

1. PURPOSE AND NEED

1.1 Introduction

This document is a Final¹ Supplemental Environmental Impact Statement (Final SEIS) for the Juneau Access Improvements (JAI) Project. It has been prepared in accordance with the Council on Environmental Quality regulations for implementation of the National Environmental Policy Act (NEPA) of 1969 (Title 40, Code of Federal Regulations [CFR], Part 1502.9) and Federal Highway Administration (FHWA) regulations (23 CFR 771.130).

Currently, access to Juneau, the Alaska state capital, is possible only by air and water. The Alaska Department of Transportation and Public Facilities (DOT&PF) proposes to improve surface transportation to and from Juneau within the Lynn Canal corridor. Figure 1-1 (at end of chapter) identifies the project vicinity and area.

Federal funds administered by the FHWA would be used for design and construction of the selected project alternative. In accordance with Section 2 of NEPA (42 United States Code [USC] § 4332), the FHWA must consider the environmental impacts of this action. DOT&PF and the FHWA issued a Draft Environmental Impact Statement (Draft EIS) for the project in June 1997. In 1998 and 1999, DOT&PF analyzed comments submitted regarding the Draft EIS and conducted additional studies related to the project. In January 2000, then-Governor Knowles declared Alternative 2, an East Lynn Canal Highway from Echo Cove to Skagway with a Katzehin Ferry Terminal and shuttle ferry to Haines, the State's preferred alternative. At the same time, he stated that the alternative would not be actively pursued during his administration and that most work on the EIS would be discontinued. In 2002, Governor Murkowski directed that the EIS be completed.

Because more than 3 years had passed since release of the 1997 Draft EIS, the adequacy of the environmental document was reevaluated. DOT&PF determined, and FHWA concurred, that there were sufficient changes in project alternatives and potential environmental impacts to warrant preparation of a Supplemental Draft Environmental Impact Statement (Supplemental Draft EIS). A Supplemental Draft EIS was released in January 2005. A Final Environmental Impact Statement (Final EIS) was prepared to address all substantive comments received on the Supplemental Draft EIS. The Final EIS was released in January 2006. It identified Alternative 2B, the East Lynn Canal Highway to Katzehin with ferry shuttles to Haines and Skagway, as the Preferred Alternative. In April 2006, FHWA issued a Record of Decision (ROD) for the Juneau Access Improvements Project stating that DOT&PF and FHWA selected Alternative 2B for design and construction.

On August 16, 2006, a lawsuit was filed in District Court alleging that:

- FHWA violated NEPA by failing to consider reasonable alternatives for improving transportation in Lynn Canal using existing infrastructure without new construction.

¹ This Final SEIS is based on the 2014 Draft SEIS, and substantive changes since the Draft SEIS have been highlighted in gray for easy identification by the reader.

- FHWA violated NEPA by relying on inaccurate and misleading frequency delay times in predicting traffic demand and by failing to explain its use in light of evidence in the project record that they were inaccurate. FHWA acted arbitrarily by approving Alternative 2B when the project record shows that the delay times used in the Traffic Demand Forecast were inappropriate and FHWA did not explain its decision to use that data.
- FHWA acted arbitrarily in violation of the Endangered Species Act and Administrative Procedure Act by failing to initiate formal consultation when the proposed road may adversely affect designated critical habitat for Steller sea lions.
- FHWA acted arbitrarily by approving Alternative 2B when its own findings show that operation of the road may result in the taking of bald eagles in violation of the Bald Eagle Protection Act.
- U.S. Forest Service (USFS) violated the National Forest Management Act by approving a right-of-way (ROW) crossing designated Old-Growth Habitat without determining that no feasible alternative existed.

On February 13, 2009, the District Court vacated FHWA's ROD concluding that the FHWA violated NEPA by failing to consider an alternative for improved ferry service using existing ferries and terminals (*Southeast Alaska Conservation Council, et al. v. Federal Highway Administration*, 2009 WL 10677763 (D. Alaska 2009)). The Court did not rule on the other claims in the lawsuit, explaining that the plaintiffs could raise other claims with the new NEPA analysis for the project. In addition to vacating FHWA's ROD, this decision:

- Remanded for further consideration the USFS's decision to grant a ROW easement; and
- Enjoined all activities dependent upon the 2006 Final EIS and ROD (permits, construction, etc.).

The DOT&PF appealed the District Court ruling to the U.S. Court of Appeals for the Ninth Circuit, and in May 2011, the three-judge panel upheld the District Court decision that the 2006 Final EIS was not valid because it did not include an alternative that would improve transportation using existing assets (649 F.3d 1050 [9th Cir. 2011]). As a result, the DOT&PF and FHWA initiated preparation of a Draft SEIS in January 2012.

The 2014 Draft SEIS evaluated an alternative that improves marine ferry service in Lynn Canal using existing Alaska Marine Highway System (AMHS) assets, identified as Alternative 1B. It also reassessed the reasonable alternatives presented in the 2006 Final EIS, including any changes to regulations, updated project conditions, updated analyses, or alternative revisions that were necessary to address new environmental and engineering information made available since the 2006 ROD.

This Final SEIS presents changes to the 2014 Draft SEIS based on updated information and comments made by the general public and interested parties (including governmental entities, regulatory agencies, Tribes, and Native organizations) on that document. It will be used by FHWA in development of a new ROD on the project. The most notable change to the 2014 Draft SEIS is FHWA's and DOT&PF's identification of a new preferred alternative. On December 15, 2016, Governor Bill Walker of Alaska announced the State's preference for Alternative 1 – No

Action (State of Alaska, 2016b). FHWA concurred and also identifies Alternative 1 – No Action as the preferred alternative in this Final SEIS.

