Lynn Canal Ferry Service Revenue Analysis

Prepared for:

Municipality of Skagway

July 2016

McDowell GROUP

Municipality of Skagway

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INTRODUCTION

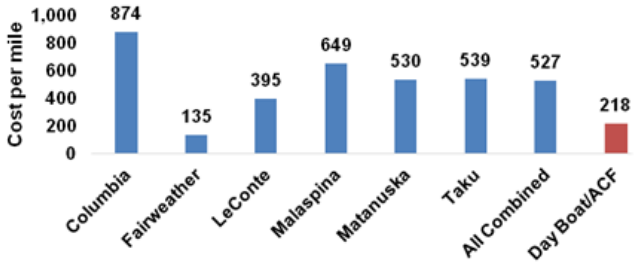
In recognition of the economic hardships imposed on State government by declining oil prices, the Municipality of Skagway commissioned this report by the McDowell Group to determine the degree to which two Alaska Class Ferries could support the traffic demand in Lynn Canal. The study, "Lynn Canal Ferry Service Revenue Analysis," demonstrates that two Alaska Class day boats on their own can support approximately 95% of the summer season traffic demand and earn approximately 95% of the summer season revenue from 2013.

The year 2013 is used as the basis for comparison because it represents peak service levels with regard to capacity in Lynn Canal. In that year the more expensive Malaspina was operated as a day boat and provided more than abundant car deck space to handle the traffic in Lynn Canal.

At the request of the Skagway Ad Hoc Marine Highway Committee, the McDowell Group examined the revenue and capacity implications of operating ONLY the two Alaska Class Ferry (ACF) day boats which were specifically designed for operation in Northern Lynn Canal. Under this scenario, all other AMHS sailings terminate in Auke Bay.

This report is not intended to be an exhaustive study of all possible routes and schedules in Lynn Canal. Rather, the schedule developed by the Skagway Ad Hoc Marine Highway Committee is based on a hypothetical scenario in which the state can no longer afford to operate mainliner service beyond Auke Bay and is intended as a "bare bones" scenario for ferry service operations in Lynn Canal. It provides one example of alternative scheduling that optimizes the efficiencies of the ACF and eliminates cost associated with expensive mainliner service. The committee focused on the ACFs because of the efficiencies imbedded in their modern design and reduced crewing requirements. The ACFs are predicted to operate with one-third the costs of the Malaspina (see Figure 2 below). These cost savings are discussed in Appendix 2 excerpted from a previous McDowell Group report commissioned by the Municipality.

Figure 2. AMHS North Lynn Canal Vessel Per-Mile Costs, FY2012, and Anticipated Day Boat ACF Per-Mile Costs



Source: AMHS, presented in "North Lynn Canal Ferry Service Analysis" by McDowell Group, 2014

While not directly addressed in this report, the study has implications on fare box recovery. Reduced operating costs of the new and efficient ACFs combined with optimized capacity utilization, will result in significantly reduced subsidy and general fund requirements for the State of Alaska.

Jan Wrentmore, Chair
Skagway Ad Hoc Marine Highway Committee

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Executive Summary

The City of Skagway contracted with McDowell Group, Inc. to prepare an analysis of traffic and revenue potential associated with Lynn Canal ferry service and specifically with the proposed Alaska Class Ferry (ACF) service.

The traffic analysis is based on hypothetical service schedules developed by the Skagway Ad hoc Marine Highway Committee. These schedules are based on two vessel deployment options:

- Option 1: Two Alaska Class ferries (ACF) in summer; one ACF in winter
- Option 2: Two ACFs in summer; one ACF in winter, supplemented by Fast Vehicle Ferry (FVF) service to meet additional demand.

This Lynn Canal ferry traffic and revenue analysis is based on the assumption that Juneau becomes the northern terminus for AMHS service.

The relationship between service schedules, traffic, and revenues is complex. Ferry traffic in Lynn Canal is sensitive to the quantity of service (voyages per week and car deck space), the convenience of service (departure and arrival times), and cost (fare structure). The issue is also complicated by spikes in travel demand around special events and other periods of high demand, when traffic can be constrained by capacity limitations. To the extent possible these factors were considered in this analysis; however, in the absence of a detailed travel demand modeling exercise, car deck capacity and utilization are the primary factors considered in the traffic analysis.

Lynn Canal Ferry Revenue Potential

The revenue potential for Lynn Canal ferry service is estimated at $7.9 million annually, based on 2013 traffic and 2016 fares. This includes $5.2 million in summer revenue and $2.7 million in winter revenue.[1] The year 2013 was selected for analysis because it had the highest traffic volume among recent years and therefore provides the most relevant measure of market demand.

