nature Center parking lot. However, through discussions with park staff it became clear that transit is one of

multiple potential strategies to managing congestion that may be appropriate for the Area. As a result, this study will discuss the following range of considerations:

- Parking Lot Infrastructure/Management (e.g., realignment/expansion or operations)
- Transit
- Multi-modal Transportation
- Data Needs
- Visitor Information
- Partnerships

Because many of these elements are interrelated, KEFJ may ultimately decide to pursue an approach that draws on multiple consideration areas.

KEFJ's Desired Transportation Conditions

KEFJ staff articulated the following desired conditions for Exit Glacier Area transportation:

- **Safety** for visitors of all transportation modes and KEFJ staff in the Nature Center parking lot and along Herman Leirer Road.
- **Access** for all visitors regardless of mode or vehicle type.
- **Capacity** to meet visitor transportation needs.
- **Financial sustainability** of infrastructure, maintenance, and operations to ensure long-term success.
- **Environmental sustainability** with minimized impacts to sensitive resources.
- **Positive visitor experience** for visitors with a range of recreational opportunities.

The park should evaluate the potential actions presented in this report based on how well they support these desired conditions.

Figure 1: Visitors to Exit Glacier

Source: Volpe



KEFJ Overview and Setting

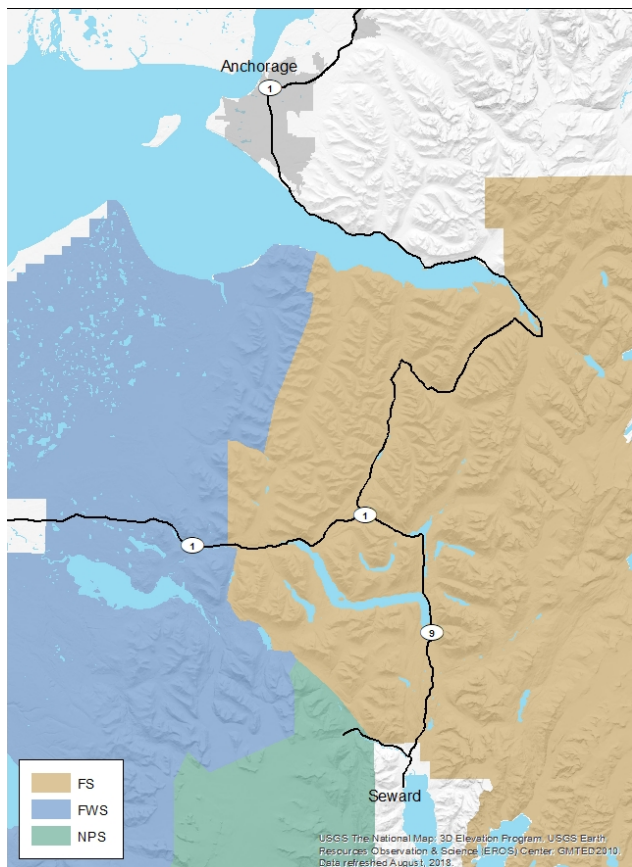
Park Foundation Statement

Kenai Fjords National Park was established in 1980 by the Alaska National Interest Lands Conservation Act, with the purpose to preserve the scenic and environmental integrity of an interconnected icefield, glacier, and coastal fjord ecosystem.¹ To fulfill this purpose, the park “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.” Transportation access to the Exit Glacier Nature Center and trails network is a crucial element to support the park’s founding purpose.

Park Location

Figure 2: Kenai Fjords National Park is located approximately 130 miles south of Anchorage.

Source: NPS, Volpe



KEFJ covers 1,760 square miles on the Kenai Peninsula in south-central Alaska, near the City of Seward (Figure 2). Seward is the southern terminus of both the Alaska Railroad and the 127-mile Seward Highway National Scenic Byway, and is Alaska’s only deep-water, ice-free port with rail, highway, and air transportation² connections to Alaska’s interior and major urban population centers. Located 130 miles south of Anchorage at the head of Resurrection Bay on the southern shore of the Kenai Peninsula, Seward is a gateway community to Kenai Fjords National Park, Caines Head State Recreation Area, and Chugach National Forest. Depending on the mode of travel and current traffic and weather conditions, the road trip via road between Seward and Anchorage takes between 2 and 3 hours.

The city of Seward has approximately 2,800 year-round residents, and substantially increases in population during the warmer months as the service economy swells to meet the needs of visitors. The area attracts thousands of travelers, many as part of organized tours and cruises. Seward receives approximately 1/5 of Alaska’s total

¹ NPS, 2013. Kenai Fjords National Park Foundation Statement:

https://www.nps.gov/kefj/learn/management/upload/KEFJ_FoundationState_040413-508.pdf.

² Seward’s airport only accommodates small-sized aircraft and does not have commercial air service.

cruise passengers, and often has over 1,600 passengers a day booked on smaller boat tours in the summer months.

Visitors traveling to Seward by cruise ship or train arrive at the Dale R. Lindsay Alaska Railroad Intermodal Facility. The Facility is located within two miles of downtown Seward, and visitors can choose to travel this distance via foot, taxi, or the town's free shuttle system. Due to the Exit Glacier Area's distance from Seward (approximately 12 miles), travel schedules, organized tours, and limited transportation options, a number of people travel to and from Seward without ever visiting the national park.

During the warmer months, tourists and local residents visit KEFJ to take in the views of the area's fjords, glacial ice, and diverse wildlife. Local operators offer wildlife-viewing tours, including marine tours of the fjords by passenger-boats and kayaks, as well as helicopter tours and guided hiking tours. The park has had record visitation in recent years, and has become a major source of economic activity in the region.

Within KEFJ, visitation sites include the following areas: the Exit Glacier Area, Harding Icefield, and the coastal fjords (Figure 3). The only road access to the park is via Herman Leirer Road, which provides access to the Exit Glacier Nature Center and trails to Exit Glacier and the Harding Icefield.

Figure 3: NPS Map of Kenai Fjords National Park

Source: Kenai Fjords



Exit Glacier Area and Harding Icefield

The Exit Glacier Area is located a short distance (8.2 miles) from off Seward Highway via Herman Leirer Road. Because Herman Leirer Road provides the only road access to the park, the Exit Glacier Area is the primary visitation site, and the Nature Center parking lot

is a crucial access node for visitors to experience the park's natural resources, interpretive programs, and trails. Figure 4 highlights the area of focus for this transportation study.

Figure 4: Map of trail to Exit Glacier

Source: Kenai Fjords



Visitation to the Exit Glacier Area averages approximately 165,000 visitors per year. In the Exit Glacier Area, there are activities for visitors of all ages and abilities – including interpretive displays and programs at the Exit Glacier Nature Center, a wheelchair-accessible trail to an Exit Glacier viewing area, a moderate trail to an overlook of the glacier, or a more advanced trail to the Harding Icefield. From the parking lot, it is approximately a one-mile walk for visitors to reach Exit Glacier. The Nature Center (the park's visitor center in the Exit Glacier Area) is typically open from Memorial Day to Labor Day. Visitors to the Exit Glacier Area typically stay for 1-2 hours, while hikers on the Harding Icefield Trail typically stay all day.

Related Planning Efforts

Park General Management Plan

The [Kenai Fjords National Park General Management Plan \(1984\)](#) specified that the only road to be constructed in KEFJ would be in the Exit Glacier Area. It also specified that the NPS did not intend to provide federally funded transportation services in the park, but instead to coordinate with public and private transportation services to provide access to the park and to maximize opportunities for viewing and using the park.

KEFJ Herman Leirer Multi-modal Trail Feasibility Study/Environmental Assessment

In 2013, KEFJ conducted a feasibility study and an environmental analysis for a future Herman Leirer Road multi-modal trail. The study focused on the feasibility of a multi-use trail (bicycle, pedestrian and ski) to extend along the Herman Leirer Road, starting from the Seward Highway and ending at the Exit Glacier Nature Center in Kenai Fjords National Park. The proposed trail would pass through public lands and right-of-ways managed by the State of Alaska, United States Forest Service (FS), and NPS, and the environmental assessment analyzed the impacts of different trail routing concept alternatives. The document emphasized that there was not a funded project to construct any of the proposed alternatives, but that the document would serve as a common vision for state, federal, and local agencies as well as organizations to pursue funding for such a project. This document was a culmination of various interagency discussions that had occurred over the years. Supporting this concept were also two local resolutions, City of Seward Resolution 2013-042 and Kenai Peninsula Borough Resolution 2013-052, to support the multi-modal trail. Various members of the City of Seward and vicinity brought up the value of this type of trail for the community in this current transportation study.

KEFJ Exit Glacier Frontcountry Management Plan

KEFJ is currently developing a frontcountry management plan for the Exit Glacier Area. To inform the plan, the park is considering a range of scenarios for the Exit Glacier Area, based on potential visitation trends and possible extent of the Exit Glacier terminus.

This planning effort recognizes that there is substantial uncertainty about the future of the Exit Glacier Area:

- ***Exit Glacier and Surrounding Landscape:*** Exit Glacier has retreated for over a century, and as of 2017, it has receded over 441 meters since the last Exit Glacier Area Management Plan in 2004. The rate and extent of glacial retreat will continue to transform the landscape of the Exit Glacier Area and may impact the nature of future visitation.
- ***Visitation:*** Visitation has increased substantially since the 1990s, but with some fluctuations, including a downturn coinciding with the economic recession of the late 2000s. Visitation may continue to increase. However, the future extent of the Exit Glacier may also influence future visitation.

The park's Frontcountry Management Plan effort is using a scenario planning approach to consider the range of potential futures for visitation and glacial retreat in the area and developing a suite of "management actions of no regret," which would be appropriate under a range of future conditions.

This Frontcountry Management Plan, which will follow the scenario planning report, is expected to be complete in 2020-2021. The strategies KEFJ develops for frontcountry recreation at Exit Glacier will have implications for the area's transportation needs. In addition, the primary areas of uncertainty addressed in the scenario report leading into the Frontcountry Management Plan are relevant for future transportation actions, as well. Although this transportation report does not use scenario planning to evaluate potential transportation solutions, it does note how some solutions may fare under different visitation scenarios, as relevant. This report also focuses on a range of scalable solutions that can be implemented or adjusted as visitation fluctuates.

City of Seward Planning Efforts

The City of Seward does not have a transportation plan, but the City of Seward's [2030 Comprehensive Plan Update](#) has the following goals related to transportation:

- *Provide safe and efficient vehicular transportation facilities that meet the needs of the community.*
- *Expand and maintain existing sidewalks and the multi-purpose trail system in order to provide safe, fully accessible, pedestrian pathways through the city.*
- *Improve the usability of the state-owned airport.*

During the project team's site visit, City staff also expressed an interest in convening a community transportation advisory committee to make progress on the City's transportation goals. This committee may be an opportunity for KEFJ to coordinate with the City of Seward, the port, and other local transportation stakeholders to enhance transportation access to the Exit Glacier Area.

Seward Marine Terminal Expansion Master Plan

The Alaska Railroad Company (ARRC) owns and manages the Seward Marine Terminal, which provides an intermodal transportation connection for passengers and freight – including cruise ships and the Alaska Railroad. The land reserve comprises 328 acres, and in 2016 the site served 65,000 train passengers and 185,000 cruise ship passengers, as well as tens of thousands of tons of freight.¹ The Dale R. Lindsay Alaska Railroad Seward Intermodal Facility is part of the Seward Marine Terminal.

¹ Alaska Railroad Company, August 2017. Seward Marine Terminal Expansion Planning: Master Plan. https://www.alaskarailroad.com/sites/default/files/Communications/MASTER_PLAN.pdf.

Figure 5: Visitors Wait Outside the Alaska Railroad Seward Intermodal Facility

Source: Volpe



The ARRC began planning efforts for the port site in 2013 and published a [Master Plan](#) in August 2017. The Master Plan recommends a range of improvements, including passenger dock replacement, freight dock improvements, and terminal replacement. Through this process, there may be opportunities to coordinate with KEFJ and the City of Seward to improve transportation connections for customers using the marine terminal. These improvements may also impact future visitation to KEFJ – for example by increasing the number of passengers disembarking in Seward who may visit the Exit Glacier Area. Alternatively, this plan may help the cruise ship companies and Alaska Railroad increase the efficiency of connections so that visitors spend less time in Seward or KEFJ. These changes may also impact the feasibility of some of the transit scenarios considered below.

Existing Conditions

Transportation Access to the Exit Glacier Area

The Exit Glacier Area is accessible via Herman Leirer Road, commonly known as Exit Glacier Road. The [route](#) between Seward and the Nature Center parking lot extends approximately 12.2 miles. From Seward, vehicles drive about 3.5 miles north on Highway 9 (the Seward Highway), before connecting to Herman Leirer Road and traveling west for 8.2 miles. The first 7.3 miles of Herman Leirer Road are State of Alaska right-of-way and are operated and maintained by the Alaska Department of Transportation and Public Facilities (ADOT&PF). The road passes through land managed by several partners, including the Alaska Department of Natural Resources and the U.S. FS. NPS manages the remaining 0.9 miles of the road and surrounding land. The drive from Seward takes approximately 20 to 30 minutes, but can vary based on weather conditions. The road is paved, and there are no significant hills or grade changes along the route. Weather conditions may vary significantly along the route due to the surrounding topography, making it possible for it to be raining, snowing, or sleeting at one point on the road but not another.

The road closes to cars seasonally, typically from the arrival of snow in mid-November until it thaws in early May. In late fall, flooding and heavy rain can cause road closures due to dangerous, icy conditions. Limited hours of daylight in the fall and winter also influence roadway use and make visitation much more common on weekends than weekdays.

Figure 6: The route from Seward to the Exit Glacier Area extends 3.5 miles on Route 9 (The Seward Highway) and 8.2 miles on Herman Leirer Road. It is the only point of entry to the park accessible by personal vehicle.

Source: NPS, Volpe



Nature Center Parking Lot: Existing Conditions

The Exit Glacier Nature Center and parking lot serve as the terminus of Herman Leirer Road. The final mile of the two-lane access route to the Exit Glacier Area was recently elevated and repaved, and many drivers travel faster than the 35 mph posted speed limit. The speed limit reduces to 15 mph at the entry to the parking lot, as the road narrows and begins the one-way loop. Within the parking lot signage directs buses, RVs, and cars to different locations. Each parking lot provides directional parking for easy entry and exit. If parking is not available on the first pass through the lot, there is a turnaround lane to loop through another time.

Figure 7: The Parking Lot Directing Buses to the Right, and Other Vehicles to the Left

Source: Volpe



Coach buses are directed to the right towards parking on the perimeter of the parking lot for safe loading and/or unloading of passengers. Sidewalk access to the Nature Center from the bus parking area is conflict-free and does not require crossing lanes of traffic or traversing parking areas.

Car and RV drivers access their respective parking areas via the driveway to the left in the photo above (Figure 6). Previous efforts to simplify wayfinding have left markings and signage limited and understated, and some drivers show signs of confusion when looking for parking. During the busiest times, the informal parallel parking along the entry roadway shoulders may increase confusion. Visitors see this non-designated parking when first entering the lot, which may be interpreted as an unmanaged system and suggest that visitor parking is permitted wherever space is available. In order to address this, the park has implemented parking assistants to direct traffic and help visitors find parking that does not impede the flow of traffic or cause safety concerns.