The basis of this Final SEIS is the 2014 Draft SEIS text in its entirety, with changes made as appropriate throughout the document. These changes reflect modifications to the 2014 Draft SEIS alternatives, identification of Alternative 1 – No Action as the new preferred alternative, updated information on the affected environment, changes in the assessment of impacts, the results of ongoing coordination, comments received on the 2014 Draft SEIS, and responses to those comments. Substantive changes to the Draft SEIS are highlighted for easy identification by the reader. New, updated, revised, and corrected appendices included in this Final SEIS are:

- Appendix Z – 2017 Update to Appendix D – Technical Alignment Report
- Appendix Z – 2017 Errata to 2014 Update to Appendix G – Visual Resources Technical Report
- Appendix Z – 2017 Update to Appendix J – Snow Avalanche Report
- Appendix Z – 2017 Errata to 2014 Update to Appendix K – Hydrology and Water Quality Technical Report
- Appendix Z – 2017 Update to Appendix L – Noise Technical Report
- Appendix Z – 2017 Errata to 2014 Update to Appendix M – Initial Site Assessment Technical Report
- Appendix Z – 2017 Errata to 2014 Update to Appendix N – Essential Fish Habitat Assessment
- Appendix Z – 2017 Errata to 2014 Update to Appendix O – Wetlands Technical Report
- Appendix Z – 2017 Errata to 2014 Update to Appendix P – Anadromous and Resident Fish Streams Technical Report
- Appendix Z – 2017 Update to Appendix Q – Wildlife Technical Report
- Appendix Z – 2017 Errata to 2014 Update to Appendix R – Bald Eagle Technical Report
- Appendix Z – 2017 Errata to 2014 Update to Appendix S – Steller Sea Lion Technical Report
- Appendix Z – 2017 Update to Appendix T – Air Quality Modeling Memorandum
- Revised Appendix AA – Traffic Forecast Report
- Revised Appendix BB – Revenues and Expenditures Report for Lynn Canal, Fiscal Years 2005–2015
- Revised Appendix CC – Development of Alternative 1B – Enhanced Service with Existing Alaska Marine Highway (AMHS) Assets
- Revised Appendix DD – Land Use Technical Report
- Revised Appendix EE – Socioeconomic Effects Technical Report
- Revised Appendix FF – User Benefit, Life-Cycle Cost, and Total Project Life Cost Analyses

- Revised Appendix GG – *Marine Segments Technical Report*
- Appendix II (New) – *Alternatives 1B Optimized and Alternative 5 Evaluation*
- Appendix JJ (New) – *Responses to Draft Supplemental Environmental Impact Statement Comments*

The 2006 Supplemental Final EIS, 2006 Final EIS appendices, 2014 Draft SEIS, and 2014 Draft SEIS appendices are on compact disk at local libraries. They can also be viewed on the project website (www.juneauaccess.alaska.gov).

Except where noted, monetary costs have been updated to 2015 dollars to reflect actual current funding requirements and to allow a comparison of alternatives using the same reference point. The environmental analysis provides a comparison of Alternative 1 – No Action and the build alternatives.

DOT&PF uses transportation planning and programming documents to guide its development of surface transportation projects. The Statewide Transportation Improvement Program (STIP) is a federally required document that focuses on federally funded projects over a 4-year period. DOT&PF's 2016–2019 STIP (Amendment 3) was approved by the FHWA and Federal Transit Administration on June 28, 2017 (DOT&PF, 2017). The JAI Project, specifically Alternative 2B, has been removed from this latest STIP update. Alternative 1 – No Action is consistent with the currently adopted STIP. The STIP includes modifications to the Haines Ferry Terminal, which are scheduled to be constructed in 2019. Using State funding, DOT&PF is also constructing two Alaska Class Ferries, one of which is slated to function as a shuttle between Haines and Skagway. The other is planned to run between Auke Bay and Haines. These vessels are under construction, and their future use relative to the JAI Project alternatives is described in Chapter 2.

The 2004 Southeast Alaska Transportation Plan (SATP) is an approved element of the Alaska Statewide Transportation Plan and was prepared in accordance with 23 USC, Alaska Statute 44.42.050, and other related federal and State regulations. The 2004 SATP (DOT&PF, 2004b) identified a road from Juneau to Skagway, with a shuttle ferry to Haines from Katzechin, as the proposed improvement (i.e., Alternative 2, the preferred alternative in the 2005 Supplemental Draft EIS). DOT&PF has been in the process of updating its SATP for several years and released a Draft SATP in June 2014 (DOT&PF, 2014). The 2014 Draft SATP recommended a highway from Juneau to Katzechin with ferry service between Katzechin and Haines and Skagway (i.e., Alternative 2B, the preferred alternative in the 2014 Draft SEIS). The SATP is now in the process of being updated to change the planned improvement to be Alternative 1 – No Action, consistent with the preferred alternative for this Final EIS.

1.2 Project History

Juneau, with a population of slightly more than 31,000 (U.S. Census, 2010b), is the largest community on the North American continent not connected to the continental highway system. The only public surface transportation available is the AMHS, a State-owned ferry system that provides transportation to many of Alaska's southeast coastal communities. AMHS service to and from Juneau connects to the continental highway system in Prince Rupert, British Columbia (B.C.), and Bellingham, Washington, to the south, and in Haines and Skagway to the north. The most commonly used access route to the continental highway system is northbound.

1.2.1 Marine Access

Between the mid-1890s and early 1960s, the two main companies providing surface transportation to Juneau were the Alaska Steamship Company and the Canadian Pacific Line. The motor vessel (*M/V Chilkat*), owned and operated by the Territory of Alaska, began providing seasonal service between Juneau, Haines, and Skagway in the 1950s.

In 1960, following statehood, Alaska voters narrowly approved a \$23 million bond proposal to create the AMHS. The issue was controversial because Alaska's four distinct population centers greatly differed in their views. Southeast region residents, who stood to benefit the most, approved the proposal almost ten to one, Southcentral area residents voted against the bond by a margin of four to one, and Central and Northwest area residents were almost evenly split.

The bonds were used to construct the *M/V Malaspina*, *M/V Taku*, and *M/V Matanuska* for Southeast Alaska service and the *M/V Tustumena* for southwest Alaska service. Service in Southeast Alaska began in 1963, operating only between the larger communities. Lynn Canal service consisted of three round-trip voyages each week between downtown Juneau, Haines, and Skagway. AMHS and private barge services have been the primary surface transportation providers in Lynn Canal since the 1960s.

In the 1970s, the *M/V Columbia*, *M/V LeConte*, and *M/V Aurora* were added to the fleet. The Lynn Canal corridor gained more service with the addition of the *M/V Columbia*, and the smaller *M/V LeConte* and *M/V Aurora* were dedicated to linking the smaller communities south of Lynn Canal (e.g., Hoonah, Tenakee, and Angoon). During this period, the Auke Bay Ferry Terminal in Juneau was constructed, which reduced the time required to travel between Juneau and Haines and Juneau and Skagway by about 2 hours.

Larger vessels of the AMHS that travel the length of the system from Bellingham or Prince Rupert in the south to Haines and Skagway in the north are called mainline ferries. Smaller vessels that provide service to smaller communities not on the mainline ferry routes are referred to as community link vessels, many of which are termed "day boats" because the vessels return to their port of departure, or home port, each day. The mainline ferry routes are part of the National Highway System (NHS).

In the late 1990s, service in Lynn Canal was supplemented by the *M/V Kennicott* and daily summer shuttle service by the *M/V Malaspina*. The *M/V Malaspina* would overnight in Juneau, travel to Haines and Skagway, and return through Haines to Juneau, usually a 14- to 16-hour voyage.