Table ES-1. Annual Lynn Canal Ferry Revenue Potential, Based on 2013 Traffic and 2016 Fares ($millions)

	Vehicles	Passengers	Total
Summer	$2.1	$3.1	$5.2
Winter	$1.2	$1.5	$2.7
Total	$3.3	$4.6	$7.9

Source: McDowell Group estimates.

The estimate of $7.9 million is consistent with other estimates of potential Lynn Canal ferry revenues. The ferry service analysis in the Juneau Access Supplemental Draft Environmental Impact Statement included annual

[1] It is not possible to measure actual historical AMHS revenue from Lynn Canal ferry service because the fare structure for through traffic (northbound or southbound through Juneau) does not attribute fares to the Lynn Canal portion of the itinerary.

revenue estimates of $7.7 million for the No Action alternative, $8.2 million for the Enhanced AMHS Service alternative, and $9.3 million for alternative 4C. Alternative 4C includes two ACFs providing daily service between Juneau and Haines and Juneau and Skagway.

ACF Hypothetical Service Schedule for Lynn Canal

- The hypothetical summer ACF schedule considered in this study includes once-daily service between Juneau and Haines/Skagway, and twice daily service between Haines and Skagway, five days a week.
- The hypothetical winter schedule includes four days per week service between Juneau and Haines, three days a week service between Juneau and Skagway, and no service between Haines and Skagway.

ACF Lynn Canal Service Capacity

The ability of ACF-based service to fully meet demand is challenged by car deck capacity well below that of vessels that have traditionally provided most AMHS Lynn Canal service. ACFs have a car deck capacity of 1,060 feet, the equivalent of 53 Alaska standard (20-foot) vehicles (ASV). The MV Columbia has car deck capacity for 134 ASV, while the MV Matanuska and MV Malaspina have capacity for 88 ASV, and the MV Taku has capacity for 69 ASV.

Based on the 2013 AMHS schedule and traffic volumes, one-quarter of northbound voyages and one-third of southbound Lynn Canal voyages carried more vehicles than can be carried by an ACF. All MV Columbia Lynn Canal voyages were over ACS capacity, northbound and southbound, during the 2013 and 2014 summer study periods. Approximately 2,000 vehicles in total (northbound and southbound) would be unaccommodated if not shifted to other scheduled ACF voyages or served by supplemental AMHS voyages.

- For a 106-day period in Summer 2013, actual southbound Lynn Canal car deck usage totaled 123,305 feet while northbound car deck usage totaled 112,643 feet. Over a 106-day period, ACF capacity would total 112,360 feet of car deck space, northbound and southbound.
- Summer weekly service capacity of the hypothetical ACF schedule is 371 vehicles each direction, northbound and southbound to and from Juneau. The hypothetical service schedule falls short of peak week vehicle demand, for service to and from Juneau. Summer 2013 peak-week demand was 417 ASV northbound and 460 ASV southbound.
- The hypothetical winter schedule would meet Haines and Skagway demand (to/from Juneau) as indicated by 2013. For the winter months of 2013, Haines weekly disembarkations averaged 135 vehicles in 2013. Haines weekly embarkations averaged 137 vehicles. Vehicle traffic is about 64 percent of the weekly ACF capacity of 212 vehicles.
- Skagway weekly disembarkations averaged 43 vehicles in winter 2013. Skagway weekly embarkations averaged 41 vehicles. Vehicle traffic is about 26 percent of the weekly ACF capacity of 159 vehicles.

ACF Revenue Potential

In total, the hypothetical ACF service schedule would be expected to generate approximately $7.4 million in annual revenue. This estimate is based on 2013 traffic and 2016 fares and is approximately $500,000 below the estimated potential for Lynn Canal, as currently served. Sources of uncertainty in this estimate include the following:

- How the market responds to not having Juneau through-service: the inconvenience and potential expense associated with disembarking in Juneau then embarking on another ferry could act as a constraint on the volume of traffic originating and terminating in communities other than Juneau.
- Depending on the price sensitivity of potential travelers, higher fares introduced in 2016 could act to reduce demand for Lynn Canal ferry travel.
- The AMHS schedule for service northbound to Juneau and southbound from Juneau will play a role in Lynn Canal ACF traffic volume. More frequent service between Juneau and ports to the south would likely result in more Lynn Canal traffic, and vice versa.
- While over the course of the summer season, ACF service supplemented with twice-weekly FVF service would provide capacity to meet current demand, much of the demand is connected with mainline travel. Whether mainline travelers would adjust their schedules to fit within an ACF/FVF service framework is uncertain.

In summary, ACF car deck capacity limitations will constrain peak day and peak week traffic; however, over time, travelers can be expected to adjust to slightly lower capacity but more consistent and convenient Lynn Canal service, making their travel plans in conformance with available space. Looking forward, of concern is the limited capacity of ACF service to accommodate increased demand, especially during peak travel periods.