Figure 8: Bus Parking is Located along the Perimeter of the Parking Lot

Source: Volpe

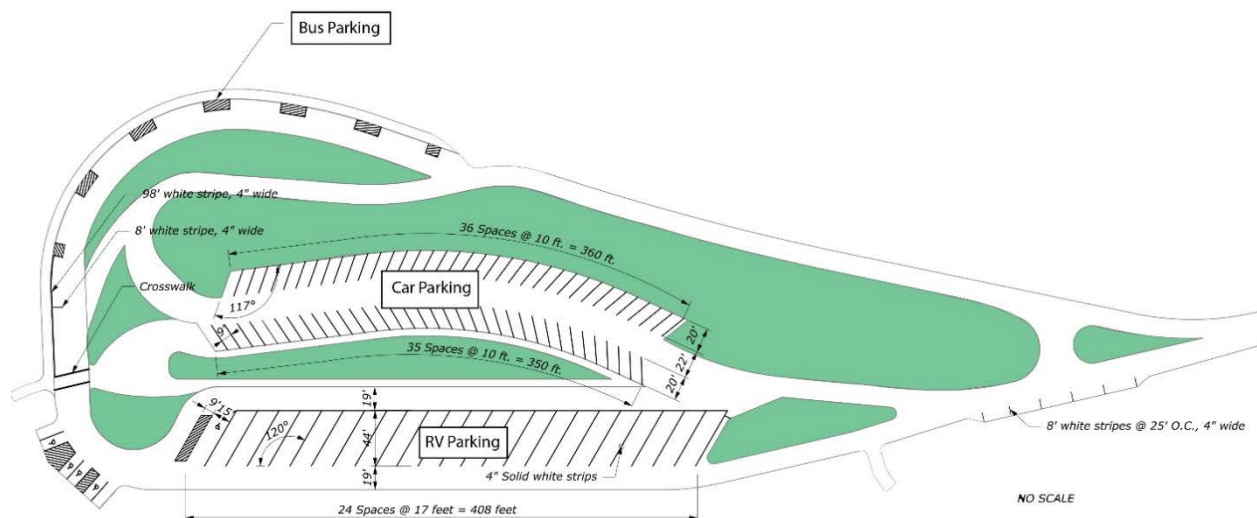


The parking lot is approximately 208,000 square feet and contains the following:

- 71 spaces for passenger vehicles (10 feet x 20 feet each)
- 24 spaces for RVs (17 feet x 44 feet each)
- 6 short-term spaces for tour buses and shuttles
- 4 passenger vehicle spaces reserved for ADA accessibility and two (2) 10-minute passenger loading and unloading.

Figure 9: Aerial view of Kenai Fjords parking lot from the 2015 Parking Lot Signing and Striping Plan. Parking lot entrance is on the right, and the Nature Center is located off to the left. Shaded areas in the upper left indicate spaces reserved for bus parking.

Source: FHWA WFL, Volpe



According to KEFJ staff, the parking lot often experiences congestion, particularly in the summer months from about 10 am to 3 pm. The project team also observed substantial congestion during the site visit. Typical conditions in the parking lot include:

- Both the RV parking area and the car area at or over-capacity. Car parking fills early and cars begin parking in the RV area, reducing the number of spaces available for RVs
- Dozens of cars and RVs park along the road shoulders
- Parking starts to occur along the perimeter of the parking areas
- The entrance and exit lanes are blocked by cars parking along Herman Leirer Road outside of the parking lot

Figure 11: Overflow Vehicle Parking on the Road Shoulder Entering the Nature Center Parking Lot

Source: Volpe



Figure 10: Spillover Car and RV Parking at the Nature Center Parking Lot

Source: Volpe



Transit Access to the Exit Glacier Area

Almost all independent travelers that arrive at the Exit Glacier Area not part of an organized tour group appear to have access to a personal vehicle. However, there are a few additional ways to visit the Exit Glacier Area in the summer that do not require a personal vehicle. Transit ridership levels are generally dependent upon the presence of cruise ships in port; with the expected addition of cruise ships and small boat tours that spend multiple days in Seward, the number of visitors without a personal vehicle may increase.

Exit Glacier Shuttle

The privately-run [Exit Glacier Shuttle](#) provides transportation service between downtown Seward and the Exit Glacier Area from late May to September, through a commercial use authorization. The information below is current as of summer 2018. The shuttle leaves downtown Seward (1013 3rd Avenue) and the Small Boat Harbor hourly between 8:30am (Friday-Sunday) or 9:30am (Monday-Thursday) and 3:30pm. Return trips from Exit Glacier Nature Center occur on the hour from 11am to 5pm. Shuttle trips can be pre-booked online (approximately 20% of trips), or in person at one of two Exit Glacier Guides offices located in Seward.

The shuttle operator requires riders to schedule their return trip prior to departure for two reasons:

1. There is no cell phone service at the Exit Glacier Nature Center, so riders cannot contact the shuttle operator from the park; and
2. The operator wants to avoid exceeding capacity on any return trip, especially if it would lead to riders stranded at the park at the end of the day or requiring the operator to run an unscheduled, “dead-head” trip to pick up excess passengers.

The shuttle costs \$15 round trip. For \$40, the company offers hiking guides with interpretive services, through Exit Glacier Guides.

Other Access Options to the Exit Glacier Area

In addition to the Exit Glacier shuttle, there are the following ways to reach the Exit Glacier Area without a personal vehicle:

- Local taxis
 - KEFJ offers a list of local taxi services [on their website](#).
- Private bus tours
 - In addition to the tours offered by the shuttle services already listed, visitors can access the Exit Glacier Area through private bus tours leaving from Anchorage or Seward. These tours often include interpretive services. Many cruise ship and small boat tour passengers have the option of taking a tour bus to the Exit Glacier Area as an on-shore excursion during their time in Seward.
- Multi-modal access to the Exit Glacier Area
 - Some visitors and local residents access the Exit Glacier Area by bicycle, hiking, or running along Herman Leirer Road. However, there is currently no dedicated bicycle or pedestrian infrastructure, so non-motorized users travel in the road shoulder. Several Seward residents expressed concerns that they do not feel safe biking or walking on Herman Leirer Road in the summer due to traffic volumes and vehicle speeds and expressed interest in development of a separated multi-use path.

Winter Access to the Exit Glacier Area

During winter, ADOT&PF closes the first gate and does not maintain Herman Leirer Road for vehicular traffic past this point. The focus of this transportation study is summer transportation to the Exit Glacier Area, so this report does not go into depth on winter transportation issues. However, it is important to note that winter snow cover and spring season plowing have implications for the range of potential roadway and parking lot treatments that are appropriate. For example, KEFJ should select designs for parking lot infrastructure such as speed bumps that can survive annual plowing.

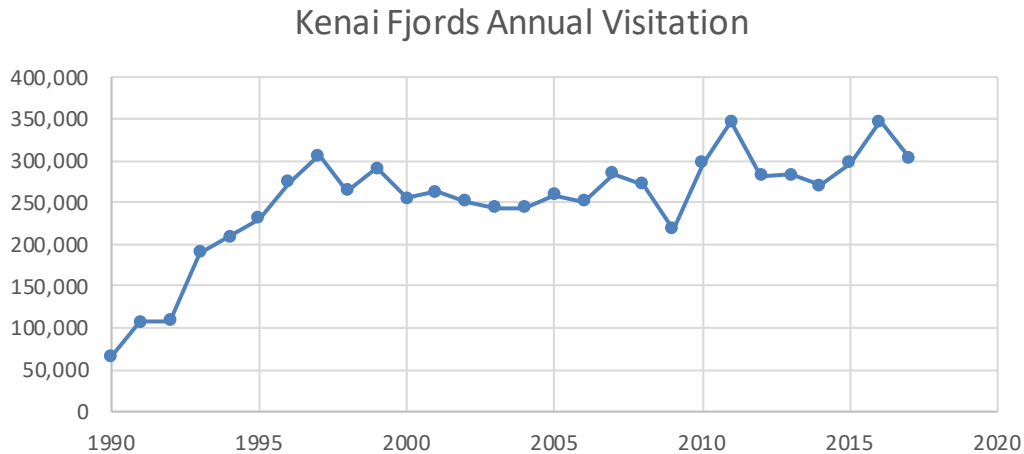
During the winter season, visitors may access the Exit Glacier Area by winter transportation modes, including snow machine, cross-country ski, snowshoe, fat bike, or dog sled. The 2012 [Kenai Fjords National Park Over-the-Snow Transportation Feasibility Study](#) documents winter transportation conditions to the Exit Glacier Area.

Use and Visitation

Between the Exit Glacier Area and coastal areas of the park, Kenai Fjords as a whole attracts approximately 300,000 visitors annually, with the large majority visiting between the months of May and September. The park had a record year for visitation in 2016, with over 346,000 visitors (Figure 12).

Figure 12: Kenai Fjords Annual Visitation, 1990-2017

Source: NPS Visitor Use Statistics



Visitation to KEFJ is heavily concentrated in the summer months, with approximately 100,000 visitors – or one-third of all visitors annually – arriving in the month of July. Figure 13 shows that June, July, and August are peak visitation months, with lesser visitation in the shoulder season in May and September, and very few visitors in the winter months.

Figure 13: Kenai Fjords Monthly Visitation, 2015-2017

Source: NPS Visitor Use Statistics

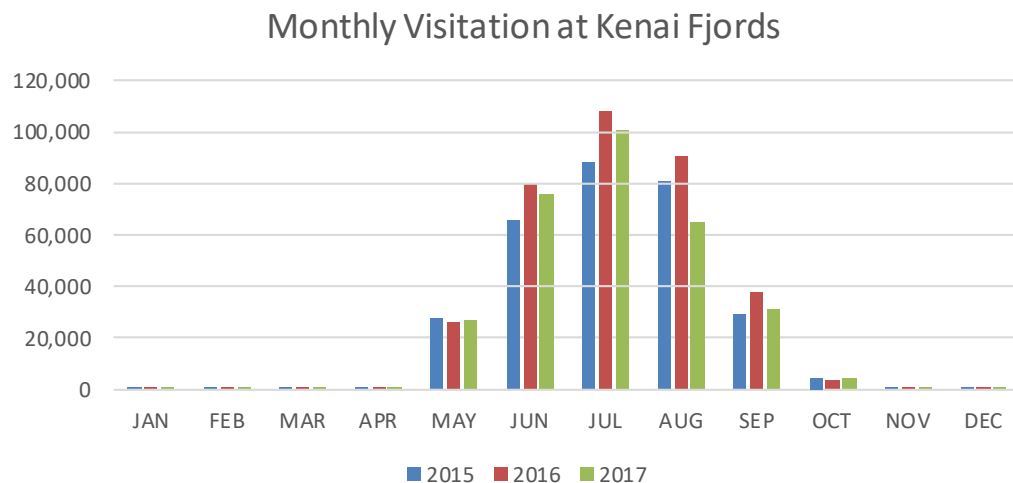
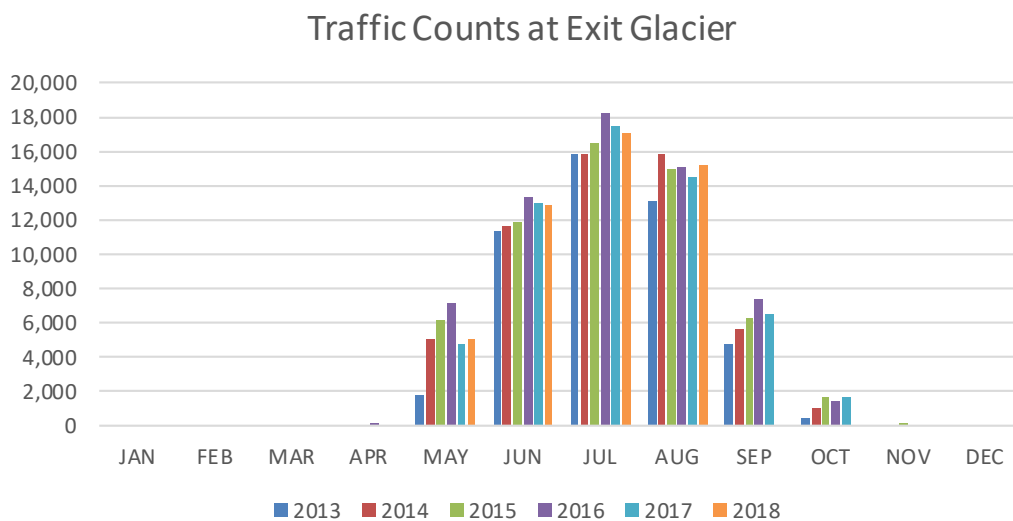


Figure 14 shows traffic counts by month at the Exit Glacier parking lot. This graph shows the number of vehicles entering the parking lot rather than the number of visitors, but its trends show a similar distribution, with peak visitation in the summer months. From 2013 to 2018, the KEFJ parking lot visitation for June through August averaged 34,116 vehicles per season. This averages to approximately 375 vehicles per day, although in reality peak days would have substantially more vehicles. Although KEFJ does not report daily traffic counts, park staff and Seward community members report that visitation to the Exit Glacier Area peaks on sunny days, when residents and visitors want to be outside.

Figure 14: Traffic Counts at the Nature Center Parking Lot, 2013-2018

Source: NPS Visitor Use Statistics



Future Visitation Trends and Projections

The City of Seward expects to see an increase in cruise ship visitation over the next several years, based on industry projections and bookings. This includes an increase in the overall number of visitors from cruise ships and an increase in smaller cruise ships that overnight in Seward prior to transferring passengers to the Alaska Railroad, giving passengers multiple days to explore KEFJ and Seward. The Port of Seward is also planning to expand their cruise ship dock to accommodate additional cruise ships. Although Kenai Fjords is just one attraction in the Seward area, it is reasonable to expect an increase in visitation to the Exit Glacier Area as a result. These visitors would likely visit the area via a shuttle or tour bus.

In the long term, cruise ship visitation tends to fluctuate based on national economic conditions.¹ As discussed above, KEFJ is conducting a scenario planning analysis for its Exit Glacier Frontcountry Management Plan that considers a range of increasing and decreasing visitation given the uncertainty inherent in projecting long-term visitation trends and the

¹ Alaska Federal Lands Long-Range Transportation Plan. 2012. Appendix B: Visitation Trends Technical Report. <https://flh.fhwa.dot.gov/programs/flpp/lrtp/documents/ak-lrtp-appendices.pdf#page=39>.

need to consider a range of potential management conditions. However, it is reasonable to expect increasing visitation and resultant parking congestion in the short- to medium-term.

Site Visit Summary

From August 6-10, 2018, the project team of NPS, WFL, and Volpe staff conducted a site visit to Seward and the Exit Glacier Area. During this site visit, the project team observed transportation conditions and conducted a series of meetings with community members (summarized below).

The project team conducted the following site observations:

- A visit to the Nature Center parking lot on a sunny afternoon, Monday, August 7. During this visit, the project team observed parking demand well in excess of supply, with dozens of passenger cars and RVs parked along the road shoulder and other vehicles circling to find a parking spot. The project team spoke to the two parking lot attendants on site to hear their experiences and observations from the summer season.
- Observations of transportation conditions in downtown Seward, including signage and wayfinding for visitors. The team observed that although there is abundant information for visitors to Seward, a more unified approach to visitor information and wayfinding may improve visitor knowledge of transit and other transportation options.
- The project team rode the full route of the free Seward shuttle that circulates around Seward. During this ride, the project team observed that the shuttle was used but not overly crowded, with approximately 20 riders of all ages, including residents and visitors staying in Seward RV and tent camping areas.
- Observation of the Seward cruise ship terminal during passenger debarkation to observe the transfer of cruise ship passengers onto transit, shuttle buses, and taxis.

Information learned during this site visit is used throughout the analysis in this report. During the site visit, the project team also identified available data sources that support this analysis.