Prior to 2004, all of the vessels in the AMHS fleet operated continuously on a 24-hour basis throughout the year except for maintenance and lay-up periods. Crews generally worked 6 hours on, 6 hours off, for 1- or 2-week periods. In the summer of 2004, the State introduced its first fast vehicle ferry (FVF), the *FVF Fairweather*, to replace the summer shuttle ferry service. The *FVF Fairweather* has less vehicular capacity than the larger monohulled vessels, but with its increased speed was able to make two daily trips between the three Lynn Canal communities. Subsequent to the 2006 Final EIS, there was some reorganization of ferry routes. During summer 2016, the *FVF Fairweather* operated as a day boat between Juneau/Haines/Skagway 3 days per week, and between Sitka and Juneau on a fourth day. Lynn Canal day boat service was provided by the *M/V LeConte* 2 days per week in summer, and the *M/V LeConte* provided service to other communities the rest of the week. Lynn Canal continued to have mainliner service twice per week in summer and once per week in winter.

1.2.2 Highway Access

The first road linking a Lynn Canal community with the continental highway system was the Haines Highway (see Figure 1-2 at end of chapter). During World War II the United States Army constructed the Alaska Highway between Dawson Creek, B.C., and Fairbanks, Alaska. The 150-mile highway spur from Haines Junction to tidewater in Haines was an essential transportation corridor, providing support for construction of the Alaska Highway and adding another route to provide supplies and equipment to western Alaska for the war effort.

The construction of the Klondike Highway in the late 1970s provided another link to the continental highway system. The highway was strongly supported by Skagway residents and city officials, the Skagway Chamber of Commerce, the U.S. Department of the Interior, National Park Service, and the governments of Yukon Territory and B.C. The support was based on the need for economic development, tidewater access for mining ventures, access to Whitehorse, and access to historical areas along White Pass. The Klondike Highway parallels the White Pass and Yukon Route Railroad that was constructed in the late 1890s to improve access to interior mining areas.

Providing highway access to Juneau has been an issue for many years. Because of geographical conditions, only two corridors are available for a highway or rail connection between the continental highway system and Juneau: Lynn Canal and the Taku River Valley.

Construction of the Alaska Highway in 1942 made a direct connection between Juneau and the continental highway system more feasible. The Bureau of Public Roads performed preliminary reconnaissance work in the Taku River Valley during the 1950s. With enactment of statehood in 1959, Alaska became responsible for an inadequate highway transportation system and could not afford to invest in expansion efforts without first repairing the existing infrastructure. This situation was further exacerbated by the 1964 earthquake, which damaged many transportation facilities in the state.

In the 1960s, after many of the State-inherited roads were upgraded, the focus on improving access to Juneau centered on constructing a highway south from Haines along the west side of Lynn Canal. The highway would terminate at a ferry terminal facility, where shuttle ferries would cross Lynn Canal to Berners Bay. Reconnaissance engineering was completed and the State was within months of initiating construction on the first phase when the project was halted and an environmental assessment prepared in compliance with the recently enacted NEPA legislation. The environmental assessment was completed in the early 1970s, but the State chose to delay construction of the highway after passage in 1974 of a statewide ballot measure to move the capital to the Southcentral region of the state.

On completion in 1979, the Klondike Highway provided another possible alternative to link Juneau to the continental highway system: via a highway along the east side of Lynn Canal. The 1975 Lynn Canal Transportation Corridor Economic Analysis identified a roadway between Juneau and Skagway as the best alternative to improve surface transportation in terms of total economic costs, citing low annual expenses and shortest travel times. The 1980 SATP recommended the Lynn Canal Highway for further investigation and evaluation. The 1986 SATP recommended acquiring high speed ferries to operate in Lynn Canal, while monitoring demand to determine if a road link was warranted.

In 1994, work on the JAI Project EIS began. In 1997, a Draft EIS was released; however, a decision was not made regarding a preferred alternative until 2000. Therefore, the 1999 SATP

only referenced the Draft EIS and the upcoming decision. In 2000, then-Governor Knowles announced Alternative 2, East Lynn Canal Highway with Katzechin Terminal, was the preferred alternative, but his administration did not actively pursue completion of the EIS. The 2001 addendum to the 1999 SATP reflected this situation, identifying the road as the preferred alternative while addressing interim improvements. In 2002, Governor Murkowski directed that the EIS be completed. The 2004 SATP (the most recently approved Plan) calls for construction of a road between Juneau and Skagway, (as well as a shuttle ferry between Katzechin and Haines). The DOT&PF is in the process of updating its SATP to reflect the continuation of ferry service in Lynn Canal. This is consistent with the identification of Alternative 1 – No Action as the preferred alternative of the JAI Project.

Providing highway access to Juneau is a contentious issue in northern Southeast Alaska. In October 2000, Juneau voters were split on an advisory ballot question regarding preference for a long-range plan for surface access north from Juneau, with 5,840 choosing enhanced ferry service and 5,761 choosing a road. A September 2002 motion by the City and Borough of Juneau (CBJ) Assembly supporting “completion of the EIS for the identified preferred alternative for the road into Juneau ...” passed by a five to four vote. In 1999 a survey conducted for the City of Skagway indicated that 49 percent of Skagway residents opposed a road while 46 percent were in favor of a road. In April 2003, the City Council of Skagway passed a resolution supporting improved ferry service and opposing a road connection by a four to one vote. In January 2003, the Haines Borough Assembly voted unanimously to request that a road to Haines (as opposed to a road to just Skagway) be included in the EIS. In April 2004, the Haines Borough Assembly passed another resolution requesting that the State and federal government focus on enhancing marine transportation within the region. In an October 2004 advisory ballot question regarding transportation in Lynn Canal, 62 percent of Skagway voters chose improved ferry service over a road. Telephone surveys of Haines, Skagway, and Juneau households conducted for the 2005 Supplemental Draft EIS confirmed that residents are divided in their opinions on the value of highway access. For further information, refer to the *Household Survey Report*, Appendix I of the 2005 Supplemental Draft EIS (www.juneauaccess.alaska.gov).