Chapter 1. Historical Lynn Canal Ferry Traffic

This Lynn Canal ferry traffic and revenue analysis is based on the assumption that Juneau becomes the northern terminus for AMHS service. All Lynn Canal through-traffic, along with all local traffic, would be served by the ACF, potentially with supplemental service as needed.

The following table provides total annual link volumes for all Lynn Canal links over the 2005 through 2014 period. Link volume is a measure of the total number of passengers and vehicles on board the vessel between two ports, regardless of point of origin or final destination. Vehicle counts includes all types of vehicles.

Table 1. AMHS Lynn Canal Link Traffic Volume, Full Year 2005 – 2014

	Haines to Skagway		Skagway to Haines		Juneau to Haines	
Year	Passengers	Vehicles	Passengers	Vehicles	Passengers	Vehicles
2005	18,996	5,887	18,452	5,368	39,047	11,752
2006	18,131	5,551	16,784	4,773	37,745	11,731
2007	14,375	4,797	13,725	4,204	35,532	11,155
2008	21,901	6,662	20,610	5,916	42,255	12,685
2009	20,546	6,622	20,362	6,077	37,508	11,554
2010	20,936	6,926	20,839	6,417	39,072	11,685
2011	20,289	6,721	20,549	6,243	39,873	12,189
2012	22,727	7,532	21,591	6,677	41,348	12,803
2013	23,597	7,612	22,509	6,761	41,517	12,823
2014	21,764	7,068	20,168	5,828	39,112	12,167
	Haines to Juneau		Skagway to Juneau		Juneau to Skagway	
Year	Passengers	Vehicles	Passengers	Vehicles	Passengers	Vehicles
2005	38,881	11,510	6,657	1,082	6,708	1,148
2006	37,981	11,670	5,041	899	5,005	958
2007	36,439	11,372	9,684	2,061	8,778	1,789
2008	41,683	12,333	3,757	938	2,351	571
2009	38,673	12,021	1,889	449	2,734	679
2010	40,314	12,258	1,643	463	1,900	435
2011	40,792	12,594	746	141	775	158
2012	42,086	13,219	289	53	222	40
2013	42,350	13,468	305	38	301	43
2014	40,777	12,607	533	138	267	44

Source: AMHS, compiled by McDowell Group.

Tables 2 through 5 provide monthly summer vehicle and passenger traffic volumes for 2013 and 2014 for Lynn Canal links. This analysis includes 2013 because the larger volume of traffic served that year provides a better measure of market demand than 2014, when traffic was about 5 to 6 percent lower.

Table 2. AMHS Lynn Canal Summer Link Traffic Volume, Vehicles, By Month, 2013

	May	June	July	Aug	Sept	Season Totals	Weekly Ave.
Jun-Hns	1,321	1,610	1,925	1,825	1,323	8,004	364
Jun-Skg	0	0	0	0	51	51	2
Hns-Skg	622	1,097	1,598	1,532	908	5,757	262
Skg-Hns	665	1,128	1,441	1,255	808	5,297	241
Hns-Jun	1,205	1,538	2,215	1,927	1,656	8,541	388
Skg-Jun	0	0	0	0	43	43	2

Source: AMHS, compiled by McDowell Group.

Table 3. AMHS Lynn Canal Summer Link Traffic Volume, Passengers, By Month, 2013

	May	June	July	Aug	Sept	Season Totals	Weekly Ave.
Jun-Hns	3,919	5,178	7,582	5,645	3,926	26,250	1,193
Jun-Skg	0	0	0	0	301	301	14
Hns-Skg	2,021	3,480	5,397	4,519	2,558	17,975	817
Skg-Hns	1,925	3,378	5,040	4,257	2,659	17,259	785
Hns-Jun	3,433	4,782	7,767	6,198	5,081	27,261	1,239
Skg-Jun	0	0	0	0	305	305	14

Source: AMHS, compiled by McDowell Group.

Table 4. AMHS Lynn Canal Summer Link Traffic Volume, Vehicles, By Month, 2014

	May	June	July	Aug	Sept	Season Totals	Weekly Ave.
Jun-Hns	1,095	1,406	1,952	1,863	1,150	7,466	339
Jun-Skg	0	0	0	0	50	50	2
Hns-Skg	366	974	1,514	1,620	848	5,322	242
Skg-Hns	392	1,046	1,318	1,108	741	4,605	209
Hns-Jun	1,040	1,550	1,951	1,943	1,573	8,057	366
Skg-Jun	0	0	0	0	20	20	1

Source: AMHS, compiled by McDowell Group.