Summary of Public Feedback

During the August 6-10 site visit, the project team conducted a series of meetings with community members. The summary below reflects what the project team heard from members of the community throughout the site visit. The project team has not verified the accuracy of these statements but provides them as a summary of public input in this initial project phase.

These comments were gathered from various meetings with community members, including:

- NPS Kenai Fjords National Park Public Meeting (August 8, 2018)
- Seward Chamber of Commerce Meeting (August 10, 2018)

The project team gathered additional input from individuals and conversations with community members in Seward, including NPS staff, city staff, business owners, transportation operators, tour operators, and others.

Current Transportation Service

- Community members are aware of the town shuttle system, but expressed a desire for more information regarding the route and schedule.
- Business owners operating tour and shuttle services stated that their services are rarely fully booked. This generally occurs only a handful of days per year.

Seward Area Considerations

- Community members are interested in a shuttle option between the town and the Nature Center parking lot, in order to increase access for tourists and residents alike. Residents reported a need to enhance the connection between the two, as they rarely visit the park despite the great resources it provides.
- Many business owners expressed a desire to ensure that transportation throughout town and to/from the Exit Glacier Area is a positive experience for visitors.
- A community member expressed the desire to ensure both residents and business owners benefit from whatever transportation solutions are implemented.
- Some residents noted that a side benefit of expanded transit access to the Exit Glacier Area could be greater access for local children who do not have cars. They noted that the free shuttle service around Seward has improved mobility options for local children.
- Community members are very concerned about the availability of data. Multiple individuals expressed a desire to see data-based justifications for any changes to the Exit Glacier Area transportation access.

Herman Leirer Road Uses

- Many community members are interested in increased multi-modal options along the corridor to the park, particularly biking. Biking has grown as a form of both transportation and recreation in the town over recent years.
- Herman Leirer Road is closed to vehicular traffic during the winter and early spring. Community members mentioned that they take full advantage of this corridor during this time, traveling it via snow machine, skis, snowshoes, bike, foot, and more.
- Community members indicated that they feel unsafe traveling the road by bike or on foot, due to the speeds at which vehicular traffic travels.
- Several community members asked about the status of a proposed multi-modal trail along Herman Leirer Road and expressed their support for the proposal.

Nature Center Parking Lot Uses

- The appropriate level of RV parking space in the Nature Center parking lot was an area of disagreement among community members. Some community members expressed interest in reducing or eliminating RV spaces in the parking lot, as this would likely provide sufficient parking for other vehicles. However, others felt very strongly that KEFJ should not “discriminate against” RV drivers by eliminating RV spaces and should be careful to accommodate access needs for all users.
- One business owner wondered if there is a better way to manage motor coaches and asked whether KEFJ could require them to park in a remote lot rather than take

space in the Nature Center parking lot while their passengers visit the Exit Glacier Area.

- One community member expressed willingness to sacrifice some of the natural landscaping in and around the parking lot in order to increase the lot's footprint and accommodate more vehicles.

Anticipated Changes Affecting Transportation

- Community members expressed concerns over the town's ability to handle the anticipated increase in cruise ship traffic in the future. More ships are expected, and some will now begin docking overnight. This will require increased transportation services to move these additional visitors throughout town and to the park.
- One community member stated that there is a new RV park under construction on Herman Leirer Road. This may increase the number of RVs traveling to the Exit Glacier Area and looking for parking, or may provide an opportunity for RV parking nearby but outside of the park entrance, freeing up additional spaces in the parking lot.

Suggestions for Transportation Solutions

- A business owner suggested that any proposed shuttle solution should seek to minimize the number of stops on the way to the park, as the complexity of moving people increases with every additional stop added to the route.
- Community members expressed an interest in multiple route options for a shuttle service to the park. There may be an opportunity to build upon the existing town shuttle route so that only one stop takes people directly to the Exit Glacier Area.
- There are several parking lots that are not fully utilized throughout town; multiple community members recommended taking advantage of these lots as a "park and ride" option for visitors to park in and take the shuttle to the Exit Glacier Area.

Exit Glacier Area Transportation Problem Statements

The project team developed the following problem statements based on observations during the August 2018 site visit and review of existing data. These problem statements are meant to articulate the primary issues affecting transportation access to the Exit Glacier Area and will inform the discussion of potential considerations for improving access in the next section.

Nature Center Parking Lot

- Current capacity of the Nature Center parking lot is not sufficient to handle peak demand for visitors, resulting in unsafe conditions, additional demands for staffing, and degraded visitor experience.

Transit

- Development of a transit service to access the Exit Glacier Area drives additional challenges with regard to funding, operations and maintenance agreements, route development, scheduling and system infrastructure. Changes to potential transit business models could have community-wide impacts.

Multi-modal Transportation

- Residents and visitors would like the ability to utilize the Exit Glacier Area/Herman Leirer Road during all seasons. Heavy vehicle traffic makes the corridor unsafe during peak season, and encourages automobile only access.

Transportation Data

- Additional vehicle and visitor information is required to determine current impacts and understand demand for parking and transit both now and in the future. Available data does not provide clear summary of vehicle mix or circulation patterns.

Information

- Changes to the parking, operations, or development of a transit system must be marketed and shared appropriately and consistently. Lack of a mobile phone network or connectivity in the Park complicates the ability to provide real-time traffic, parking and transit information to park users.

Partnerships

- There is not currently a comprehensive, collaborative effort focused on transportation needs in the community. Numerous individual efforts to access the park and improve transportation in the region can be leveraged to enhance the existing network, but requires a lead agency or organization.

Potential Considerations to Improve Transportation Access to the Exit Glacier Area

Because of the complex nature of the congestion and access challenges at the Exit Glacier Area, the project team identified a range of potential strategies to help the park achieve its desired transportation conditions, as stated in the Introduction. These include safety, access, capacity, financial sustainability, environmental sustainability, and a positive visitor experience.

This section reviews the following categories of strategies and considerations to achieve the parks' desired transportation conditions:

- Parking Lot Infrastructure/Management (e.g., realignment/expansion or operations)
- Transit
- Multi-modal Transportation
- Data Needs
- Visitor Information
- Partnerships

This section analyzes the strengths, challenges, and potential implications of potential strategies associated with each of these categories. Because many of these elements are interrelated, KEFJ may ultimately decide to pursue an approach that draws on multiple consideration areas.

There are also a few key resources that the park can use to brainstorm options and learn about notable practices from other parks or transportation agencies, which cross-cut topic areas. These include:

- [NPS Congestion Management Toolkit](#): Developed by NPS, this Toolkit currently features 59 tools and a process to identify congestion problems and mitigate them. The toolkit can be used by parks, partners, and/or consultants.
- [FHWA Traffic Calming ePrimer](#): This ePrimer presents a thorough review of current traffic calming practice and contains information needed to understand this complex field. This resource includes information and examples from rural contexts, which would be particularly relevant for KEFJ.

Nature Center Parking Lot: Infrastructure and Parking Management

The Nature Center parking lot does not have the capacity to accommodate demand on peak visitation days in the summer. Although expansion of the parking lot may be a long-term consideration, the park should consider a range of less costly measures to realize efficiencies within the existing footprint.

Circulation Patterns

Currently, cars and RVs both turn left at the first junction within the parking lot, while buses turn right. This is counter to most campgrounds and rest areas, which separate small automobiles and large vehicles. A redesign that combines bus and RV circulation could reduce confusion, separate cars, and eliminate a conflict point.

Safety/Traffic Calming

Additional traffic calming, striping and signage would help to slow entering vehicles and reduce confusion. An entrance gate can provide visitor information and communicate to visitors that they are entering the park. A manned gate is likely not necessary, as an empty booth is expected to elicit slowing on its own. Electronic speed signs, landscaped islands, speed tables, and narrower lanes should all be considered as possible measures to be implemented in unison with an entrance gate. Directional arrows on the pavement and pictograms instead of text communicate intent quicker and more clearly for international visitors. Speed markings on the pavement may also aid in reducing speeds.

Parking Configuration

KEFJ could consider small, phased changes to the parking lot configuration to achieve additional parking capacity. For example, during peak visitation times drivers often park informally along the gravel shoulder along the edges of the parking lot. A gravel glue or stabilizer could be applied to ensure that the gravel surface does not deteriorate or erode rapidly. Ensuring the integrity of the gravel shoulder will also protect the edges of the pavement from breaking off. Painted lane lines at the edge of pavement may ensure that visitors are parked off the roadway and provide adequate roadway clearance.

Many of these spaces could be paved to create more formal parking spots and to reduce safety hazards and resource impacts from parking along the gravel shoulder. Such an improvement would necessitate an expansion of the existing footprint, and formalizing these spaces would still require road shoulder for safety and drainage.

If formalized, KEFJ should also add a walkway for visitors to walk from their vehicles to the Nature Center. Pedestrians walking on the roadway provide the benefit of traffic calming, but at the risk of visitor safety. KEFJ should also consider additional temporary or trial measures that change the mix of spaces, add short-term parking, or reduce RV spaces to increase the overall vehicle capacity of the parking lot. More specifically, conversion of RV parking to passenger vehicle parking is a possible trial option.

Operations

In the past few years, KEFJ has hired part-time, seasonal parking attendants to direct cars to open spaces. The park reported that the parking attendants have been successful in managing parking congestion and optimizing the efficiency of the parking lot. Given the success of this practice, KEFJ should continue to hire seasonal parking attendants. KEFJ should consider developing a traffic management plan at the beginning of the season to support these attendants, and hold end-of-season debriefs to evaluate lessons learned for future seasons.

To aid the parking attendants, KEFJ could also redesign existing signage to be more clear for visitors. One suggestion is to use graphics, such as types of vehicles, as well as text; this will help convey directions to non-English-speaking visitors.

Capacity Expansion

A more substantial expansion of the lot may eventually be necessary if the site continues to experience growth in visitors. The existing parking lot including pavement, sidewalks and vegetation is 208,000 square feet (4.88 acres). It is estimated that the parking capacity could be doubled by taking advantage of the existing circulation and adding an additional 108,000 square feet (2.5 acres) of parking area. Further design analysis will be needed to

determine if such an estimate is accurate. A capacity study for the Exit Glacier Area should be performed before undertaking an expansion to create a better understanding of the number of spaces that may be necessary.

Transit Considerations

The purpose of this section is to consider ways to use transit to meet park visitor's transportation needs, as well as the park's goals, via existing service or other business models.

Transit service between Seward and the Exit Glacier Area is currently available through a private company, and service around town is available through the City of Seward. A potential modified or expanded transit service to the area could serve two main purposes:

- Providing access to the park via a means other than personal vehicle; and
- Reducing vehicle and parking congestion at the Nature Center parking lot during peak hours.

This analysis will examine two potential service concepts to address these:

- Concept 1: A shuttle service to move visitors between downtown Seward and the Exit Glacier Area
- Concept 2: A park-and-ride service to transport visitors to the Exit Glacier Area from an overflow parking lot along Herman Leirer Road.

The shuttle service from Seward has the potential to meet both objectives (expanding access and reducing congestion), while the "park-and-ride" service focuses on reducing vehicle and parking congestion without providing an alternative means to access the park for those without a personal vehicle. There are several key distinctions between the two services:

- *Route:* The shuttle service would have a fixed route between Seward and the Exit Glacier Nature Center, while the park-and-ride service would have a fixed route between one of several locations along Herman Leirer Road and the Exit Glacier Nature Center, discussed in detail below.
- *Scheduling and Frequency:* For the shuttle service, visitors would plan their entire trip in advance, based on the posted schedule and a reservation. In this case, a reliable posted shuttle schedule is more important than frequency of service. Since the park and-ride service operates to transport visitors who cannot park at the Nature Center parking lot when it is full, visitors would not plan in advance to take the shuttle. Thus, frequency of service is important to ensure riders are not required to wait at an overflow lot for an extended period of time.
- *Capacity:* Both options are likely to experience capacity challenges and "bunching" at the end of the day when visitors are leaving the park. Having return trips scheduled in advance could resolve this problem for the shuttle option, but the park would need to consider other solutions for the park-and-ride option to avoid excessive waiting.

Routing and Cost Assumptions

Several assumptions are made based on analyses of existing conditions and conversations with park staff, business owners, and other stakeholders. The assumptions are as follows:

- The average visitor to the Exit Glacier Area spends two hours at the site. Thus, a shuttle service should run at least once per hour in order to accommodate visitor schedules.
- Peak hours for visitation are between 10:00 am and 3:00 pm. The parking lot is often full during these times.
- A stop takes approximately 3 minutes, including passenger drop-off and pickup.
- Transit operating schedules should allow for driver rest breaks and a half-hour lunch break. Some of the schedules below do not build driver breaks into the schedule, but KEFJ or the transit operator should consider adding scheduled breaks or using a relief driver to allow for driver breaks.
- No passengers will be returning from the Nature Center prior to 11:00am, and no passengers will be departing Seward after 4:00pm.
- KEFJ will not own or operate transit service to and from the park. Instead, NPS is interested in providing a business opportunity for a private business or partnership with the City of Seward.

Concept 1: Shuttle from Seward to the Exit Glacier Area

This concept presents a scenario for a transit shuttle from downtown Seward to the Exit Glacier Area. This concept would address both goals of reducing congestion and expanding non-personal vehicle access to the park. This concept is similar to the existing shuttle service provided by Exit Glacier Shuttle, and serves as a point of comparison for analysis with the park-and-ride concept. Under this service concept, KEFJ could continue to work with the existing operator through the existing commercial use authorization (CUA) – a no-change scenario – or KEFJ and the City of Seward can consider ways to support or enhance service through marketing or incentives for visitors to use the shuttle.