Comments submitted during the review period for the 2005 Supplemental Draft EIS that expressed a preference were approximately 60 percent in support of a highway, with 40 percent preferring a marine alternative. Comments submitted during the 2012 scoping period for the 2014 Draft SEIS and on the Draft SEIS document in fall 2014 indicated both strong support for and strong opposition to the JAI Project. Highway access received support from the CBJ in 2007 and 2009, as evidenced in Assembly Resolutions 2394 and 2463. Resolution 2463 made recommendations for transportation projects to DOT&PF for the 2010–2013 STIP, one of which was extension of the Glacier Highway to MP 91.1 (just north of the Katzechin River delta, which is the proposed location of the Katzechin Ferry Terminal in Alternative 2B). In Assembly Resolution 2784, adopted January 23, 2017, the CBJ affirmed its continuing support for DOT&PF to complete construction of the East Lynn Canal Highway (Alternative 2B). The Haines Borough has indicated its preference for improved ferry service, as evidenced in Assembly Resolution 11-11-316 and in the *Haines Borough 2025 Comprehensive Plan*. The Municipality of Skagway also has a preference for improved ferry service, as shown in the *Municipality of Skagway 2020 Comprehensive Plan*. A summary of community resolutions can be found in Section 2.5.3.

1.2.3 Existing Transportation Network

Haines and Skagway, at the north end of Lynn Canal, are linked by road to the continental highway system via the Alaska Highway. The Haines Highway connects Haines with the Alaska Highway at Haines Junction, Yukon Territory. The Klondike Highway links Skagway to the Alaska Highway near Whitehorse, Yukon Territory.

The existing road system in Juneau currently extends approximately 43 miles to the north where Glacier Highway terminates at Cascade Point. No surface transportation facilities extend beyond Cascade Point. The 3 miles of roadway between Echo Cove and Cascade Point were constructed by DOT&PF in 2006 using permits and approvals originally issued to Goldbelt, Inc., a local corporation organized under the Alaska Native Claims Settlement Act that owns land at Cascade Point. The State of Alaska funded construction (but not surfacing) of this extension as part of the Industrial Roads Program. Also known as the Roads to Resources program, these State funds are used to foster industrial development. In this case the goal was to assist Goldbelt and its partner Coeur Alaska, Inc. (Coeur Alaska), the mining company developing the Kensington Gold Project, with their plans to develop a marine facility at Cascade Point (USFS, 1997a). The initial road extension constructed in 2006 was only 20 feet wide and was not accessible to public vehicles, but was available to pedestrians, cyclists, and skiers. In 2009, DOT&PF acquired permits and easements to widen the gravel-surface roadway to 26 feet and make it suitable for public access. These upgrades were completed in 2011 (GovCB, 2011).

The State of Alaska also used Industrial Roads Program funding to upgrade the road from Slate Cove to Jualin Mine. Because the road to Cascade Point does not connect to another community, the NHS designation of Glacier Highway ends at the Auke Bay Ferry Terminal. Due to Juneau's location and lack of highway access, all freight, vehicle, and passenger movement is by air or sea.

Independent of the JAI Project, recent improvements on Glacier Highway include replacing Brotherhood Bridge and constructing a roundabout at Back Loop Road. The 2016–2019 STIP identifies the reconstruction of the highway from Fritz Cove Road to Seaview Avenue. This project started construction in spring 2017.

1.2.4 Aircraft Service

Aircraft access to Juneau is provided by commercial jet aircraft primarily from Seattle and Anchorage. The nearest other communities with regular jet service are Petersburg (98 miles south), Sitka (76 miles southwest), Yakutat (163 miles northwest), and Whitehorse (165 miles north). Commuter aircraft serve Juneau as well as Haines, Skagway, and other communities that have neither the demand nor the facilities for jet aircraft service. Two companies offer regularly scheduled commuter service in Lynn Canal (Juneau, Haines, and Skagway). These companies offer approximately 30 round-trips daily in Lynn Canal in the summer, with reduced service in the winter (Wings of Alaska, 2013; Alaska Seaplanes, 2013). They transported approximately 3,600 people between Juneau, Haines, and Skagway in the 12-month period ending in August 2013. Most of the commuter aircraft in use in Lynn Canal can accommodate 5 to 9 passengers and, on average, there are four passengers per flight. The cost of one-way travel in Lynn Canal (e.g., Juneau-Haines or Juneau-Skagway) is approximately \$120 to \$130.

Because of the relatively short travel times and schedule frequency, business travelers generally prefer air travel to the ferry system. Air service in the Lynn Canal corridor plays an important

role in transporting passengers, freight, and mail; however, travel is often constrained by fog, high winds, or snowstorms and can be delayed up to several days in the fall, winter, and spring.

1.2.5 AMHS Service

The AMHS is the only public transportation that carries passengers and vehicles in Lynn Canal. Statewide, the ferry system serves 33 ports (AMHS, 2013) in Alaska with a combined population of about 92,000, or 13 percent of Alaska's population (ADOLWD, 2013). The system also has a port in Prince Rupert, B.C., and in Bellingham, Washington.

In 2015, there were six State ferries that served Lynn Canal: one mainline ferry originating from Bellingham (*M/V Columbia*), two mainline ferries originating from Prince Rupert (*M/V Matanuska* and *M/V Taku*), one mainline ferry that operated as a Lynn Canal shuttle vessel May through September (*M/V Malaspina*), and two day boat ferries (*M/V LeConte* and *FVF Fairweather*). The three mainline ferries and the *M/V Malaspina* have full accommodations and can carry between 69 and 134 vehicles at one time. The *M/V LeConte* can transport 34 vehicles, and the *FVF Fairweather* can transport 36 vehicles. These day boats do not have state room or berth accommodations. About one-third of all vehicular traffic on the statewide ferry system travels through Lynn Canal, and 70 percent of all travel through Lynn Canal embarks or disembarks in Juneau. In the summer of 2015, weekly ferry service in Lynn Canal included mainline ferries from Bellingham and Prince Rupert and shuttle service traveling between Juneau, Haines, and Skagway 6 days per week via the *M/V Malaspina*. The times of arrival and departure for many of the mainline ferries in Juneau, Haines, and Skagway can vary due to tidal restrictions, differing ports of call, and other factors.

1.2.6 Private Vessel Service

Private companies provide passenger-only marine transport service between Lynn Canal communities. This service is seasonal from mid-May to mid-September. Multiple daily trips are scheduled between Haines and Skagway as well as twice-weekly service between Haines and Juneau.

Juneau receives two to three barge shipments per week from the Puget Sound area, with at least one barge shipment continuing north to Haines and Skagway.

1.3 AMHS Service History in Lynn Canal

In 2015, AMHS transported approximately 23,500 vehicles and 74,500 passengers through Lynn Canal. Average daily traffic (ADT) is an important planning tool used to evaluate traffic levels on transportation facilities. It is a measure of average daily bi-directional traffic, that is, the number of vehicles passing a given point in either direction. Annual ADT is calculated by dividing annual traffic volumes by 365 days per year.