Table 5. AMHS Lynn Canal Summer Link Traffic Volume, Passengers, By Month, 2014

	May	June	July	Aug	Sept	Season Totals	Weekly Ave.
Jun-Hns	3,197	4,824	7,319	6,244	3,320	24,904	1,132
Jun-Skg	0	0	0	0	267	267	12
Hns-Skg	1,137	3,204	5,261	4,954	2,514	17,070	776
Skg-Hns	1,033	3,234	4,597	4,205	2,861	15,930	724
Hns-Jun	2,803	4,930	6,864	7,211	4,736	26,544	1,207
Skg-Jun	0	0	0	0	174	174	8

Source: AMHS, compiled by McDowell Group.

Tables 6 through 9 provide monthly winter vehicle and passenger traffic volumes for 2013 and 2014 for Lynn Canal links.

Table 6. AMHS Lynn Canal Winter Link Traffic Volume, Vehicles, By Month, 2013

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Season Totals	Weekly Ave.
Jun-Hns	762	808	647	542	611	898	1,071	5,339	178
Jun-Skg	0	0	0	0	0	0	0	0	0
Hns-Skg	358	224	146	120	198	298	457	1,801	60
Skg-Hns	255	203	181	121	193	264	411	1,628	54
Hns-Jun	877	717	707	641	614	792	980	5,328	178
Skg-Jun	0	0	0	0	0	0	0	0	0

Source: AMHS, compiled by McDowell Group.

Table 7. AMHS Lynn Canal Winter Link Traffic Volume, Passengers, By Month, 2013

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Season Totals	Weekly Ave.
Jun-Hns	1,958	2,294	1,899	1,638	1,858	2,638	2,982	15,267	509
Jun-Skg	0	0	0	0	0	0	0	0	0
Hns-Skg	931	688	483	391	695	989	1,445	5,622	187
Skg-Hns	719	630	580	424	720	879	1,298	5,250	175
Hns-Jun	2,215	2,070	2,051	1,875	1,863	2,291	2,724	15,089	503
Skg-Jun	0	0	0	0	0	0	0	0	0

Source: AMHS, compiled by McDowell Group.

Table 8. AMHS Lynn Canal Winter Link Traffic Volume, Vehicles, By Month, 2014

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Season Totals	Weekly Ave.
Jun-Hns	843	702	625	595	584	782	887	5,018	167
Jun-Skg	0	0	0	0	0	0	0	0	0
Hns-Skg	328	231	177	130	160	246	292	1,564	52
Skg-Hns	274	182	157	128	154	237	205	1,337	45
Hns-Jun	907	698	626	621	559	782	664	4,857	162
Skg-Jun	0	48	23	0	0	0	0	71	2

Source: AMHS, compiled by McDowell Group.

Table 9. AMHS Lynn Canal Winter Link Traffic Volume, Passengers, By Month, 2014

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Season Totals	Weekly Ave.
Jun-Hns	2,290	2,205	1,884	1,740	1,631	2,226	2,232	14,208	474
Jun-Skg	0	0	0	0	0	0	0	0	0
Hns-Skg	814	732	620	433	476	734	885	4,694	156
Skg-Hns	818	555	540	474	494	669	688	4,238	141
Hns-Jun	2,541	2,237	1,871	1,888	1,623	2,185	1,888	14,233	474
Skg-Jun	0	147	89	0	0	0	0	236	8

Source: AMHS, compiled by McDowell Group.

Chapter 2. Lynn Canal Ferry Revenue Potential

The amount of revenue Lynn Canal ACF service might generate depends on a variety of factors, including service frequency and schedule (convenience), the fare structure, and conditions in the markets served by the ferry. A detailed revenue analysis that considers all of these factors is beyond the scope of this project. For purposes of this analysis, to estimate revenue *potential*, past and present fare structures are applied to actual traffic volumes to derive measures of annual revenue. Several important simplifying assumptions were made for purposes of this analysis, including;

- To estimate total revenues, Juneau/Haines and Juneau/Skagway link volumes are summed then disaggregated into Haines and Skagway local and through-market shares, based on origin/destination data. All northbound traffic (originating south of Juneau) and southbound traffic (originating north of Juneau) through Juneau is fared (priced) at published Lynn Canal fares.
- For purposes of measuring vehicle revenue, the ASV link volume count multiplied by the fare for a 19-foot vehicle is used as a proxy for vehicle-related revenue for all classes of vehicles (the AMHS fare structure is based on length of vehicle).
- For purposes of measuring passenger revenue, the passenger link volume count multiplied by the fare of an adult traveler is used as a proxy for passenger-related revenue for all categories of passengers (the AMHS passenger fare structure includes free or discounted travel for children and seniors).