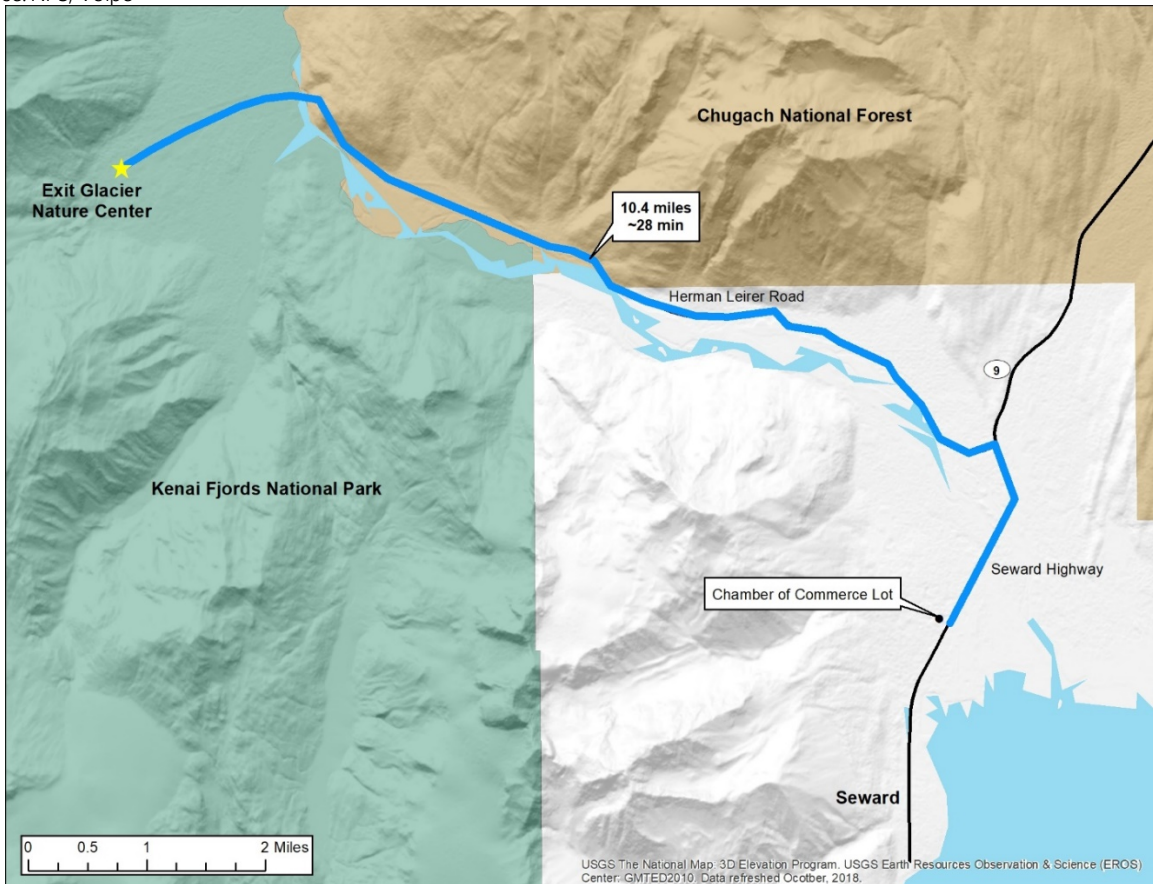
Table 1: Service Concept for a Shuttle between Seward and the Exit Glacier Area

Source: Volpe

Service Concept	Hours of Service (headways)	Headway	Vehicles Required	Total Daily Service Hours
Scenario 1: Full Route, 1-Hour Headway	Seward (to Exit Glacier): 9:00 AM to 3:00 PM Exit Glacier (to Seward): 10:30 AM to 5:30 PM	1 hour	1	9

Figure 15: Potential Shuttle Route between Downtown Seward and Nature Center

Source: NPS, Volpe



Route

This route spans between downtown Seward and the Exit Glacier Nature Center. The drop-off/pickup location could be in downtown Seward or at a parking lot on the Seward Highway next to the Chamber of Commerce, located approximately 10 miles from the Nature Center, or a 20-minute drive.

Scheduling and Frequency

This service would leave from downtown Seward starting at 9:00 AM and offer service to the park until 3:00 PM. Return service would begin operating at 10:30 AM, with the last shuttle leaving the Nature Center at 5:30 PM. Regular, reliable headways are important for this service model to ensure visitors are able to access the park without excessive delay or difficulty.

Table 2: Sample Timetable for the Seward to the Exit Glacier Area Shuttle Concept

Source: Volpe

Leave Seward Lot	Arrive at Nature Center	Leave Nature Center	Return to Seward Lot	Layover/Recovery
9:00 am	9:20-9:25 am	9:30 am (deadhead)	9:50-9:55 am	00:05, until 10:00 am
10:00 am	10:20-10:25 am	10:30 am	10:50-10:55 am	00:05, until 11:00 am
5:00 pm (deadhead)	5:20-5:25 pm	5:30 pm	5:50-5:55 pm	00:05, until 5:00 pm

Based on demand, less frequent service could be possible during non-peak hours in the middle of the day, such as 1.5-hour headways. With greater demand, two vehicles could allow for 30-minute headways at peak hours, particularly to address the demand for return trips at the end of the day.

In order to maximize capacity and avoid turning away passengers, reservations should be either required or recommended, with walk-ons available as capacity allows. For the return trip from the Exit Glacier Area back to Seward, reservations should be required to ensure all visitors are able to return to Seward prior to park closure at the end of the day. It is possible to allow visitors to take an earlier return shuttle than previously scheduled, if space allows. However, visitors should not expect to get on a later shuttle than scheduled.

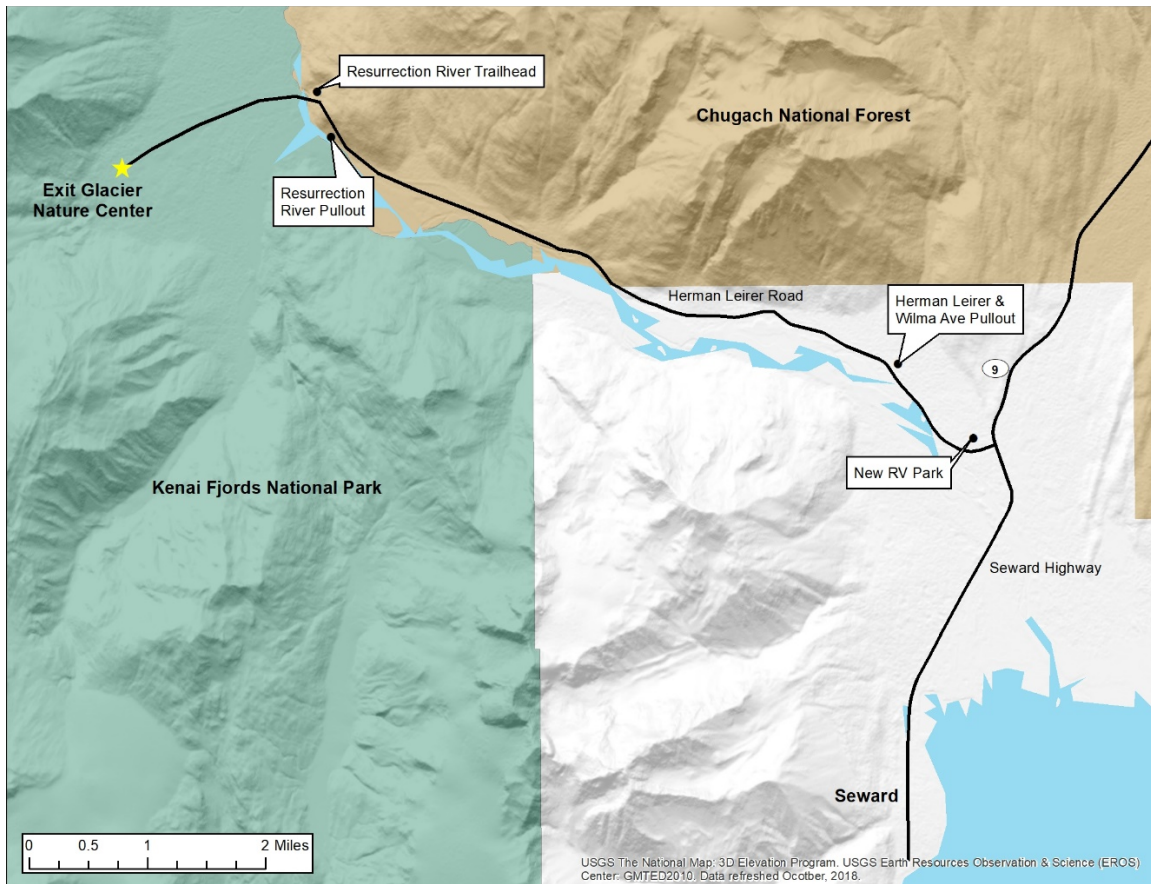
Concept 2: Park-and-Ride Shuttle for Congestion Management

This concept presents a range of scenarios for a transit shuttle between the Exit Glacier Area and an overflow lot located along Herman Leirer Road. This concept addresses the goal of providing parking capacity when the Nature Center parking lot fills up, but visitors would still need to drive to the overflow lot. No such park-and-ride service currently exists at the Exit Glacier Area.

During the site visit in August 2018, the project team visually identified five locations along Herman Leirer Road that could potentially serve as overflow parking lots (Figure 16). These are flat, open spaces that either serve as current parking lots or vehicle pull-offs. The project team has not evaluated the feasibility of these lots in terms of size or design. In addition, several of these locations are not on NPS-owned land, so they would require partnerships with other landowners along the road corridor.

Figure 16: Potential Sites for a Park-and-ride Lot along Herman Leirer Road

Source: NPS, Volpe



Route

The locations considered for the potential overflow sites are as follows:

- **Forest Service Resurrection River Trailhead Lot**
 - Distance: 1.6 mi from Nature Center, approximately 5-minute drive
 - Owned by: U.S. Forest Service
 - Challenges: This lot serves as the trailhead for the Resurrection River Trail, and overflow parking could conflict with this use. This lot would require a partnership with the Chugach National Forest.
- **Resurrection River Pullout**
 - Distance: 1.9 mi from Nature Center, approximately 5-minute drive
 - Owned by: U.S. Forest Service
 - Challenges: This lot serves as a popular vista point for the Exit Glacier. Overflow parking could conflict with this use. This lot would require a partnership with the Chugach National Forest.
- **Pullout at Herman Leirer Road and Wilma Avenue**
 - Distance: 7.4 mi from Nature Center, approximately 15-minute drive
 - Owned by: Alaska Department of Transportation

- Challenges: This lot would require a partnership with the landowner. It is also substantially farther from the Nature Center parking lot, so visitors would have to travel farther by bus, and the system would either have longer headways or require additional vehicles.
- New RV Park site at 31851 Herman Leirer Road
 - Distance: 8.3 mi from Nature Center, approximately 15-minute drive
 - Owned by: Private land
 - Challenges: This lot would require a partnership with the landowner. It is also substantially farther from the Nature Center parking lot, so visitors would have to travel farther by bus, and the system would either have longer headways or require additional vehicles.

During the site visit, the project team also considered the NPS campground site as a potential park-and-ride site. This site has the benefit of being close to the Nature Center parking lot, and it is owned by NPS. However, the team did not include it in this analysis, because it determined that the lot is too small to be effective for overflow parking, which would conflict with the existing use for the campground.

The utility of a park-and-ride service decreases as the frequency of headways decreases and distance from the Exit Glacier Area increases. Visitors will not likely want to wait at an overflow lot for a significant period of time, particularly if they were already travelling via personal vehicle. Thus, the Wilma Avenue and the New RV Park site may be less practical given that they are almost as far as the downtown Seward shuttle option.

Scheduling and Frequency

Under the park-and-ride scenario, the shuttle would not run on a posted schedule, but prioritize frequency of service. Signage would include expected wait times between shuttles and current wait time (if real-time data is available). Service would ideally be continuous, factoring in available vehicles and driver breaks. The service would likely run nonstop during peak hours, and on a more leisurely schedule during off-peak times, including driver breaks, etc. Timetables are just an estimate; the shuttle could achieve faster headways by scheduling driver breaks for non-peak demand times where possible.

Under this concept, visitors would arrive at the park-and-ride lot in their own vehicles, and will not have booked their trip ahead of time. Because of this, there may be peak times when the available service is not able to manage capacity. If this occurs and visitors are required to wait significant amounts of time for transit service, the park will need to consider how this may affect the visitor experience, and how to manage sharply peaked visitor demands.

The project team has developed timetables for each of the potential locations for a park-and-ride lot (Table 3). For each site, there is a fastest possible and a more conservative sample timetable. The fastest possible timetable represents the fastest that a continuous service is expected to be able to operate to meet peak demand, while the conservative estimates represent a slower pace that could be used for non-peak hours. These timetables are meant to serve as an example, but actual timing of the shuttle would vary based on demand and the speed of a continuously running system during peak hours. Note that, given their proximity, this analysis assumes approximately the same timing and pairs together the two Forest Service lots and the Wilma Avenue Pullout and new RV park site, respectively.

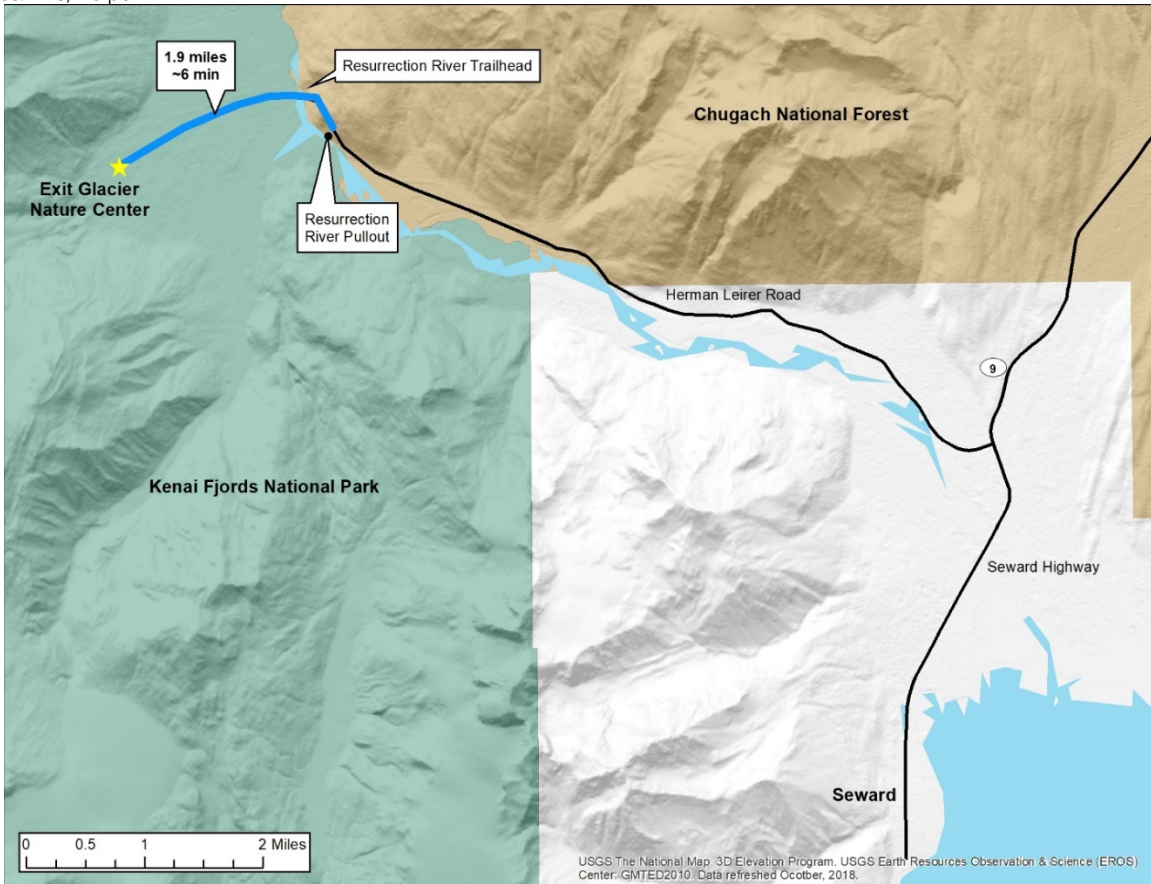
Table 3: Service Concepts for Park-and-ride Shuttle between Various Potential Sites and Nature Center

Source: Volpe

Service Concept	Hours of Service (headways)	Headway	Vehicles Required	Total Daily Service Hours
Scenarios 1 & 2: Overflow Lot Shuttle at FS Resurrection River Trailhead/Resurrection River Pullout	FS Resurrection River Trailhead/Resurrection River Pullout (to Exit Glacier): 9:00 AM to 3:40 PM Exit Glacier (to Resurrection River Trailhead/Additional FS Lot): 10:30 AM to 4:50 PM	20 minutes	1	8.75
	FS Resurrection River Trailhead/Resurrection River Pullout (to Exit Glacier): 9:00 AM to 3:00 PM Exit Glacier (to Resurrection River Trailhead/Additional FS Lot): 11:15 AM to 5:15 PM	30 minutes	1	8.75
Scenarios 3 & 4: Overflow Lot Shuttle at Wilma Av/New RV Park Site	Wilma Ave/New RV Park (to Exit Glacier) 9:00 AM to 3:00 PM Exit Glacier (to Wilma Ave/New RV Park): 11:20 AM to 4:40 PM	40 minutes	1	8
	Wilma Ave/New RV Park Site (to Exit Glacier) 9:00 AM to 3:00 PM Exit Glacier (to Wilma Ave/New RV Park Site): 10:30 AM to 4:30 PM	1 hour	1	8

Figure 17: Potential Route from Forest Service Lots to Nature Center

Source: NPS, Volpe



Scenario 1 shows a service concept with one vehicle operating a route from an overflow lot at the Resurrection River Trailhead or other Forest Service Lot to the Exit Glacier Area on 20-minute headways, requiring 8.75 daily service hours. The 20-minute headway is considered the fastest possible route for this distance assuming a five-minute drive time and five-minute layover time on each end. The first departure from downtown Seward is at 9:00 AM, and the last departure is at 3:40 PM. The first departure from the Exit Glacier Area is at 10:30 AM, and the last departure is at 4:50 PM. This frequent service allows for a variety of visit lengths that should accommodate most visitors.