For AMHS service in Lynn Canal, annual ADT has two distinct counting locations: any point between Juneau and Haines and any point between Haines and Skagway. The annual ADT in Lynn Canal between Juneau and Haines, which includes traffic between Juneau and Skagway, is 76 vehicles, based on a 28-year average (i.e., 1988 through 2015). This equates to about 38 vehicles traveling to or through Haines and about 38 vehicles traveling to or through Juneau. Table 1-1 summarizes the Lynn Canal annual ADT and passenger traffic from 1988 to 2015.

**Table 1-1:
Lynn Canal AMHS Annual ADT 1988 to 2015
Auke Bay to Haines, Haines to Auke Bay, Auke Bay to Skagway, and Skagway to Auke Bay (Total
for all Routes)**

Year	Round Trips	Traffic Volumes for Year (Vehicles)	Annual Average Daily Traffic	Passenger Traffic
1988	266	29,513	81	117,045
1989	240	28,871	79	115,742
1990	256	30,734	84	123,610
1991	290	32,605	89	131,865
1992	283	31,044	85	131,234
1993	245	30,098	82	122,271
1994	262	29,322	80	120,360
1995	270	30,349	83	118,857
1996	270	30,998	85	115,946
1997	287	29,158	80	107,040
1998	285	28,083	77	103,512
1999	298	30,131	83	112,531
2000	308	28,889	79	106,875
2001	285	26,662	73	93,645
2002	324	29,202	80	104,913
2003	325	27,967	77	96,517
2004	388	26,971	74	97,285
2005	403	25,492	70	91,293
2006	398	25,258	69	85,872
2007	434	26,377	72	90,433
2008	391	26,527	73	90,046
2009	340	24,703	68	80,804
2010	329	24,841	68	82,929
2011	344	25,082	69	82,186
2012	296	26,115	71	83,945
2013	323	26,372	72	84,473
2014	308	24,956	68	80,689
2015	297	23,543	65	74,623
Average	313	27,852	76	101,662

Source: AMHS, *Annual Traffic Volume Reports, 1998-2015* (AMHS, 1998-2015).

While Table 1-1 shows a decline in AMHS passenger traffic from a peak of 131,865 in 1991 to 74,623 in 2015, overall traffic on the principal arterials in Haines, Skagway, and Juneau has increased as has population in these communities. See Section 1.4 for more discussion.

About 60 percent of all ferry traffic in Lynn Canal occurs between May and September. AMHS adjusts for the downturn in volume during the off-season by reducing the number of weekly round-trips. For example, in 2015 weekly trips were reduced from about seven in the summer to about five in the winter.

In 2016, the *FVF Fairweather* provided summer shuttle ferry service in Lynn Canal, traveling between Juneau, Haines, and Skagway 3 days per week. The *M/V LeConte* provided day boat service 2 days per week. A similar schedule for these vessels was set for 2017. All other vessels that provide service in Lynn Canal communities have scheduled but varied arrival and departure times.

The route distance between Auke Bay Ferry Terminal in Juneau and Lutak Inlet in Haines is 76.2 miles. It takes an average of 4.5 hours for a mainline ferry and 2.3 hours for a FVF to transit this distance. The distance between Auke Bay and Skagway is 85.9 miles and requires an average transit time for a mainline ferry, including an intermediate stop in Haines, of 6.5 hours. The FVF takes approximately 2.8 hours to transit between Auke Bay and Skagway with no intermediate stop in Haines. The required check-in time (1 to 2 hours for vehicles with reservations) and off-loading time add to total travel time for ferry travelers. For the mainline ferry, off-loading generally adds 0.6 hour to the travel time. For the FVF, unloading time adds approximately 0.4 hour to the total travel time.

1.4 Purpose and Need Statement

The purpose and need for the JAI Project² is to provide improved surface transportation to and from Juneau within the Lynn Canal corridor that will:

- Provide the capacity to meet transportation demand in the corridor
- Provide flexibility and improve opportunity for travel
- Reduce travel times between the communities
- Reduce State costs for transportation in the corridor
- Reduce user costs for transportation in the corridor

² In 2008, the U.S. Army Corps of Engineers (USACE), a cooperating agency for this Final SEIS, issued a ROD for its permit of the JAI Project with its own Overall Project Purpose in compliance with Section 404(b)(1) Guidelines. The USACE's overall project purpose was determined to be "...to provide improved surface transportation with increased capacity to meet demand, provide flexibility, improved opportunity for travel, and reduced travel time between the Lynn Canal communities of Juneau, Haines, and Skagway." That overall project purpose was used in the USACE's Section 404 permit analysis.

While both FHWA and USACE develop NEPA documents in general accordance with Council on Environmental Quality regulations defined in 40 CFR 1500, individual federal agency regulations are supplemented and further defined for the FHWA in 23 CFR 771, Environmental Impacts and Related Procedures, and for USACE in 33 CFR parts 320–332, implementing regulations under the Clean Water Act. These regulations further define policies and procedures that are unique to each federal agency's individual authority.

The project Purpose and Need Statement has been subdivided into these five elements for clarity and to help evaluate the ability of project alternatives to meet or approach the overall goal of improving surface transportation to and from Juneau in the Lynn Canal corridor.

The five elements of the project Purpose and Need Statement are interrelated. Convenience and opportunity for travel are important factors in transportation demand, as are travel times and user costs. Transportation improvements to provide increased capacity and opportunity in Lynn Canal affect State and traveler costs. Traveler cost and travel time have a strong effect on demand. Generally, the more expensive the trip and the longer the travel time, the less the actual demand (as opposed to latent demand, which is a term used to describe the demand for travel in unconstrained conditions; i.e., where there is no impediment to typical surface travel). Also, reductions in travel time and/or user cost generally increase State cost.

1.4.1 Transportation Demand

The first element of the Purpose and Need Statement is to *provide the capacity to meet transportation demand in the corridor*.

The Lynn Canal corridor is the largest bottleneck in Alaska's surface transportation system. DOT&PF estimates that the demand to travel through the corridor is approximately 20 times greater than the number of vehicles currently transported by AMHS. As explained in the following sections, indications of unmet demand in Lynn Canal include traffic growth and volume comparisons, telephone surveys, and the traffic forecast analyses.

1.4.1.1 Traffic Growth and Volume Comparisons

A clear indication that AMHS service is not meeting demand in Lynn Canal is the lack of traffic growth in Lynn Canal compared to the population growth in the state as a whole and in the three communities. A second indicator is the comparison of the traffic growth within transportation corridors adjacent to Lynn Canal to traffic growth in Lynn Canal. Table 1-2 presents both of these comparisons.

As shown in Table 1-2, the population of the three Lynn Canal communities grew more than 30 percent from 1988 to 2011. Traffic on adjacent corridors during that same time period showed much lower growth or, on the Haines and Alaska highways and in Lynn Canal, a 10 to 15 percent decline.