Two revenue forecasts were calculated, one based on 2013 traffic and 2013 fares and another based on 2013 traffic and current (2016) fares. Lynn Canal fares for 2013 and 2016 are shown in the following table.

Table 10. 2013 AMHS Lynn Canal Fares

	Passenger	19-ft Vehicle
Jun-Hns/Hns-Jun	$37	$86
Hns-Skg/Skg-Hns	31	49
Jun-Skg/Skg-Jun	50	111

Table 11. Summer 2016 AMHS Lynn Canal Fares

	Passenger	19-ft Vehicle
Jun-Hns/Hns-Jun	$44	$100
Hns-Skg/Skg-Hns	32	53
Jun-Skg/Skg-Jun	57	125

Based on 2013 traffic and 2013 fares, Lynn Canal has annual revenue generating capacity of approximately $6.9 million. Overlaying the current AMHS Lynn Canal fare structure on 2013 traffic results in total annual revenues of approximately $7.9 million, about 15 percent above revenue estimates based on 2013 fares. Adjusting for senior citizen and youth passenger discounts reduces total revenue potential by about 5 percent.

Table 12. Lynn Canal Ferry Revenue Potential, Based on 2013 Traffic and Fares

	Vehicles	Passengers	Total
Summer			
Jun-Hns/Hns-Jun	$972,867	$1,173,493	$2,146,359
Hns-Skg/Skg-Hns	285,376	418,593	703,969
Jun-Skg/Skg-Jun	591,252	1,120,049	1,711,301
Total	$1,849,495	$2,712,135	$4,561,630
Winter			
Jun-Hns/Hns-Jun	$700,981	$808,188	$1,509,169
Hns-Skg/Skg-Hns	44,982	73,222	118,204
Jun-Skg/Skg-Jun	279,283	425,654	704,937
Total	$1,025,246	$1,307,064	$2,332,309
Annual			
Jun-Hns/Hns-Jun	$1,673,847	$1,981,681	$3,655,528
Hns-Skg/Skg-Hns	330,358	491,815	822,173
Jun-Skg/Skg-Jun	870,535	1,545,703	2,416,238
Total	$2,874,741	$4,019,199	$6,893,939

Source: McDowell Group estimates.

Table 13. Lynn Canal Ferry Revenue Potential, Based on 2013 Traffic and 2016 Fares

	Vehicles	Passengers	Total
Summer			
Jun-Hns/Hns-Jun	$1,131,240	$1,395,505	$2,526,745
Hns-Skg/Skg-Hns	308,672	432,096	740,768
Jun-Skg/Skg-Jun	665,825	1,276,856	1,942,681
Total	$2,105,737	$3,104,457	$5,210,194
Winter			
Jun-Hns/Hns-Jun	$815,094	961,089	1,776,183
Hns-Skg/Skg-Hns	48,654	75,584	124,238
Jun-Skg/Skg-Jun	314,508	485,245	799,753
Total	$1,178,256	$1,521,918	$2,700,173
Annual			
Jun-Hns/Hns-Jun	$1,946,334	$2,356,594	$4,302,928
Hns-Skg/Skg-Hns	357,326	507,680	865,006
Jun-Skg/Skg-Jun	980,333	1,762,101	2,742,434
Total	$3,283,993	$4,626,375	$7,910,367

Source: McDowell Group estimates.

Other Estimates of Lynn Canal Ferry Service Revenue Potential

Juneau Access DSEIS

The Juneau Access Draft Supplemental Environmental Impact Statement considered a range of marine highway-based alternatives to improve Lynn Canal surface transportation opportunities. Three Juneau Access alternatives are examined in this analysis: Alternative 1, No Action; Alternative 2, Enhanced AMHS Service; and Alternative 4C (marine service).

No Action: This alternative includes a continuation of mainline ferry service in Lynn Canal and two Alaska Class Ferries (ACF).

- During the summer, one ACF would make one round-trip between Auke Bay and Haines six days per week; and, a second ACF would make 2 round-trips per day between Haines and Skagway six days per week and one roundtrip on the seventh day.
- In the winter, one ACF would make one round-trip between Auke Bay and Haines three days per week; and, a second ACF would make 2 roundtrips per day between Haines and Skagway on the same three days.
- Mainline service would include two round-trips per week in the summer; and, one round-trip per week in the winter, with Auke Bay – Haines – Skagway – Haines – Auke Bay routing.

Alternative 1B: This includes all of the components of Alternative 1 but with additional service components including:

- the M/V Malaspina remains in service as a Lynn Canal summer shuttle after the second ACF is brought online, to provide additional capacity in Lynn Canal;
- a 20 percent reduction in fares for trips in Lynn Canal; and,

During the summer, the M/V Malaspina would make one round-trip per day seven days per week on a Skagway – Auke Bay – Skagway route. The addition of the M/V Malaspina to the ACF service in Lynn Canal increases service capacity and frequency. Otherwise, Alternative 1B's scheduled service is the same as Alternative 1.