Table 4: Fastest Possible Sample Schedule for Park-and-ride Shuttle between Forest Service Lots and Nature Center

Source: Volpe

Leave Forest Service Lot	Arrive at Nature Center	Layover/Recovery	Leave Nature Center	Return to Forest Service Lot	Layover/Recovery
9:00	9:05	00:05, until 9:10	9:10 (deadhead)	9:15	00:05, until 9:20

Scenario 2 shows a more conservative timetable with one vehicle operating a route from an overflow lot at the Exit Glacier Campground to the Exit Glacier Area on 30-minute headways, requiring 8.75 daily service hours. The 30-minute headway is considered a more conservative route for this distance assuming a five minute drive time and five to ten minute layover time on each end. The first departure from downtown Seward is at 9:00 AM, and the last departure is at 3:00 PM. The first departure from the Exit Glacier Area is at 11:15 AM, and the last departure is at 5:15 PM. This service allows for a variety of visit lengths that should accommodate most visitors.

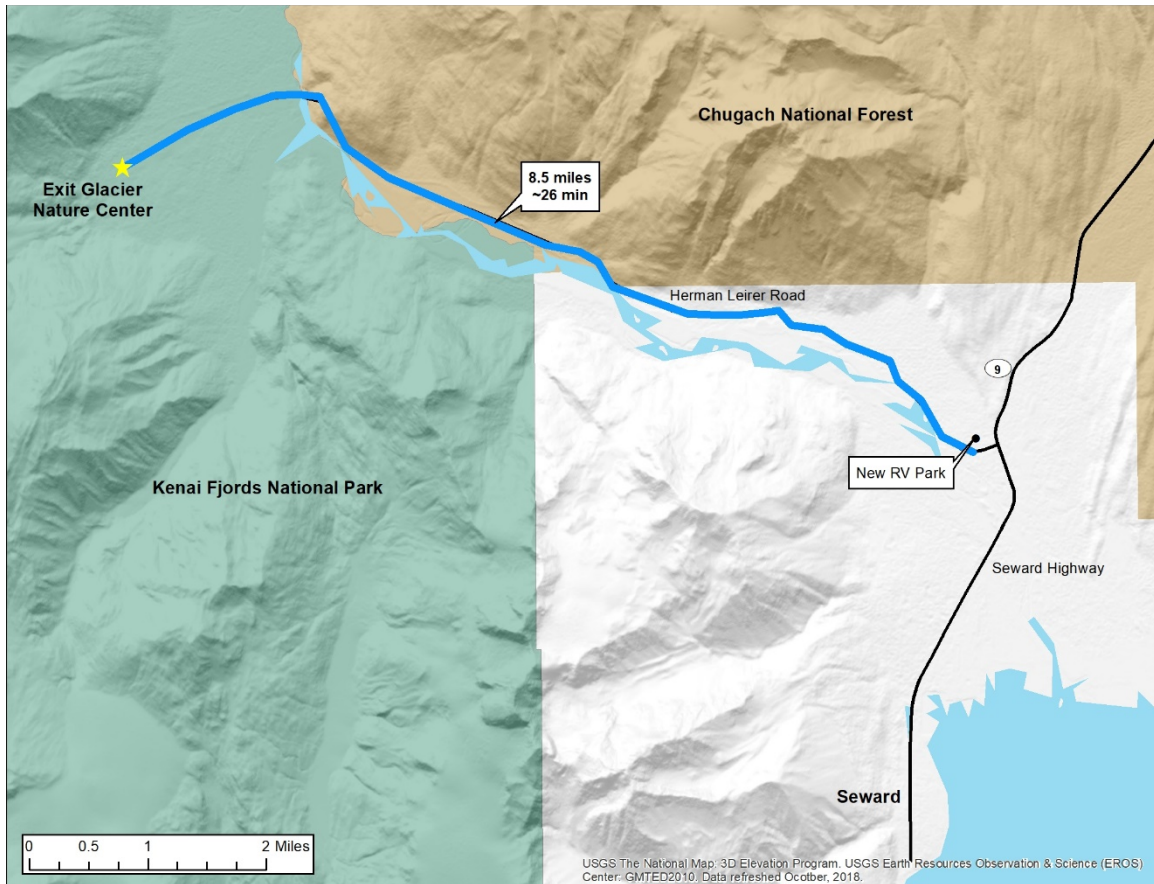
Table 5: Conservative Sample Schedule for Park-and-ride Shuttle between Forest Service Lots and Nature Center

Source: Volpe

Leave Forest Service Lot	Arrive at Nature Center	Layover/Recovery	Leave Nature Center	Return to Forest Service Lot	Layover/Recovery
9:00	9:05	00:10, until 9:15	9:15 (deadhead)	9:20	00:10, until 9:30

Figure 18: Potential Park-and-ride Shuttle Route from Wilma Ave/New RV Park Site to Nature Center

Source: NPS, Volpe



Scenario 3 details a service concept with one vehicle operating a route from an overflow lot at the Wilma Ave or New RV Park to the Exit Glacier Area on 45-minute headways, requiring eight daily service hours. The one-hour headway is considered the fastest possible route for this distance assuming a 15-minute drive time and five-minute layover time on each end. The first departure from downtown Seward is at 9:00 AM, and the last departure is at 3:00 PM. The first departure from the Exit Glacier Area is at 11:20 AM, and the last departure is at 4:40 PM. This service allows for a minimum visit length of 40 minutes, with visit lengths of one hour and 20 minutes or two hours likely to accommodate most visitors.

Table 6: Fastest Possible Sample Schedule for Park-and-ride Shuttle between Wilma Ave/New RV Park Site and Nature Center

Source: Volpe

Leave Wilma Ave or New RV Park	Arrive at Nature Center	Layover/Recovery	Leave Nature Center	Return to Wilma Ave or New RV Park	Layover/Recovery
9:00	9:15	00:05, until 9:20	9:20 (deadhead)	9:35	00:05, until 9:40

Scenario 4 shows a more conservative timetable with two vehicles operating a route from an overflow lot at the Exit Glacier Campground to the Exit Glacier Area on one-hour headways, requiring nine daily service hours. The 45-minute headway is considered a faster route for this distance assuming a 15-minute drive time and 35-minute layover time at the shuttle lot. The first departure from the overflow lot is at 9:00 AM, and the last departure is at 3:00 PM. The first departure from the Exit Glacier Area is at 10:30 AM, and the last departure is at 4:30 PM. This allows for a minimum visit length of one hour, with a one to two hour visit length accommodating most visitors.

Table 7: Sample Schedule for Conservative Pace Park-and-ride Shuttle between Wilma Ave/New RV Park Site and Nature Center

Source: Volpe

Leave Forest Service Lot	Arrive at Nature Center	Layover/Recovery	Leave Nature Center	Return to Forest Service Lot	Layover/Recovery
9:00	9:15	00:15, until 9:30	9:30 (deadhead)	9:45	00:15, until 10:00

Transit Business Models

Overview

There are several potential business models that by which KEFJ and/or a partner entity could operate a transit shuttle to the Exit Glacier Area. This report defines a business model as the system that delivers an effective transportation offering to its users. This particular *system* is comprised of several critical components. The following section presents the key business model components in the context of this study, which are based on the general business model components described in the Business Model Canvas¹ and the

¹ Business Model Generation

<https://books.google.com/books?id=L3TnC7ZAWAsC&dq=business+model+canvas+osterwalder&lr=>

Value Mapping Tool.¹ The project team has contextualized these components for the Exit Glacier Summer Transportation Feasibility Study.

Business Model Components

Purpose

Purpose is the reason why a particular organization, offering, service, or product exists. In the context of this study, the purpose of a KEFJ transportation offering is to provide public access to the Exit Glacier Area while protecting park resources. This purpose aligns with the KEFJ Foundation Statement presented in the KEFJ Overview and Setting section above. Business models are complex systems that often involve the interests of multiple organizations and groups of people. An organization that designs a business model without thoroughly revisiting or establishing its purpose and that of its potential offering runs the risk of straying too far from its originally intended purpose and goals.

Stakeholder Value Propositions

Stakeholders are organizations and individuals that have an interest or stake in the transportation offering. Value propositions are the benefits that a transportation offering may provide for its stakeholders.

Value Propositions to User Segments

User segments are categories of park visitors with shared characteristics who adopt the transportation offering. Here we explore value propositions to user segments first for the transit shuttle offering and then for the park-and-ride offering.

For the transit shuttle, potential user segments include out-of-town visitors without access or desire to drive, local visitors without access or desire to drive, and out-of-town or local visitors who learn pre-departure that the Nature Center lot is full. The following table offers specific examples of users within these user segments, as well as examples of potential value propositions to each user segment.

¹ A value mapping tool for sustainable business modelling
<https://www.emeraldinsight.com/doi/abs/10.1108/CG-06-2013-0078>

Table 8: Transit Shuttle Value Propositions to User Segments

Source: Volpe

User Segments	Specific User Examples	Value Propositions to User Segments
Out-of-town visitors without access or desire to drive	<ul style="list-style-type: none"> Day visitors arriving to Seward via cruise ship or railroad RV drivers that want to leave their RV in its parking spot 	<ul style="list-style-type: none"> Ability to access the park without the hassle of acquiring a car (e.g., rental) or moving a parked vehicle Comfortable and worry-free journey from origin to destination Opportunity to fully take in the scenery Opportunity to use journey time to prepare for Exit Glacier visit (e.g., review maps, adjust hiking boots, etc.)
Local visitors/staff without access or desire to drive	<ul style="list-style-type: none"> Park staff interested in lowering personal GHGs School groups Teenagers 	<ul style="list-style-type: none"> Alternative transportation mode to lower personal GHG emissions Ability to visit the Exit Glacier Area without a vehicle or driver's license Opportunity to fully take in the scenery Opportunity to use journey time to prepare for Exit Glacier arrival (e.g., use smart phone, review maps, etc.)
Out-of-town or local visitors who learn pre-departure that the Nature Center lot is full	<ul style="list-style-type: none"> Visitors who proactively seek info about the lot via phone, app, website Visitors who receive information from their hotel/accommodation or from an ITS variable messaging sign that lot is full 	<ul style="list-style-type: none"> Time saved by opting for shuttle versus driving to Exit Glacier only to be turned away or circle for parking Ability to access Exit Glacier even though the lot is full Freed up bandwidth that would otherwise be used driving and parking

For the park-and-ride service concept, potential user segments include out-of-town or local visitors who learn pre- or post-arrival that the Nature Center lot is full.

Table 9: Park-and-ride Value Propositions to User Segments

Source: Volpe

User Segments	Specific User Examples	Value Propositions to User Segments
Out-of-town or local visitors who learn pre-arrival that the Nature Center lot is full	<ul style="list-style-type: none"> • Visitors who proactively seek info about the lot via phone, app, website • Visitors who receive information from something like an ITS variable messaging sign 	<ul style="list-style-type: none"> • Time saved by opting for overflow parking lot and park-and-ride shuttle versus driving the extra distance only to be turned away or have difficulty parking
Out-of-town or local visitors who learn post-arrival that the Nature Center lot is full	<ul style="list-style-type: none"> • Visitors who are turned away at the parking lot entrance • Visitors who circle the lot unsuccessfully 	<ul style="list-style-type: none"> • Relief that they don't have to park their vehicle in an unsafe way

While brainstorming the value propositions to various user segments, it is important to realize that not all the value generated by the offering is positive. Each user segment will likely have some negative experiences that stem from the offering as well. It is important to think through those potential negative experiences while formulating value propositions.

In the case of the park-and-ride for example, the service needs to be frequent enough to realize the value propositions presented above (e.g., time saved). If the service is too infrequent, users will likely be overwhelmed by negative experiences such as long waits. The park-and-ride needs to be designed to truly create value for the visitors (i.e., meet their needs).

Value Propositions to Key Partners

Key partners are the organizations and individuals that work directly with the park in order to support a transportation offering. It is possible to imagine a number of different partners and value propositions to those partners. Tables 10 and 11 list potential value propositions for partners below.

Table 10: Transit Shuttle Value Propositions to Potential Key Partners

Source: Volpe

Key Partner	Value Propositions to Key Partners
Exit Glacier Guides	<ul style="list-style-type: none"> • Potential opportunity to increase ridership for transit service • Potential for increased revenues
New transit operator	<ul style="list-style-type: none"> • Potential business opportunity
City of Seward	<ul style="list-style-type: none"> • Opportunity to enhance ridership of existing town transit shuttle • Opportunity to increase access to Exit Glacier for residents (improving quality of life) • Potential to enhance tourism experience in Seward, boost tourism economy

Table 11: Park-and-ride Value Propositions to Key Partners

Source: Volpe

Key Partner	Value Propositions to Key Partners
Transit operator	<ul style="list-style-type: none">• Potential business opportunity

Owner-operator Models

There are several owner-operator models that are relevant for this study. Owner-operator models are typical ways that NPS chooses to partner with external entities or proceed independently to deliver a transportation solution. Owner-operator models can be characterized based upon who is ultimately liable for providing service and who is liable for managing and covering associated costs. 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. The descriptions of the owner-operator models that are most relevant for the transit shuttle and the park-and-ride are provided here.

Non-NPS-owned, Non-NPS-operated Commercial Use Authorization

CUAs are owner-operator models in which a unit approves a private entity to operate within park boundaries. The park may limit the private entity's 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 next owner-operator model described). The private operator submits an application and annual application and maintenance fees, and the unit and the private operator agree on terms of use and cost recovery ([current information on KEFJ CUA fees available here](#)). 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 a 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.

Non-NPS-owned, Non-NPS-operated Concessions Contract

NPS 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 has 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.

The NPS website provides information about the law, regulation, and policy governing concessions contracts on its [Concessions: Law, Regulation, and Policy webpage](#).

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 another 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 past and present cooperative agreements with regional transportation authorities, public transit systems, or other not-for-profit partners include those at 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 used 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 operations and maintenance activities using fees authorized under the Federal Lands Recreation Enhancement Act (FLREA), transportation fees, partner funding sources, or base funds.

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 offering limited transit systems with a few small vehicles. Eugene O'Neill National Historic Site, Kennesaw Mountain National Battlefield, Pinnacles National Park, and Scotts Bluff National Monument are a few examples of units that have implemented this owner-operator model.

KEFJ is not considering a NPS-owned and NPS-operated model; the park is interested in supporting business opportunities for private entities rather than running a transit system.