Table 1-3 compares AMHS annual ADT for Lynn Canal with the annual ADT of adjacent transportation corridors and the annual ADT of three other highways in Alaska that terminate at a tidewater community. These three communities—Seward, Valdez, and the Kenai Peninsula—all have populations smaller than Juneau.

**Table 1-2:
Population and Transportation Growth**

Population Growth	Percent change¹ from 1988 to 2011
State of Alaska	+36
City and Borough of Juneau	+31
Haines Borough	+34
City of Skagway	+37
Transportation Growth	Percent change from 1988 to 2011
Haines Highway Border Station	-15
Klondike Highway Border Station	+14
Alaska Highway at Champagne ² (between Haines Junction and Whitehorse)	+4
Alaska Highway near Beaver Creek	-10
AMHS Lynn Canal Service (passengers or vehicles)	-15

¹ Percent change rounded up to the nearest percent.

² 1988 counts were not available; 1989 counts were used for this table.

Note: While 2015 population information is available for the State and the three Lynn Canal communities, traffic counts for the locations reported in this table were available only through 2011. This table, therefore, was not updated because there would be no direct comparison of the 1988–2015 timeframe for population growth and transportation growth.

Source: Population growth from Alaska Department of Labor & Workforce Development, Research and Analysis Section, Demographics Unit statistics (1990), U.S. Census Bureau (1990), and Northern Economics (2012). Transportation growth from DOT&PF Annual Traffic Maps 1998–2002 (2003a) and Yukon Highways and Public Works 2011 Yukon Traffic Count Summary (2012).³

The AMHS is the NHS route between Juneau and Haines, the principal surface transportation route for everyone traveling between these two communities. The low annual ADT on this NHS route compared to the annual ADT on other roads in the region indicates that AMHS is not meeting the travel demand in Lynn Canal.

Note: The capacity and demand analyses in this document focus on vehicles. On inter-city surface routes, the primary responsibility of the State is to provide a transportation facility and not the transportation itself. Because of the nature of the AMHS, the facilities to move vehicles also accommodate walk-on passengers. However, this is a secondary function that is not provided on other highways in the state.

As can be seen from Table 1-2 and Table 1-3, neither traffic volume nor population changes can account for the decrease in 2000 to 2015 Lynn Canal AMHS traffic volumes shown in Table 1-1. Rather it is likely the cost of fares relative to the overall economy has affected this AMHS travel. In general, ridership increases during good economic times, as people have more income available for transportation and tourism.

**Table 1-3:
Corridor Annual Traffic Volumes and Annual ADT**

Corridor	Annual Traffic Volume (Vehicles) ¹	Annual Average Daily Traffic
Alaska Highway between Haines and Whitehorse near Champagne (2015)	189,800	520
Glacier Highway in Juneau near Tee Harbor	769,400	2,108
Glacier Highway end of road in Echo Cove	39,100	107
Egan Drive in Juneau near McDonalds	9,611,200	26,332
Haines Highway east of Haines Airport	583,600	1,599
Dyea Road in Skagway near end of road	96,700	265
Lutak Road in Haines	172,300	472
North Douglas Highway in Juneau past boat launch	175,900	482
Klondike Highway at Skagway River Bridge	367,790	1,008
Sterling Highway west of Seward Highway Junction ²	1,123,500	3,078
Richardson Highway at Glenn Highway junction ²	611,400	1,675
Seward Highway south of Sterling Highway Junction ²	824,900	2,260
AMHS Lynn Canal between Juneau and Haines	26,372	72

¹ Annual traffic volumes are rounded.

² Highways that terminate at a tidewater community outside the project study area.

Sources: DOT&PF, 2011d; Yukon Highways and Public Works 2011 Yukon Traffic Count Summary (YHPW, 2012); and AMHS, Annual Traffic Volume Reports, 1998-2015 (AMHS, 1998-2015), 2013 DOT&PF Annual Average Daily Traffic (AADT) GIS Map; 2016 personal communication between the Government of Yukon (Knowles) and HDR (Navio).

*Traffic volumes are from 2013 unless specifically noted otherwise.

1.4.1.2 Telephone Surveys

In 1994 and 2003, DOT&PF contracted with an independent consultant to conduct telephone surveys of households in Juneau, Haines, Skagway, and Whitehorse (2003 survey only) regarding transportation needs, travel patterns, access preferences, and predicted travel frequencies. The surveys indicated that travelers in each community would make more trips through the Lynn Canal corridor if travel were faster, less costly, and more convenient.

The 1994 survey (Appendix C of the 1997 Draft EIS) responses indicated the following:

- More than 60 percent of households surveyed in all three communities felt that improving transportation was important to their own households.
- More than 75 percent of households in each community felt that improving transportation was important to their respective cities.

The 2003 (Appendix I of the 2005 Supplemental Draft EIS) survey responses indicated the following:

- The majority of households, over 70 percent in all three communities, felt that improving transportation to and from Juneau was important.

1.4.1.3 Traffic Forecast Analysis

The traffic forecast analysis used the types of travel, origin/destination information, regional growth, and other methods and modeling to determine transportation demand in the Lynn Canal corridor for 2025 through 2055. A summary of the traffic forecast methodology is provided in Section 4.1.5. Further detail on the forecast is provided in Revised Appendix AA, *Traffic Forecast Report*.

The traffic forecast estimated that latent travel demand (also referred to as unconstrained demand) is nearly 20 times greater (1,260 vehicles per day) than the 2015 AMHS usage (annual ADT of 65 vehicles per day).

The analysis also indicated that traffic demand would be relatively constant in the Lynn Canal corridor between 2025 and 2055.

1.4.2 Flexibility and Opportunity for Travel

The second element of the Purpose and Need Statement is to *provide flexibility and improve opportunity for travel* in Lynn Canal.

The opportunity to travel is restricted in Lynn Canal under the current ferry system. As Table 1-1 in Section 1.3 indicates, there has been an average of about 313 round-trip voyages each year between Juneau and Skagway with intermediate stops in Haines. AMHS provides more service in the summer season, May to September, than in October to April, the winter season. There are usually 9 round-trip voyages per week to Haines and 7 round-trip voyages per week to Skagway during the summer peak season and 4 round-trip voyages per week to both communities during the off-season.³

During the summer season, a traveler has a choice of one or two sailings per day. In the winter, a traveler has a choice of approximately four sailings per week. Ferries typically sail below vehicular capacity during winter, but in summer they are at times unable to accommodate all reserved space and standby traffic.