Alternative 4C: This alternative would include a new conventional monohull ferry operating between Haines and Skagway. The M/V Malaspina would not operate as a summer day boat in Lynn Canal. The new monohull ferry would replace the ACF on the Haines – Skagway shuttle run allowing the ACF to begin Auke Bay – Skagway service.

In the summer, the ACF's would make a daily round-trip between Auke Bay and Haines, and a daily round-trip between Auke Bay and Skagway. During the winter, one Day Boat ACF would alternate between:

- one round-trip between Auke Bay and Haines one day; and,
- one round-trip between Auke Bay and Skagway, the next day.

Mainline service would be as scheduled under Alternative 1. Haines – Skagway shuttle service would include:

- 2 round-trips per day between Haines and Skagway 6 days a week in the summer;
- one round-trip per day between Haines and Skagway on each seventh day in the summer, when a mainliner will be on a similar schedule to the second sailing; and,
- a minimum of three round-trips per week between Haines and Skagway in the winter.

Alternative 4C was selected for this analysis because it would produce the most annual revenue, among the marine alternatives considered in the Juneau Access DSEIS and therefore provides an upper bound for Lynn Canal revenue potential.

Table 14 provides annual revenue estimates for the three Juneau Access alternatives described above. Revenues for 2015 are identical as that year was the beginning of the SDEIS study period and prior to implementation of any potential changes in service. By 2021, when changes would be fully implanted, annual revenues for the three alternatives range from $7.72 million (No Action) to $9.25 million (4C).

Table 14. Juneau Access Marine Alternatives Annual Fare Revenue

	2015	2017	2021
No Action AMHS			
Jun- Hns/Skg	$5,852,000	$7,363,000	$7,379,000
Hns-Skg	$239,000	$342,000	$342,000
Total	$6,091,000	$7,705,000	$7,721,000
Enhanced AMHS Service			
Jun- Hns/Skg	$5,852,000	$7,935,000	$7,952,000
Hns-Skg	$239,000	$274,000	$274,000
Total	$6,091,000	$8,226,000	$8,226,000
Alternative 4C			
Jun- Hns/Skg	$5,852,000	$7,363,000	$8,910,000
Hns-Skg	$239,000	$342,000	$342,000
Total	$6,091,000	$7,705,000	$9,252,000

Source: Juneau Access User Benefit Analysis, Tables A-59, 60, 65, 67, 68 and 73. Estimates in 2013 dollars.

The fare structure used for calculating annual revenues for the No Action, Enhanced Service, and 4C alternatives in the Juneau Access SDEIS are provided in Table 15. The Enhanced AMHS Service alternative assumed fares 20 percent lower than other alternatives.

Table 15. Juneau Access Ferry Fares

	No Action & 4C		Enhanced Service	
	Vehicle	Passenger	Vehicle	Passenger
Jun-Hns	$86	$37	$68.80	$29.60
Jun-Skg	$111	$50	$88.80	$40.00
Hns-Skg	$22	$7.50	$17.60	$6.00

Source: Juneau Access User Benefit Analysis, Tables A-13 and A-22.

Chapter 3. ACF Service Schedule and Capacity

The total capacity of the ACF ferry service in Lynn Canal is a function of vessel capacity and service frequency. ACFs have a car deck capacity of 1,060 feet, the equivalent of 53 Alaska standard (20-foot) vehicles (ASV), and passenger capacity of 300. A hypothetical summer service schedule, developed by the Skagway Ad-hoc Marine Highway Committee, is shown in the following table.

Table 16. ACF Lynn Canal Summer Schedule

Vessel: ACF 1, Homeported in Auke Bay				
Tuesday, Wednesday, Friday, Saturday, Sunday				
	Depart Auke Bay	Arrive Haines	Depart Haines	Arrive Auke Bay
	8:00 AM	12:46 PM	1:20 PM	6:06 PM
Monday, Thursday				
	Depart Auke Bay	Arrive Skagway	Depart Skagway	Arrive Auke Bay
	8:00 AM	1:18 PM	1:50 PM	7:08 PM
Vessel: ACF 2, Homeported in Haines				
Tuesday, Wednesday, Friday, Saturday, Sunday				
	Depart Haines	Arrive Skagway	Depart Skagway	Arrive Haines
Circuit 1	10:00 AM	10:53 AM	11:25 AM	12:18 PM
Circuit 2	1:10 PM	2:03 PM	2:35 PM	3:28 PM
Monday, Thursday				
	Depart Haines	Arrive Auke Bay	Depart Auke Bay	Arrive Haines
	8:00 AM	12:46 PM	1:20 PM	6:06 PM

Source: Skagway Ad hoc Marine Highway Committee. Schedules are hypothetical and are drawn from the Juneau Access SDEIS. Appendix GG.