Lifecycle Costs

Lifecycle costs are all the financial expenses required in order to provide a transportation offering over the long term. These costs can be divided into the following categories:

- Capital Costs (transit vehicle purchase and replacement)
- Operating Costs (driver labor and fuel costs)
- Maintenance Costs

To model life-cycle transit system costs, the project team used the Department of the Interior Bus Lifecycle Cost Model¹ with the following inputs. The team modeled Service

¹ <https://www.volpe.dot.gov/transportation-planning/public-lands/department-interior-bus-and-ferry-lifecycle-cost-modeling>

Concept 1, the transit shuttle from Seward; other service concepts could be modeled with changes to the total mileage, service hours, and/or number of vehicles and drivers.

Table 12: Summary of Constant Inputs, Passenger Van Option

Source: Volpe

Category	Input	Value
Vehicle, Service, Driver, and Environment	Vehicle type	Full-size passenger van
	Vehicle price	\$25,000 - \$50,000 (see Appendix A)
	Number of Vehicles	1
	Passenger Capacity per Vehicle	12
	Start-up costs	\$10,000
	Marketing costs	\$5,000/year
	Expected vehicle service lifespan	7 years
	Driver hourly wage	\$30
	Road conditions	Good
	Inflation rate	3.5%
Basic Schedule	Annual service days	153 (May 1 – Sept. 30)
	Daily round trips	9
	Miles per round trip	20
Operations and Maintenance	Maintenance costs per mile	\$0.60
	Fuel economy	14 mpg
	Fuel cost per gallon	\$4.00

Table 13: Summary of Constant Inputs, Cutaway Shuttle Option

Source: Volpe

Category	Input	Value
Vehicle, Service, Driver, and Environment	Vehicle type	Light-Duty Shuttle
	Vehicle price	\$70,000 - \$200,000 (see Appendix A)
	Number of Vehicles	1
	Passenger Capacity per Vehicle	28
	Expected vehicle service lifespan	12 years
	Start-up costs	\$10,000
	Marketing costs	\$5,000/year
	Driver hourly wage	\$30
	Road conditions	Good
	Inflation rate	3.5%
	Basic Schedule	Annual service days
Daily round trips		9
Miles per round trip		20
Operations and Maintenance	Maintenance costs per mile	\$0.60
	Fuel economy	14 mpg
	Fuel cost per gallon	\$4.00

Based on the inputs above, this service concept with a 12-person passenger van would cost approximately \$600,000 over the seven-year lifespan of the vehicle, or approximately \$85,700 per year. If the vehicle ran at full capacity, that would equal a per passenger cost of \$5.20. The same service concept with a cutaway shuttle bus would cost approximately \$1.38 million over the 12-year lifespan of the vehicle, or approximately \$115,000 per year. If the vehicle ran at full capacity, that would equal a per passenger cost of \$3.01. As discussed in the Appendix A: Vehicle Recommendations section, KEFJ or a transit operator should select a vehicle size based on the anticipated or measured demand for service. However, if demand exists for a larger vehicle, the per passenger cost of the cutaway shuttle bus would make it more cost efficient.

Funding Mechanisms

There are several potential ways that parks can finance transportation offerings. From the point of view of a National Park like KEFJ, these can be categorized into internal and external sources. Examples of internal sources of funding are the Federal Lands Highway Program (FLHP) and park unit base funds. An example of an external source of funding is the FTA Formula Grants for Rural Areas (5311). It is important to note that for many of the external sources of funding, such as the Federal Lands Access Program (FLAP) and 5311, grant recipients must be state or local public agencies to be eligible. However, state and local agencies can select a non-profit or rural transit provider as a sub-recipient. In order for KEFJ to access some of the external sources presented below, KEFJ may have to enter into a partnership with a state or local agency to provide the transportation offering.

Internal Funding Sources

Federal Lands Transportation Program (FLTP)

Under the Federal Lands Transportation Program (FLTP), Regions get a certain amount of funding each year, which can be spent on transportation systems owned by NPS. In recent years, FLTP has provided annual funds averaging \$6.5 million to the Alaska Region for both Cat I (roads and bridges) and cat III (alternative transportation) projects. FLTP funds can be applied to transit at the Region's discretion; however, a transit use would compete with uses for roads, bridges, and trails throughout the state.

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 another 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 caps or limits to transportation fees. Costs of comparable services are used to justify transportation fees for approval.

Base Funds

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

External Funding Sources

The following examples of external funding are those that have been determined most relevant for KEFJ. Some focus on rural federal lands and have been selected because of KEFJ's rural location.

Federal Lands Access Program (FLAP)

FLAP provides funds for projects to improve Federal Lands Access Transportation Facilities that provide access to, are adjacent to, or are located within federal lands. This can include public roads, bridges, trails, or transit systems that are owned and/or maintained by the

state, county, town, township, tribal, municipal, or local government. Funds may be used for the costs of transportation planning, research, engineering, preventative maintenance, rehabilitation, restoration, construction, and reconstruction of transportation facilities.

FLAP funds are awarded through Calls for Projects in each state. In Alaska, the Project Decision Committee that makes final funding decisions is composed of representatives from the FHWA WFL, and the Alaska Municipal League. In Alaska, FLAP funds approximately \$8 million per year. FLAP projects require a non-Federal match of approximately 10%, which can be paid for with local agency funds or with NPS FLTP funds.

Applicable activities include the operation and maintenance of transit facilities that operate within, adjacent to, or provide access to federal lands. Although there have not been any FLAP projects to date that support transit in Alaska, there have been successful transit projects in other states, including the Columbia River Gorge Express in Oregon (operated by the Oregon Department of Transportation) and the Gorge Translink in Washington (operated by Skamania County Transit Services in Washington).

More information about FLAP can be found at the [FHWA FLAP website](#) and this [NPS factsheet on FLAP](#) for parks.

FTA Formula Grants for Rural Areas (5311)

The 5311 program provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations of less than 50,000. 5311 funds are apportioned to State DOTs and tribal governments. Subrecipients may include local government authorities, nonprofit organizations, and operators of public transportation or intercity bus service. This program also provides technical assistance to rural areas through the Rural Transit Assistance Program.

5311 funds can fund capital projects (such as bus purchase), with a maximum Federal share of 80%. 5311 funds can fund operating expenses with a maximum Federal share of 50%. In fiscal year 2018, Alaska received \$98,756 in 5311 funds.¹

Because of the public transportation focus of 5311 funds, these funds are most applicable to transit systems that provide general rural transit services, rather than systems that solely provide recreational access to park sites. This is something that is important for KEFJ to consider if they decide to apply for 5311 funds to introduce a potential transit shuttle from Seward to the KEFJ Nature Center. For a transit shuttle to be competitive for this program, it would have to provide meaningful transit access for community members, not just recreational access to the KEFJ Exit Glacier.

More information about 5311 and other FTA funding programs can be found in the [NPS factsheet on FTA funding](#) for parks.

¹ <https://www.transit.dot.gov/funding/apportionments/table-9-fy-2018-section-5311-and-section-5340-rural-area-formula>

Fares or Cross-Subsidies

Private entities operating transportation systems for which NPS is not liable commonly charge fares. In some cases, a transit operator may provide variety of visitor services – such as interpretive tours – and subsidize transit service with profits from the other services. However, there have been few such concessionaires with this ability, and cross-subsidies have been uncommon.

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, it is important to state the caveat that arrangements like this are uncommon.

Summary of Business Model Components

Table 14: Business Model Components of the Study

Source: Volpe

Component	Definition	Examples Presented Above
Purpose	The purpose is the reason why a particular organization, service, product, etc. exists	<ul style="list-style-type: none"> • Purpose of a KEFJ transportation offering is to provide public access to the Exit Glacier Area while protecting park resources.
Value propositions to stakeholders	<p>The value propositions are the benefits that an organization promises that its transportation offering will have for various stakeholders; stakeholders are organizations and individuals that have an interest or stake in the transportation offering. Specific categories have been defined above:</p> <ul style="list-style-type: none"> • User segments (Section 1.2.2.1) • Key partners (Section 1.2.2.2) • Additional stakeholders (Section 1.2.2.3) 	<p>For transit shuttle users:</p> <ul style="list-style-type: none"> • Ability to visit the Exit Glacier Area without a vehicle or driver's license • Alternative transportation mode to lower personal greenhouse gas emissions • Opportunity to fully take in the scenery <p>For park-and-ride users:</p> <ul style="list-style-type: none"> • Time saved by opting for overflow parking lot versus circling to park • Relief that they don't have to park their vehicle in an unsafe way <p>For transit operators:</p> <ul style="list-style-type: none"> • Potential business opportunity
Owner-operator model	Owner-operator models are typical ways that NPS chooses to partner with external entities or proceed independently to deliver a transportation solution	<ul style="list-style-type: none"> • Non-NPS-owned, non-NPS-operated commercial use authorization • Non-NPS-owned, non-NPS-operated concessions contract • Non-NPS-owned, non-NPS-operated cooperative agreement • Non-NPS-owned, non-NPS-operated service contract • NPS-owned, non-NPS-operated service contract • NPS-owned, NPS-operated
Lifecycle costs	Lifecycle costs are all of the financial expenses that are incurred in order to provide a transportation offering	<ul style="list-style-type: none"> • Capital costs • Operations costs • Maintenance costs
Funding mechanisms	Funding mechanisms are the means by which the lifecycle costs of the transportation offering are financed.	<ul style="list-style-type: none"> • Internal • External

Example Business Models for Exit Glacier Business Model Examples

The following subsections offer examples of business models for the two transit concepts described above (transit shuttle from Seward and park-and-ride shuttle).

Commercial Use Authorization for Exit Glacier Guides

As described above, CUAs are owner-operator models in which a unit approves a private entity to operate within park boundaries. There are a number of ways that a business model for the transit shuttle that operates with the commercial use authorization could evolve, but for the purposes of this analysis, we will assume that a private business like the existing CUA holder, Exit Glacier Shuttle, would run the shuttle. Building from this premise and some of the business model components presented above, this potential business model would likely involve the following:

- **Least change from current situation as an existing CUA holder already serves this route.** This potential business model would maintain the existing transit system as currently operated by Exit Glacier Shuttle. This model aligns relatively well with the purpose of the KEFJ transportation offering to provide public access to the Exit Glacier Area while protecting park resources.
- **Partnership with the transit operator and the City of Seward to promote the transit shuttle through an information campaign.** It is important for KEFJ to consider and clarify a value proposition to the City of Seward in securing their partnership on a publicity campaign. For example, the transit shuttle could enhance the Seward experience for both local residents and tourists, and boost the tourism economy.
- **Partnerships with City of Seward and/or RV Parks to provide discounts to shuttle users who can demonstrate that they have left their RV parked in a Seward lot.** Again, it is important for KEFJ to consider and clarify the value propositions to these potential partners. Parked RVs might increase safety and reduce traffic in Seward. Taking a shuttle may also be an attractive proposition to RV drivers, who would not have to mark their parking spot and would save fuel by not driving to Exit Glacier.
- **Partnership with City of Seward to design and promote seamless links to city transit system.** Seamless links to the city transit system could improve general mobility in Seward and support the local economy.

Cooperative Agreement with City of Seward

As described above, cooperative agreements are situations when a park unit enters into an agreement with a not-for-profit partner such as a regional transportation authority, a municipal government, a public transit system, or another partner to provide transportation to visitors. Under this model, NPS shares liability with the partner for providing and/or paying for service. Again, it is important to note that there are a number of ways that a business model based on a cooperative agreement with the City of Seward could evolve. The following list presents potential considerations:

- **Considerable change from current situation as there is no City of Seward transit shuttle that currently serves this route.** While this business model would likely require the expansion of the City of Seward shuttle services and potentially the acquisition of a new vehicle or vehicles, strong ridership of a Seward to Exit Glacier shuttle might displace vehicles from the roads. Further research is required to understand how this business model aligns with the purpose of the KEFJ transportation offering to provide public access to the Exit Glacier Area while protecting park resources.

- **Partnership with City of Seward Chamber of Commerce to promote the transit shuttle through local businesses.** It is important for KEFJ to consider and clarify the value proposition of potential partnerships between the City of Seward transit shuttle and the City of Seward Chamber of Commerce and local businesses. For example, the City of Seward transit shuttle might discount the cost of a shuttle ticket with proof of purchase at a local business, and local businesses might offer retail discounts with proof of purchase of a shuttle ticket to Exit Glacier.
- **Partnerships with RV Parks to provide discounts to shuttle users who can demonstrate that they have left their RV parked in a Seward lot.** As discussed for the previous business model, parked RVs might increase safety and reduce traffic in the City of Seward. They may also be attractive to RV drivers for providing a convenient alternative to moving their RV.

Potential Business Model for a Park-and-Ride Shuttle

Service Contract

As described above, in this owner-operator model, a park unit takes responsibility for providing and paying for transportation service and contracts out ownership and operations. The following list presents potential considerations for a park-and-ride business model initiated through a service contract:

- **Considerable change from current situation as there is no designated Exit Glacier overflow parking lot with park-and-ride shuttle service to the Nature Center parking lot.** This business model might result in increased traffic along Herman Leirer Road and disruption to the location identified as a potential overflow lot (e.g., increased noise and traffic). Further research is required to understand how this business model aligns with the purpose of the KEFJ transportation offering to provide public access to the Exit Glacier while protecting park resources. One challenge to the business model for the park-and-ride scenario is that it may face unpredictable demand; riders will typically only use the shuttle when the Nature Center lot is full, since the shuttle does not provide full transit access from Seward. This may make it difficult for a transit operator to derive reliable income from the service, and the operator may require service contract funding from NPS to ensure a viable income stream. In addition, the service may face a challenge of heavily peaked demand, which may require an operator to have excess vehicle capacity during non-peak visitation times in order to avoid excessive wait times during peak periods.

Business Model Innovation

Business models change over time. They often must change in order to stay viable. KEFJ and its partners should revisit their business models regularly to understand whether or not they are keeping true to their purpose(s) and realizing the value propositions they intended for various stakeholders.

Multi-modal Transportation

There is significant interest from the public to have alternative forms of access to Kenai Fjords. At times of peak visitation many residents refrain from visiting the park by car, and don't feel comfortable walking or riding a bicycle on Herman Leirer Road. There is a desire

by many residents to access the park by bicycle. A 2010 multi-modal transportation study suggested a trail connecting Seward Highway with the Exit Glacier visitor area.

The total length of the proposed trail is 8.2 miles. Milepost 7.3-8.2 is located on National Park Service land and if the National Park Service were to fund construction of the first 0.9 miles of the trail within park boundaries, the U.S. FS and other partners may agree to continue its construction towards Seward. As of now, there is no pedestrian connection between the Exit Glacier campground and Nature Center, and no opportunity to explore the area surrounding the park. In addition to initiating the first section of trail, a new connection would link the NPS campground, the Forest Service Resurrection River Trailhead, and the Resurrection River Pullout (a photo point for Exit Glacier). These parking lots serving the neighboring federal lands are currently isolated and limit shared access.

A multi-use path would also provide all-season opportunities for access. In winter, the path would serve as a place to cross-country ski, snowshoe, or dogsled. During the winter, NPS closes the road to passenger vehicles, and local residents and visitors often use the closed roadway for snow machine and winter non-motorized access to Exit Glacier. However, a multi-use path would make it possible to separate motorized and non-motorized winter travel.