Some restrictions to flexibility and opportunity to travel are as follows:

- Travelers must make reservations for vehicles in advance; travel during peak summer season periods can require making reservations within days of the summer ferry schedule release in the preceding December.
- Changing reservations can be problematic and can include cancellation charges if made within 14 days of a reservation.
- Travelers must plan trips to coincide with ferry schedule departures and arrivals.
- A 1- to 2-hour check-in time is required.
- Trips can be delayed by unforeseen events, including vessel mechanical problems, inclement weather, and last-minute requests to serve an additional port south of Juneau.

³The actual number of sailings per year varies for a variety of reasons, including demand and the availability of ferries. For example, the number of sailings may change due to a ferry being out of service for an extended period of time for maintenance.

- Reservation changes are limited to regular business hours.
- Border crossings are restricted at night but ferry schedules do not always coincide with the operating hours of the U.S. Customs stations, inconveniencing travelers going beyond Haines and Skagway.
- When ferries do not have vehicle space available, travelers may register at the ticket counter 2 hours before sailing for standby vehicle space; however, there is no guarantee of boarding.

The listed restrictions to opportunity and flexibility to travel, combined with long travel times, inhibit residents of Juneau from using alternate airports such as Whitehorse Airport to travel to locations outside Southeast Alaska. These restrictions also contribute to the perception held by many Alaska residents that the capital is isolated from the rest of the state. Capital move proponents often cite this as a reason to relocate the state's capital.

The 1994 and 2003 household surveys included several questions on flexibility and convenience. The following information was identified in the 1994 survey:

- Households in all three communities reported having problems with ferry reservations (44 percent in Juneau, 53 percent in Haines, and 33 percent in Skagway).
- 55 percent of households in Haines, 34 percent of households in Juneau, and 40 percent of households in Skagway said that they had been unable to travel in Lynn Canal due to scheduling or reservations problems.
- 47 percent of Juneau households, 62 percent of Haines households, and 44 percent of Skagway households said that obtaining car space on the ferries was a problem.

The following information was identified in the 2003 survey:

- A strong majority of residents would travel more frequently in Lynn Canal if transportation were improved (72 percent in Juneau, 79 percent in Haines, and 70 percent in Skagway).
- Whitehorse households would make as many as three trips per year to Juneau with a highway connection, compared to the current average of once per year. Haines residents would take an average of eight trips to Juneau with a highway connection, and Skagway residents would take an average of 12 trips to Juneau with a highway connection.
- With a highway connection, Juneau households would increase their trips to Haines from the current two per year to four per year and would travel three times per year to Skagway, compared to the current once per year.

1.4.3 Travel Time

The third element of the Purpose and Need Statement is to *reduce travel time between the communities* in Lynn Canal. Table 1-4 lists AMHS travel times between Auke Bay and Haines and Auke Bay and Skagway.

Travel time between the communities by ferry is significantly longer than travel times would be by highway, the most prevalent method of surface transportation outside the Lynn Canal corridor. If a direct highway connection existed, driving between Auke Bay and Haines at a

speed of 40 to 50 miles per hour (mph) would take about 1.5 to 2 hours. Traveling by highway between Auke Bay and Skagway at a speed of 40 to 50 mph would take between 2 and 2.5 hours.

**Table 1-4:
AMHS Travel Time**

Route	Vessel Type	Check-in Time (hours) ¹	In-Transit (hours)	Unload Time (hours)	Driving Time (hours) ²	Total Travel Time (hours)
Auke Bay-Haines	Mainline ferry	2.0	4.5	0.6	0.1	7.2
	FVF	1.0	2.5	0.3	0.1	3.9
Auke Bay-Skagway	Mainline ferry	2.0	6.5	0.6	0.0	9.1
	FVF	1.0	2.7	0.3	0.0	4.1

Note: Numbers may not add up exactly due to rounding.

¹ Check-in time is the time that a vehicle must arrive at the dock prior to departure and includes loading. Check-in time for the FVF used in this document is 1 hour. Vehicles must have completed check-in an hour before departure to avoid losing a reservation. Therefore, AMHS recommends 2 hours. The FVF is currently used only occasionally in Lynn Canal in summer due to difficulty in making the Juneau-Haines-Juneau-Skagway run without placing too great a load on its engines.

² Driving time from the Haines Ferry Terminal to downtown Haines (Third and Main streets) is added for travel on the Auke Bay-Haines route to provide comparable travel time to the Auke Bay-Skagway route, which ends in downtown Skagway at the Skagway Ferry Terminal.

1.4.4 State Costs for Transportation System

The fourth element of the Purpose and Need Statement is to *reduce State costs for transportation in the corridor*.

To maintain and operate the ferry system, AMHS depends on vessel-generated revenues (e.g., fares, restaurant income, staterooms) and State funds appropriated annually by the legislature. Statewide, the system required about \$160.8 million to operate in 2015 and generated about \$54.8 million in revenues, as shown in Table 1-5. Table 1-5 reveals a general decline in the percentage of expenditures covered by revenue since the early part of this century.

**Table 1-5:
AMHS Statewide Expenditures and Revenues**

Fiscal Year (FY)	Expenditures in \$Millions	Revenues in \$Millions (Percent of Total)	State General Fund in \$Millions (Percent of Total)
FY01	\$81.7	\$37.6 (46%)	\$44.1 (54%)
FY02	\$79.6	\$39.5 (50%)	\$40.1 (50%)
FY03	\$85.6	\$41.2 (48%)	\$44.4 (52%)
FY04	\$89.5	\$44.7 (50%)	\$44.8 (50%)
FY05	\$101.3	\$46.8 (46%)	\$54.4 (54%)
FY06	\$135.4	\$51.8 (38%)	\$83.7 (62%)
FY07	\$143.7	\$49.6 (34%)	\$94.2 (66%)
FY08	\$143.1	\$48.2 (34%)	\$94.9 (66%)
FY09	\$141.6	\$47.9 (34%)	\$93.7 (66%)
FY10	\$140.3	\$47.0 (34%)	\$93.3 (66%)
FY11	\$158.7	\$48.6 (31%)	\$110.1 (69%)
FY12	\$171.0	\$54.7 (32%)	\$116.4 (68%)
FY13	\$172.5	\$53.8 (31%)	\$118.6 (69%)
FY14	\$166.0	\$51.8 (31%)	\$114.3 (69%)
FY15	\$160.8	\$54.8 (34%)	\$106.0 (66%)
Average	\$131.4	\$47.9 (38%)	\$83.5 (62%)

Sources: Lynn Canal Revenue and Expenditures 2001 and 2002 and Projected Capital Costs 2001-2038 (DOT&PF, 2004a); Lynn Canal Corridor Revenue and Expenditures 2003 and 2004 (DOT&PF, 2005b); *Revenues and Expenditures Report for Lynn Canal, Fiscal Years 2005-2015* (Revised Appendix BB of this Final SEIS).