This schedule includes once-daily service between Juneau and Haines/Skagway, and twice daily service between Haines and Skagway, five days a week. The following table translates the schedule into weekly vehicle and passenger capacity.

Table 17. ACF Summer Weekly Scheduled Service Capacity

	Voyages	ASV Capacity	Passenger Capacity
Jun-Hns/Skg	7	371	2,100
Hns-Skg	10	530	3,000
Skg-Hns	10	530	3,000
Skg/Hns-Jun	7	371	2,100

The hypothetical winter schedule includes four days per week service between Juneau and Haines, three days a week service between Juneau and Skagway, and no service between Haines and Skagway.

Table 18. ACF Winter Weekly Scheduled Service Capacity

	Voyages	ASV Capacity	Pass. Capacity
Jun-Hns	4	212	1,200
Hns-Jun	4	212	1,200
Jun-Skg	3	159	900
Skg -Jun	3	159	900

Summer Capacity Analysis

The hypothetical ACF summer service schedule considered in this analysis meets demand for ferry travel between Haines and Skagway, and meets passenger demand throughout the Lynn Canal service area, but does not provide sufficient car deck capacity for peak demand for service to and from Juneau.

Considered on a seasonal basis, the 371 ASV weekly capacity for Juneau to Haines/Skagway is just above the summer weekly average demand of 366 ASV. That same capacity is below the Haines/Skagway to Juneau summer average weekly demand of 390 ASV.

Table 19. ACF Summer Weekly Scheduled Service Capacity and Summer Average Weekly 2013 Traffic

	Voyages	ASV Capacity	Pass. Capacity	2013 Weekly Ave. Vehicles	2013 Weekly Ave. Pass.
Jun-Hns/Skg	7	371	2,100	366	1,207
Hns-Skg	10	530	3,000	262	817
Skg-Hns	10	530	3,000	241	785
Skg/Hns-Jun	7	371	2,100	390	1,253

Source: 2013 averages from AMHS Annual Traffic Volume Report. Compiled by McDowell Group.

With daily service, total ACF capacity, for the 106-day summer period in 2013 examined in the study, would have been 112,360 feet of car deck space, northbound and southbound. During that period, actual southbound car deck usage totaled 123,305 feet while northbound car deck usage totaled 112,643 feet.

With daily service, total ACF capacity, for the 119-day summer period in 2014 examined in the study, would have been 126,140 feet of car deck space, northbound and southbound. During that period southbound car deck usage totaled 119,519 feet while northbound car deck usage totaled 107,347 feet.

The hypothetical service schedule falls short of peak week vehicle demand, for service to and from Juneau. Summer 2013 peak-week demand was 417 ASV northbound and 460 ASV southbound.

Table 20. ACF Summer Weekly Scheduled Service Capacity and Average & Peak Weekly Summer 2013 Traffic

	ASV Capacity	2013 Weekly Ave. Vehicles	2013 Peak Week Vehicles*
Jun-Hns/Skg	371	366	417
Hns-Skg	530	262	348
Skg-Hns	530	241	300
Skg/Hns-Jun	371	390	460

*Weekly average for July and August, 2013

Analysis of vehicle traffic carried on each voyage in summer of 2013 and summer of 2014 provides the number of voyages that carried more vehicles than can be carried by the ACF, and the overage in terms of car-deck feet and number of ASVs. Results are provided in the following tables and summarized below.

For the period between May 25, 2013 and September 30, 2013 there were:

- 36 northbound voyages where car deck usage was greater than what could be carried by an ACF. Total car deck usage greater than ACF capacity during this period was 14,945 feet, or 746 Alaska Standard Vehicles (ASV).
- 50 southbound voyages where car deck usage was greater than what could be carried by an ACF. Total car deck usage greater than ACF capacity during this period was 24,168 feet, or 1,209 ASV.
- During the 2013 study period, approximately 25 percent of northbound Lynn Canal voyages carried more than ACF capacity, while 33 percent of southbound voyages carried more than ACF capacity.

For the period between May 14, 2014 and September 11, 2014 there were:

- 37 northbound voyages where car deck usage was greater than what could be carried by an ACF. Total car deck usage greater than ACF capacity during this period was 14,200 feet, or 710 ASV.
- 40 southbound voyages where car deck usage was greater than what could be carried by an ACF. Total car deck usage greater than ACF capacity during this period was 21,501 feet, or 1,075 ASV.
- During the 2014 study period, approximately 30 percent of northbound and 33 percent of southbound voyages carried more than ACF capacity.