In addition to the multi-use path, or until the path is constructed, safety improvements along the highway are in high demand. During meetings with stakeholders and the public, the project team heard that residents and visitors do not feel safe using the roadway for walking or bicycling in the summer when the visitation to the park is at its peak. This is unfortunate, because the threat of conflict with motor vehicles greatly discourages use of one of the most scenic roadways in the area, and there are limited options in the region for on-pavement exploration by bicycle. It will likely be many years before funding and construction of a true multi-use trail, but the following improvements would make a more welcoming user experience:

- Widened shoulders on the roadway to ensure that walkers and cyclists are further buffered from traffic;
- Rumble warning strips on the edge of the road and centerline communicate to drivers and recreationists that a vehicle has veered out of the lane; and
- Clearing of vegetation can improve visibility and safety.

KEFJ should also consider how future motorized and non-motorized mobility trends may impact the Herman Leirer Road in the future. Communities across the U.S. are seeing a rise in new, motorized options such as electric bicycles (e-bikes), electric scooters, electric skateboards, and other small electric vehicles. Electric options have extended the range that is possible in a single trip. Electric bikes and scooters are often operated through a dockless sharing model, in which private companies deploy and maintain fleets of Global Positioning System (GPS)-enabled bicycles and scooters that riders can unlock and pay for with a smart phone and ride to their destination. These services have changed many users' perceptions of how to get around and what distances are feasible to travel by bike or scooter. Although there is currently no bicycle or scooter share in Seward, which is unlikely to be a large enough community to support such a service, conditions may change as business models and technologies evolve. In addition, a private company could choose to offer e-bikes through a more traditional day or half-day rental model; a similar service has

become popular for visitors in Skagway, Alaska, who ride e-bikes to the Dyea unit approximately 10 miles away.

As the distribution and popularity of e-bikes and scooters grows, they may start appearing on Herman Leirer Road. Although the future of bike sharing, scooters, and other mobility trends in Seward is currently unknown, it is important for KEFJ to consider how emerging modes could change visitor expectations and behaviors along a potential future multi-use path. KEFJ and other partners should consider current or future policies regarding motorized modes such as e-bikes and scooters, and whether they would be allowed to use a multi-use path. Likewise, the park should consider and monitor demand for bicycle parking and other related infrastructure at the Exit Glacier Nature Center. Although these modes may create a policy challenge, they can also present an opportunity; e-bikes would make the 10-mile trip to the Exit Glacier Nature Center approachable for a larger number of visitors than traditional bicycles and could expand access to the Nature Center through means other than a private vehicle. This could, in turn, reduce demand for vehicle parking at the Nature Center parking lot.

Transportation Data

Additional data will assist decision-makers when considering future courses of action at the Exit Glacier Area. Substantial changes to the parking lot will require supporting data to make an informed decision and justify expenditure of funds. Likewise, implementation of a transit system will be aided by the continued collection and analysis of ongoing operations information. Collaboration with other owners of such information will ensure the system operates smoothly and interconnects efficiently.

Through the course of this study, the project team identified data needs that KEFJ should work to address by adding additional categories to the ongoing data collected for Herman Leirer Road and the Nature Center parking lot. Certain recommendations from the report may be contingent on achieving specific milestones and collecting accurate information will ensure that those actions are implemented at an appropriate time. A parking lot utilization study is a good first step to define current conditions. Possible data points include:

- Total number of vehicles entering the lot (annual and daily)
- Distribution of vehicles by type (e.g., number of buses, cars, and RVs)
- Distribution of vehicle parking over time (seasonal and weekly trends)
- Average vehicle speed
- Length of stay
- How often parking lot is at capacity and for what duration
- Time required to wait for a parking space
- Time of day parking typically fills up
- Estimated capacity exceedance (i.e., how many vehicles park in informal overflow spots or are unable to find a parking space?)

It is important to develop an understanding of demand on the current transit system as well as demand for a transit system that connects to Exit Glacier. KEFJ should work with the City of Seward, its shuttle system contractor (Seward City Tours), and the Exit Glacier Shuttle to collect and share data regarding transit use in Seward and to Exit Glacier. This data should include:

- Frequency of service
- Capacity of service

- Number of riders daily and annually
- Peak demand periods
- Inquiries into service (to gauge interest)
- Rider surveys
- Rider origin (cruise ship, train, RV park, etc.)

There are several data needs at the outset of a new transit system. A good understanding of the initial demand and a clear plan for data collection will help establish a baseline of operations when adjusting frequency of service and/or fleet vehicles. Additional data that will help with the planning of a transit system include:

- Number of potential riders staying in the campgrounds
- Number of RV visitors to Seward each year
- Number of overnight hotel stays, with and without a car if possible
- Visitor projections (cruise ship dockings, campground and hotel reservations, trend analyses)
- Private tour operator capacity

Seward tourism data and visitation information should be quantified to the extent possible. Not all such information is available. Efforts to collect such data may be undertaken by the office of tourism, Chamber of Commerce, or the City of Seward. Data collection to support a transit system is more than just a partnership opportunity; it relies on an effective partnership with the transit provider. Data to be collected in this arena include:

- Total number of hotel beds
- Occupancy rate
- Number of visitors by car vs. cruise ship vs. RV vs. train
- Number of visitors coming off ship and transferring directly to train (and vice versa)

Traveler Information

Transportation data collected above will help with the dissemination of information to park visitors. Although KEFJ provides general transportation information on its website and brochure, there is currently no system in place to provide real-time information on the status of the Nature Center parking lot or other transportation information. The current lack of mobile network coverage creates difficulties for travelers and for NPS operations and is a constraint on any future sharing of real-time information. However, KEFJ should consider opportunities to provide real-time information – either by establishing seasonal cell phone service at the Exit Glacier Nature Center or through other strategies.

Real-time traveler information is often referred to as ITS and is useful in communicating useful information for trip planning. A very common form of ITS, and likely the most useful for Exit Glacier, is variable messaging signage that could be placed in Seward or along the Herman Leirer Road corridor. The variable messaging sign would have to be updated with parking lot status, either manually by KEFJ staff or through “smart” technology, such as traffic counters or video cameras that can track the number of vehicles and empty spaces in the lot. This information could then be sent to variable messaging signs, the KEFJ website, and/or visitor apps. One example of a parking management system in a national park

setting is Cape Cod National Seashore, which uses traffic counters to provide real-time monitoring of parking lot capacity to the public.¹

Recommended information for collection and dissemination includes:

- Number of open parking spaces
- Wait time for a parking spot
- Visitor surge times
- Next available bus (if applicable)
- Drive time to the Nature Center
- Weather conditions

In addition to ITS, some basic signage and wayfinding changes for the park can help reduce visitor confusion. Similar signage treatments along Herman Leirer Road and in the City of Seward will help with navigation to the park or interconnected transportation. These strategies could include:

- Clearly marked bus stops and parking
- Pictogram vs. text on directional signage
- Large markings on the ground that coincide with signage
- Bicycle route signage
- RV parking information
- Safety information

A final issue with traveler awareness involves managing the information disseminated to tourists. During the August 2018 site visit, the project team noticed that information related to transportation to Exit Glacier was inconsistent, and staff at many local businesses – such as hotel desk staff – lacked knowledge of existing transit offerings. KEFJ could work with the City of Seward, the Seward Chamber of Commerce, local transit operators, and other local businesses to develop more unified messaging regarding transportation options to Exit Glacier. This could also include online information and handouts to provide to hotel desk clerks and other local businesses.

Partnerships

Almost all considerations for improving transportation access to Exit Glacier noted above will require collaboration with public or private partners to be successful. For example, any infrastructure along the non-NPS-owned section of Herman Leirer Road to support multi-modal access, transit, or ITS would require approval and coordination with ADOT&PF and any other adjacent landowners, such as the U.S. FS or Alaska Department of Natural Resources (DNR). Because of the multiple jurisdictions along Herman Leirer Road and the variety of stakeholders in the City of Seward, KEFJ should consider opportunities to work with partners and leverage opportunities through those partnerships. Many of the operational or information-based strategies – such as providing incentives for RV users taking transit or marketing transit access to visitors in Seward – would also rely on partnerships with a private transit operator, the City of Seward, other local businesses, and the Seward Chamber of Commerce. Better coordinating transit schedules and routes to

¹ NPS. 2013. *Cape Cod National Seashore Parking Management System Pilot Synthesis*. <https://rosap.ntl.bts.gov/view/dot/12098>.

coincide with other major attractions or transportation nodes – such as the Sea Life Center, train arrivals, or cruise ships – could also make transit more appealing for visitors.

During the August 2018 site visit, City of Seward staff said that they were planning to convene a new transportation working group to address transportation issues in Seward. Although this group will likely focus on other community transportation challenges, it may also be a valuable forum for KEFJ to discuss ways to improve access to Exit Glacier. When working with this group, it will be important for KEFJ staff to frame discussions to be salient to community members in Seward, by focusing on the potential benefits for community residents and businesses.

Conclusion

The purpose of the Exit Glacier Area Transportation Feasibility Study is to evaluate the current transportation conditions at the Exit Glacier Area – including parking lot congestion and multi-modal access – and evaluate the feasibility of a range of potential infrastructure, operations, or traveler information actions to improve transportation conditions. To achieve this, the project team analyzed the following strategies to manage congestion:

- Parking Lot Infrastructure/Management (e.g., realignment/expansion or operations)
- Transit
- Multi-modal Transportation
- Data Needs
- Visitor Information
- Partnerships

Because many of these elements are interrelated, KEFJ may ultimately decide to pursue an approach that draws on multiple consideration areas.

KEFJ staff articulated the following desired conditions for transportation to the Exit Glacier Area:

- **Safety** for visitors of all transportation modes and KEFJ staff in the Nature Center Parking lot and along Herman Leirer Road.
- **Access** for all visitors regardless of mode or vehicle type.
- **Capacity** to meet visitor transportation needs.
- **Financial sustainability** of infrastructure, maintenance, and operations to ensure long-term success.
- **Environmental sustainability** with minimized impacts to sensitive resources.
- **Positive visitor experience** for visitors with a range of recreational opportunities.

This conclusion will consider the range of considerations above with regard to these desired conditions. It will also consider the timing and relative level of effort required for different actions or strategies, and highlight the potential for “quick wins” or a progression of actions as conditions change.

In addition, it is important to consider future uncertainty. KEFJ should monitor future visitation and parking conditions in the Exit Glacier area and develop responses appropriate to demonstrated need. Where possible, KEFJ should also pursue “actions of no regret,” which will be effective under a range of future visitation conditions.

Potential Sequencing of Congestion Management Strategies


Nature Center Parking Lot Infrastructure and Management

For the Nature Center parking lot, there are a number of relatively low-effort strategies that may help KEFJ manage or reduce congestion that would be less costly and have fewer impacts than expanding the Nature Center parking lot. In general, the park should employ these strategies first and evaluate their effectiveness; many of these strategies also can be implemented on a shorter timeframe and can be tried as pilots before being made permanent. Table 15 lists the potential parking lot strategies from lowest to highest efforts. The items closer to the top of the table represent relatively “quick wins” that the park

could implement quickly, with limited cost, while the strategies near the bottom would require more substantial effort and investment.

Table 15: Summary of Nature Center Parking Lot Considerations, from Lowest to Highest Effort

Source: Volpe

Sequencing	Strategy	Notes
<p>Low-effort / "Quick wins"</p> 	Operations / Parking Management	Continue to use seasonal parking attendants to direct visitors to available parking spots. Develop a parking management plan at the beginning of each season for use during high congestion. Monitor, evaluate, and adjust as necessary.
	Signage / Wayfinding	Redesign signage and pavement markings to better communicate how to navigate the parking lot.
	Parking Monitoring / Capacity Analysis	Collect and analyze data to quantify parking demand and inform future management of the parking lot. See Transportation Data section for more information.
	Reallocate spaces between vehicle types (RVs and cars) within the existing parking lot footprint	By painting a stripe through the middle of an RV spot, KEFJ could turn one RV spot into two car spots. This would increase the total vehicle capacity of the lot, although it may lead to more parking challenges for RVs.
	Minor parking lot expansion	By formalizing the current informal parking along the shoulders of the current parking lot, KEFJ could increase the formal parking capacity of the lot. This would require an expansion of the footprint, however, and would require the park to develop and maintain a new gravel shoulder at the new pavement edge.
	Substantial parking lot expansion	KEFJ could begin feasibility studies and planning for a substantial parking lot expansion. This option would require several years to implement, requiring planning, design, and environmental review prior to construction. It would also have a substantial cost and would require long-term maintenance of the additional parking lot area. A future study would be required to estimate its cost, as well as evaluate its potential impacts on natural and cultural resources and the visitor experience.
High-effort / Long-term projects		


Transit to Exit Glacier Nature Center

As discussed in the Transit Considerations section above, there is an existing shuttle that provides transit access to Exit Glacier from downtown Seward, as well as a circulator shuttle that provides transit service around the City of Seward. However, the project team identified opportunities to enhance the effectiveness of these existing services to encourage greater utilization, through traveler information, marketing, and potential coordination on routes and schedules to make the services more attractive to visitors. In general, KEFJ should try to work with the existing transit providers to encourage greater utilization of existing transit to Exit Glacier before considering establishing any other system. The park

should also be careful not to disrupt or compete with existing businesses, instead focusing on enhancing services and providing expanded business opportunities for local businesses. However, as conditions change over time, KEFJ may recognize a need for greater transit capacity, or the transit offerings in KEFJ may change, which may require the park to consider alternative transit business models. Table 16 lists the potential transit strategies from lowest to highest efforts. The items closer to the top of the table represent relatively “quick wins” that the park could implement quickly, with limited cost, while the strategies near the bottom would require more substantial effort and investment.

Table 16: Summary of Exit Glacier Transit Considerations, from Lowest to Highest Effort

Source: Volpe

Sequencing	Strategy	Notes
	Transit Information / Marketing	KEFJ could work with the existing transit CUA holder, the City of Seward, the Chamber of Commerce, and other local stakeholders to enhance the reach and consistency of traveler information for visitors to Seward. This could include coordinated transit information about the City of Seward circulator shuttle and the Exit Glacier shuttle, information on the KEFJ website encouraging visitors to take transit from Seward, and clear signage in Seward marking shuttle stop locations and routes.
	Adjustments or Enhancements to Existing Transit Service	KEFJ could work with the existing transit CUA holder and the City of Seward to consider opportunities to adjust or enhance the existing transit service options to make them more attractive to visitors. Potential options include: <ul style="list-style-type: none"> • Co-locating stops and coordinating schedules for convenient transfers between the city shuttle and the Exit Glacier shuttle • Developing a subsidy for visitors staying in the City of Seward RV lots to ride the Exit Glacier shuttle for a free or reduced rate
	New Transit System (either a shuttle from Exit Glacier Area or a Park-and-Ride system along Herman Leirer Road)	If the park experiences substantial parking lot congestion in the future, or in the case of changes to the existing transit service to Exit Glacier, KEFJ may need to consider developing a new transit system to serve the Exit Glacier Area. This system could either be a shuttle from Seward (similar to the existing shuttle route) or a park-and-ride system along Herman Leirer Road. This strategy would have substantial costs (outlined in the Transit Considerations section above) and would have to be considered carefully to avoid disrupting existing local businesses.
High-effort / Long-term projects		


Multi-modal Transportation Considerations

The project team heard substantial enthusiasm for multi-modal transportation enhancements during the August 2018 site visit. Many local residents expressed an interest in biking and running to Exit Glacier but said they do not feel safe sharing the road with

traffic during the summer tourism season. Table 17 lists the potential multi-modal transportation strategies from lowest to highest efforts. The items closer to the top of the table represent relatively “quick wins” that the park could implement quickly, with limited cost, while the strategies near the bottom would require more substantial effort and investment.