Note: An additional \$12 million is spent annually for U.S. Coast Guard required vessel overhauls.

The cost to operate the AMHS is high in comparison to the cost to operate and maintain Alaska's roads and highways. For comparison, the AMHS provided about 20.9 million vehicle miles of travel at a State cost of about \$110.1 million in 2011, or \$5.27 per vehicle mile (DOT&PF, 2013a). On State-owned highways, 3.54 billion miles were driven in 2011 and the maintenance costs (including administration) for roads and highways in Alaska that year were about \$105 million, which equates to approximately \$0.03 per vehicle mile (DOT&PF, 2003b; 2011c). Revenues from a State gas tax on highway vehicles and from vehicle licensing and registration fees (about \$84.5 million in 2011) go into the State's General Fund; the State Legislature makes allocations from the General Fund to pay the State's costs, including costs for road, highway, and AMHS maintenance.

Travelers in the Lynn Canal corridor account for about 13 percent of total AMHS revenues. Over fiscal years 2001 through 2015, the cost to operate AMHS in Lynn Canal averaged \$16.6 million per year (Table 1-6). This cost included maintenance and operation of the vessels and administrative costs, such as selling tickets, scheduling, and operating the terminals. Revenues from fiscal years 2001 through 2015 from passenger and vehicle tickets and on-ship services averaged \$6.1 million. As a result, the State general fund contribution has averaged \$10.5 million to provide surface transportation in Lynn Canal. Similar to statewide operations, expenditures for

AMHS service in Lynn Canal have increased in the last decade, but revenues have not generally kept pace, resulting in increased costs to the State.

**Table 1-6:
AMHS Lynn Canal Corridor Expenditures and Revenues**

Fiscal Year (FY)	Expenditures in \$Millions	Revenues in \$Millions (Percent of Total)	State General Fund in \$Millions (Percent of Total)
FY01	\$10.4	\$5.5 (53%)	\$4.9 (47%)
FY02	\$11.5	\$6.4 (56%)	\$5.1 (44%)
FY03	\$11.3	\$6.2 (55%)	\$5.1 (45%)
FY04	\$11.7	\$6.0 (51%)	\$5.7 (49%)
FY05	\$13.4	\$6.8 (51%)	\$6.6 (49%)
FY06	\$16.0	\$6.8 (42%)	\$9.2 (58%)
FY07	\$15.4	\$5.8 (37%)	\$9.6 (63%)
FY08	\$17.5	\$6.4 (37%)	\$11.0 (63%)
FY09	\$17.2	\$6.1 (36%)	\$11.1 (64%)
FY10	\$16.6	\$6.2 (37%)	\$10.5 (63%)
FY11	\$18.8	\$5.9 (31%)	\$12.9 (69%)
FY12	\$20.4	\$6.6 (32%)	\$13.8 (68%)
FY13	\$23.2	\$5.9 (26%)	\$17.3 (75%)
FY14	\$20.7	\$5.0 (24%)	\$15.7 (76%)
FY15	\$25.1	\$5.6 (22%)	\$19.5 (78%)
Average	\$16.6	\$6.1 (39%)	\$10.5 (61%)

Sources: Lynn Canal Revenue and Expenditures 2001 and 2002 and Projected Capital Costs 2001-2038 (DOT&PF, 2004a); Lynn Canal Corridor Revenue and Expenditures 2003 and 2004 (DOT&PF, 2005b); *Revenues and Expenditures Report for Lynn Canal, Fiscal Years 2005–2015* (Revised Appendix BB of this Final SEIS).

Note: An additional \$1.3 million is spent annually for U.S. Coast Guard required overhauls for Lynn Canal vessels.

In comparison to statewide operations, AMHS provided about 1.6 million vehicle miles of travel in Lynn Canal in 2015⁴ at an annual cost to the State of \$19.5 million, or \$11.98 per vehicle mile.

1.4.5 User Costs

The fifth element of the Purpose and Need Statement is to *reduce user costs for transportation in the corridor*.

The cost of one-way travel by air between Juneau and Haines is approximately \$120 and between Juneau and Skagway is approximately \$130. The fares for passage in Lynn Canal on the AMHS are substantially higher than those for other surface transportation modes elsewhere in

⁴ This number was calculated using the AMHS 2015 *Annual Traffic Volume Report*. The number of vehicles traveling between each Lynn Canal port was multiplied by their respective distances and then each value was added to produce a value of 1,628,430 vehicle miles in the 2015 calendar year.

the state. A family of four in a 19-foot vehicle⁵ traveling one way between Juneau and Skagway by ferry paid \$301.50 in 2015. The fare between Juneau and Haines for the same family was \$229. A driver in a 19-foot vehicle would have paid \$169 between Juneau and Skagway and \$131 between Juneau and Haines. In comparison, if direct highway links existed, the total 2015 cost to a vehicle owner would have been about \$55.50 between Juneau and Skagway and \$52 between Juneau and Haines. The 2015 out-of-pocket cost to a vehicle owner would have been about \$15.50 between Juneau and Skagway and \$15 between Juneau and Haines.⁶

Table 1-7 summarizes the projected cost per mile in Lynn Canal for a family of four and a driver traveling by ferry and an equivalent-length highway.

**Table 1-7:
Projected Cost per Mile in Lynn Canal by Mode in 2015**

Route	Family of Four by Ferry Vessel ¹	Driver and Vehicle by Ferry Vessel ¹	Travel by Highway ²
Auke Bay-Haines	\$2.62	\$1.69	\$0.58
Auke Bay-Skagway	\$3.25	\$1.82	\$0.58

¹ Uses distances of 92.7 miles (Auke Bay-Skagway) and 87.4 miles (Auke Bay-Haines). The ferry costs per mile are based on summer 2015 AMHS published fares.

² Based on total vehicle cost for an SUV (AAA, 2015). Cost includes fuel, oil, tires, maintenance, insurance, license, registration, depreciation, and financing.

As shown in Table 1-7, the cost per mile for a family of four traveling on the AMHS in Lynn Canal is three to six times higher than the cost to make an equivalent-length trip by highway.

⁵ Twenty-one feet is the average vehicle size transported on the AMHS including motorcycles, campers, trucks, and recreation vehicles. For a family vehicle, the 15- to 19-foot category is used. This medium vehicle size category includes station wagons, minivans, most pickups, and many sedans. The family-of-four passenger costs are based on two adults, one child over the age of 12, and one child 2 through 12 years old.

⁶ Assumes fuel cost at \$4.03 per gallon (ADCCED, 2015) and 24.8 miles per gallon (EPA 2015 fleet mix average from EPA, 2016).