Table 17: Summary of Exit Glacier Multi-modal Transportation Considerations, from Lowest to Highest Effort

Source: Volpe

Sequencing	Strategy	Notes
<p data-bbox="203 615 363 678">Low-effort / “Quick wins”</p>  <p data-bbox="203 1577 363 1675">High-effort / Long-term projects</p>	<p data-bbox="393 554 639 688">Signage / Wayfinding Improvements for Multi-modal Transportation</p>	<p data-bbox="669 554 1396 688">Signage and pavement markings along Herman Leirer Road could provide wayfinding for bicyclists and pedestrians. It could also have a minor safety benefit by notifying drivers to expect multi-modal road users and to give them space while passing.</p>
	<p data-bbox="393 728 586 821">Multi-modal Roadway Safety Improvements</p>	<p data-bbox="669 728 1414 1033">Safety improvements to Herman Leirer Road to separate bicyclists and pedestrians from vehicle traffic as much as possible would require substantial investment but would be cheaper than an off-road bike path. These could include vegetation clearing to improve visibility, a wider shoulder, lane markings, and rumble strips. However, these would have limited benefit in encouraging multi-modal use, as some road users would feel comfortable traveling in a widened shoulder, but others would still be nervous sharing the road with RVs, buses, and cars.</p>
	<p data-bbox="393 1075 623 1167">Off-Road Multi-use Trail along Herman Leirer Road</p>	<p data-bbox="669 1075 1414 1520">An 8.2-mile off-road multi-use trail along Herman Leirer Road would provide safe, comfortable, multi-modal access to Exit Glacier. KEFJ completed a feasibility study for a potential trail in 2010 and an Environmental Assessment in 2013, but there are no plans for construction currently. In addition to the expense of the trail, KEFJ and other road owners along the corridor need to plan for the long-term maintenance costs and staff resources needed over the total life span of the trail. In addition, the multi-jurisdictional nature of the Herman Leirer Road is a challenge to implementation. KEFJ could consider constructing the 0.9-mile section within NPS boundaries, but would need to coordinate with ADOT&PF, the U.S. FS, and other partners along the road corridor if the trail were to be constructed on the whole corridor.</p> <p data-bbox="669 1556 1414 1724">KEFJ, ADOT&PF, and the U.S. FS could also pursue construction grant funds through programs like FLAP, which funds projects on non-federally-owned assets that access Federal Lands. However, FLAP does not fund maintenance, so KEFJ and its partners would still need to develop a long-term maintenance plan.</p>

Transportation Data Considerations

Over the course of this transportation study, the project team identified several areas where KEFJ does not have data to quantify the nature of use and congestion at Exit Glacier. In addition, the project team heard several questions about data from community members, who emphasized that the park should make data-driven decisions. As a result, the project team recommends that KEFJ consider ways to enhance its data collection in the following areas:

Parking Lot Utilization Data

The project team recommends collecting more detailed data regarding parking lot utilization. One strategy to collect this data would be to task KEFJ staff, such as the parking lot attendants, with some data collection as part of their duties. This would be relatively cost-effective, but it would compete with their primary role of managing parking during busy times, so KEFJ should be careful to keep data collection as simple as possible. For example, staff could note what time each day the parking lot fills up, but would not be able to keep hourly parking utilization data. Another strategy would be to acquire additional traffic counters to help KEFJ refine its understanding of how many vehicles (and which types) access the lot, and could provide hourly data on vehicle entrances and exits. This would require KEFJ to install a series of counters – on a permanent or temporary basis – to count vehicles not only as they enter the lot but also as they leave and as they enter different parking areas (bus vs. car vs. RV). Alternatively, KEFJ could consider purchasing a counter that can distinguish between vehicle types, but this would require additional research to identify a suitable model. In summer 2019, KEFJ began testing a vehicle classifier that counts vehicles based on axle length which will run concurrently with the existing vehicle counter to determine if finer counts of vehicle type can be obtained using the classifier.

KEFJ could also undertake a more formal parking lot utilization study. In such a study, traffic counter data collection and analysis could be paired with observation of the parking lot during a representative sample of summer weekends to track the duration of vehicle parking in the lot, informal shoulder parking, and other parking lot utilization. This study would provide the most robust, comprehensive understanding of how visitors use the parking lot.

Transit Use Data

Currently, KEFJ has a limited understanding of use and demand for transit service to Exit Glacier. KEFJ should work with the City of Seward, its shuttle system contractor (Seward City Tours), and the current shuttle CUA holder to Exit Glacier (Exit Glacier Shuttle) to better understand ridership data. Some of this data may be easier to access than others. For example, KEFJ could require ridership reporting (annual or daily) as part of the CUA for the Exit Glacier shuttle. Other data may be more difficult to collect and may require a survey as part of a longer term effort to understand transit use and demand.

Other Tourism Industry Data

As discussed above, KEFJ should track trends in the tourism industry in Seward, such as cruise ship visitation trends. This can best be achieved by collaborating with local partners and through access to publically available datasets such as the [Alaska Visitor Statistics Program](#).

Traveler Information Considerations

The project team identified several potential strategies to enhance traveler information. This includes both static information – such as signage or website content providing information about transportation options and general conditions – and real-time information about parking lot capacity or transit service schedules. An intermediate strategy, if real-time data is not feasible, is to provide general information about times of the day or week when congestion is typically highest, to encourage visitors to arrive at non-peak times. Table 18 lists the potential multi-modal transportation strategies from lowest to highest efforts. The items closer to the top of the table represent relatively “quick wins” that the park could implement quickly, with limited cost, while the strategies near the bottom would require more substantial effort and investment.

Table 18: Summary of Exit Glacier Traveler Information Considerations, from Lowest to Highest Effort

Source: Volpe

Sequencing	Strategy	Notes
<p style="text-align: center;">↓</p> <p>Low-effort / “Quick wins”</p>	Post general transportation option information and strategies to avoid parking congestion on KEFJ website	This strategy is the lowest level of effort and could provide valuable information to visitors. Adding a discussion about how to avoid parking congestion – for example by taking the shuttle or by arriving at non-peak times – could help visitors plan their trips and reduce peak demand on the parking lot.
	Coordinate with Local Partners on Traveler Information / Marketing	KEFJ could work with the City of Seward, the Chamber of Commerce, and other local stakeholders to enhance the reach and consistency of traveler information for visitors to Seward. This could include coordinated transit information about the City of Seward circulator shuttle and the Exit Glacier shuttle, information on the KEFJ website encouraging visitors to take transit from Seward, and clear signage in Seward marking shuttle stop locations and routes.
	Intelligent Transportation Systems (ITS) to Provide Real-Time Parking and/or Transit Data	KEFJ could develop an ITS to provide real-time information to visitors. For example, a variable messaging sign on Herman Leirer Road or at the junction with Seward Highway could alert visitors to parking lot capacity and warn them if the parking lot is full. This, partnered with a transit option, could allow visitors to choose to use transit, instead. ITS information could also be uploaded to the KEFJ website and/or visitor information apps. The biggest challenge with this strategy is the lack of cell phone coverage or internet access at Exit Glacier. Without a way to transmit real-time information from Exit Glacier, KEFJ could not support a robust ITS. However, the park could explore the potential for providing phone updates when the parking lot is full that could inform the variable message signs or website updates.
High-effort / Long-term projects		

Partnerships

As discussed above, partnerships are key to the success of almost all considerations for improving transportation access to Exit Glacier. For example, any infrastructure along the non-NPS-owned section of Herman Leirer Road to support multi-modal access, transit, or ITS would require approval and coordination with ADOT&PF and any other adjacent landowners, such as the U.S. FS or Alaska DNR. Because of the multiple jurisdictions along Herman Leirer Road and the variety of stakeholders in the City of Seward, KEFJ should consider opportunities to work with partners and leverage opportunities through those partnerships.

During the August 2018 site visit, City of Seward staff said that they were planning to convene a new transportation working group to address transportation issues in Seward. Although this group will likely focus on other community transportation challenges, it can also be a valuable forum for KEFJ to discuss ways to improve access to Exit Glacier. When working with this group, it will be important for KEFJ staff to frame discussions to be salient to community members in Seward, by focusing on the potential benefits for community residents and businesses.

Next Steps and Resources for Implementation

This conclusion lays out a range of strategies under each category starting with actions feasible in the short term and ending with more difficult or expensive actions to consider in the long term. In general, the project team recommends an iterative, adaptive approach. KEFJ should pursue actions that are feasible in the short term (“quick wins”), while collecting data and monitoring conditions. Improving data on parking lot and transit use will be necessary prior to undertaking more substantial potential projects, such as park lot expansion or a new or expanded transit service. KEFJ could also pursue these longer-term ideas through the park’s future Frontcountry Management Plan, which would consider a number of different potential future scenarios to get the most robust actions.

KEFJ can also consult the following resources to brainstorm options and learn about notable practices from other parks or transportation agencies, which cross-cut topic areas:

- [NPS Congestion Management Toolkit](#): Developed by NPS, this Toolkit currently features 59 tools and a process to identify congestion problems and mitigate them. The toolkit can be used by parks, partners, and/or consultants.
- [FHWA Traffic Calming ePrimer](#): This ePrimer presents a thorough review of current traffic calming practice and contains information needed to understand this complex field. This resource includes information and examples from rural contexts, which would be particularly relevant for KEFJ.

As discussed above, community support and coordination with stakeholders will be crucial to the success of the strategies in this report. KEFJ should discuss the strategies in this report with its partners and community stakeholders to identify strategies of mutual benefit and potential implementation approaches.

Appendix A: Vehicle Recommendations

This Appendix reviews the constraints and requirements for vehicles providing transit access to the Kenai Fjords Nature Center. Depending on which business model and service concept the park and its partners select, the transit provider may choose not to purchase a new vehicle in order to provide service, instead relying on existing vehicles. However, this section provides useful information to inform vehicle selection decisions, if such a service requires procurement of new vehicles.

Constraints and Requirements

Prominent considerations for selection of an appropriate vehicle include passenger capacity, which will drive a vehicle type and size; and physical characteristics of the route itself (e.g., height restrictions, tight turning areas, terrain and environment / weather during operations).

Herman Leirer Road presents no significant hills or grade changes along the route; however, there is a relatively steady uphill grade for the duration of the road. The current Exit Glacier Shuttle service vehicles consist of passenger vans and small, “cutaway” style passenger buses constructed on popular domestic truck chassis. While a larger vehicle could navigate the route successfully, it would do so with a reduced margin for safety, particularly with pedestrian and bicycle traffic along the route, and require more skill and attention on behalf of the driver.

Suitable Vehicle Platforms

The table below compares vehicle options that are ADA compliant¹ and suitable for transportation service along Herman Leirer Road. Vehicle options for each are available for purchase via the General Services Administration, or through private vendors if purchased by a non-Federal entity.

¹ Transportation service providers providing access to or transportation through Federal lands must utilize Americans with Disabilities Act (ADA) accessible vehicles, for all vehicles in operation.

Table 19: Summary Characteristics of Potential Transit Vehicle Types

Source: Volpe

Type	Capacity (seated)	Life (years/miles)	Cost	Fuel Economy	Maneuverability	Access
Passenger Van	6-8 1 WC	5 / 100,000	\$25,000- \$50,000	15 mpg (gas)	<u>Best</u> Narrow width & short wheelbase	<u>Poor</u> Sliding door, wheelchair (WC) lift
Van-based Shuttle	12-14 2 WC	7 / 200,000	\$60,000 - \$120,000	9-10 mpg (gas)	<u>Good</u> Med. width & short wheelbase	<u>Good</u> Transit door, WC lift, & center aisle
Light-Duty Shuttle Bus	12-30 2 WC	7 / 200,000	\$70,000 - \$200,000	8 mpg (diesel)	<u>Poor</u> Full width & long wheelbase	<u>Best</u> Transit door, WC lift, & full-width aisle

Passenger Vans

Passenger vans are a popular and economic solution for moving small groups of people, but they have two critical shortcomings:

- Difficult entry / access for passengers achieved through a sliding side door with no aisle to reach rear seats; and,
- Inadequate passenger capacity when equipped with wheelchair lift systems.

Bulky items are difficult to handle upon entry or exit via a sliding side door, resulting in longer times for passenger loading and unloading at each stop. For limited services that do not expect large groups of passengers, passenger vans can provide basic transportation services at a modest cost. For a regular transportation service that aims to provide transportation to all visitors, passenger vans are not an ideal platform.

Van-based Shuttle Bus

Several secondary manufacturers offer vehicles built off van chassis that feature dual rear wheels on each side of a heavy-duty rear axle and include larger bus-style passenger compartments with capacities for 12 to 16 people. These manufacturers begin with an existing mass-produced platform (with drivetrains from domestic or foreign automotive manufacturers such as Ford, GM, or Mercedes); which are then outfitted with the body (including passenger door and windows), interior, seats and remaining equipment, and are made available for sale by the secondary manufacturer. Any local commercial bus dealership will have various models built by secondary manufacturers that will be similar. Options include those built off a Ford chassis, such as the Goshen Coach Pacer II shown in Figure 19, and multiple fuel options including gas and diesel variants are readily available.

Figure 19: Goshen Coach Pacer II

Source: Goshen Coach



Regardless of the base chassis employed, each of the vehicles available in this configuration enable a narrow body with a full-size transit-style door and a larger passenger compartment than a traditional passenger van, which provides for a center aisle for access to rearward seats. These options aid overall accessibility and expedite passenger loading and unloading. Passenger capacities offered range from 12-16 passengers, with the largest option available recommended, as the incremental cost for higher capacity versions yield more seats and flexibility within a similar footprint.

Light Duty Shuttle (Cutaway) Bus

Similar to the van based shuttles discussed above, light-duty shuttle buses (often referred to as “cutaways”) are economical buses built on top of mass-produced “stripped chassis” work-trucks supplied by major automotive manufacturers such as Ford or GM. By sharing the same engine, cab, and frame for a plethora of vehicles ranging from utility and delivery trucks to buses and upscale limousines, secondary manufacturers are able to offer specialized vehicles at a reduced price due to them all sharing the same fundamental truck platform. Cutaway shuttle buses are available with shorter or longer passenger compartments to facilitate the desired passenger capacity. A significant drawback to a cutaway shuttle bus is the height of the truck chassis, which prevents the passenger from sitting low to the ground. Since the passenger compartment sits on top of the truck’s frame, entry requires climbing steps to access the vehicle. Light-duty shuttle buses offer a wide array of possible sizes and configurations from 12 to 30 passengers or more, and range in price from \$50,000 to over \$200,000. Commercial bus dealers will have a wide range of available vehicles, engines and passenger capacities readily available. A typically configured 24-passenger cutaway style shuttle bus costs between \$85,000 and \$130,000 and are available with gasoline, diesel, and alternative fuel engines, depending on manufacturer. Recent models built on Ford chassis may be available with battery-electric drivetrains as well.

Figure 20: Champion Bus Defender

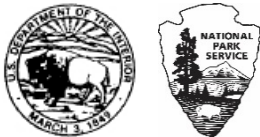
Source: GSA



Discussion

Anticipated demand for the proposed service is difficult to estimate; however, an existing service utilizes a traditional passenger van. The primary shortcomings of passenger vans are limited capacity, and difficult entry and exit through a sliding passenger door. A van-based shuttle bus provides a more robust and flexible solution, as well as one with greater access for all users with entry and exit via a transit-style, full door opening, and satisfies ADA requirements for transit vehicles operating in Federal lands.

Larger vehicles may eventually be necessary should demand grow over time. If so, the primary factor to consider is ensuring safe passage along the road to Exit Glacier. Should larger vehicles be required for future service, consider narrow-bodied variants.



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.

NPS PMIS# 220697A / 10 October 2019