All MV Columbia Lynn Canal voyages were over ACF capacity, northbound and southbound, during the 2013 and 2014 summer study periods. The Columbia has car deck capacity of 134 ASV compared to ACF capacity of 53 ASV. The MV Matanuska and MV Malaspina have capacity of 88 ASV and the MV Taku has capacity of 69 ASV.

Table 21. AMHS Lynn Canal Northbound Voyages with Car Deck Use Greater than 1,060 feet, Summer 2013

Date	Vessel	Car Deck Usage (ft)	Over 1,060	ASV
25-MAY-2013	MAL	1,124	64	3
03-JUN-2013	COL	1,818	758	38
10-JUN-2013	COL	2,118	1,058	53
14-JUN-2013	MAL	1,322	262	13
17-JUN-2013	COL	1,755	695	35
24-JUN-2013	COL	1,922	862	43
28-JUN-2013	MAL	1,234	174	9
29-JUN-2013	MAL	1,206	146	7
30-JUN-2013	MAL	1,262	202	10
01-JUL-2013	COL	1,829	769	38
08-JUL-2013	COL	2,060	1,000	50
11-JUL-2013	MAT	1,438	378	19
15-JUL-2013	COL	1,973	913	46
19-JUL-2013	MAL	1,155	95	5
22-JUL-2013	COL	2,155	1,095	55
25-JUL-2013	MAL	1,306	246	12
26-JUL-2013	MAL	1,424	364	18
27-JUL-2013	MAL	1,204	144	7
29-JUL-2013	COL	1,153	93	5
03-AUG-2013	MAL	1,136	76	4
05-AUG-2013	COL	2,313	1,253	63
06-AUG-2013	MAL	1,083	23	1
10-AUG-2013	MAL	1,109	49	2
12-AUG-2013	COL	1,484	424	21
17-AUG-2013	MAL	1,341	281	14
19-AUG-2013	COL	1,886	826	41
26-AUG-2013	COL	1,673	613	31
30-AUG-2013	MAL	1,312	252	13
31-AUG-2013	TAK	1,248	188	9
02-SEP-2013	MAL	1,410	350	18
05-SEP-2013	TAK	1,245	185	9
06-SEP-2013	TAK	1,318	258	13
09-SEP-2013	MAL	1,385	325	16
16-SEP-2013	MAL	1,166	106	5
23-SEP-2013	MAL	1,069	9	0
27-SEP-2013	TAK	1,288	228	11
30-SEP-2013	MAL	1,241	181	9

Source: AMHS, compiled by McDowell Group.

Table 22. AMHS Lynn Canal Southbound Voyages with Car Deck Use Greater than 1,060 feet, Summer 2013

Date	Vessel	Car Deck Usage (ft)	Over 1,060	ASV
26-MAY-2013	MAL	1,330	270	14
28-MAY-2013	COL	1,219	159	8
03-JUN-2013	COL	1,991	931	47
10-JUN-2013	COL	1,859	799	40
17-JUN-2013	COL	1,592	532	27
25-JUN-2013	COL	1,246	186	9
27-JUN-2013	MAT	1,162	102	5
30-JUN-2013	MAL	1,160	100	5
01-JUL-2013	COL	2,473	1,413	71
03-JUL-2013	MAL	1,066	6	0
04-JUL-2013	MAT	1,202	142	7
07-JUL-2013	MAL	1,588	528	26
08-JUL-2013	COL	2,372	1,312	66
11-JUL-2013	MAT	1,339	279	14
14-JUL-2013	MAL	1,318	258	13
15-JUL-2013	COL	2,473	1,413	71
18-JUL-2013	MAT	1,260	200	10
21-JUL-2013	MAL	1,168	108	5
22-JUL-2013	COL	2,358	1,298	65
25-JUL-2013	MAT	1,485	425	21
27-JUL-2013	MAL	1,522	462	23
28-JUL-2013	MAL	1,371	311	16
29-JUL-2013	COL	2,478	1,418	71
29-JUL-2013	FWX	1,229	169	8
30-JUL-2013	MAL	1,412	352	18
01-AUG-2013	MAT	1,240	180	9
04-AUG-2013	MAL	1,575	515	26
05-AUG-2013	COL	2,417	1,357	68
08-AUG-2013	MAT	1,484	424	21
11-AUG-2013	MAL	1,306	246	12
12-AUG-2013	COL	2,519	1,459	73
15-AUG-2013	MAT	1,375	315	16
18-AUG-2013	MAL	1,195	135	7
19-AUG-2013	COL	2,028	968	48
22-AUG-2013	MAT	1,627	567	28
26-AUG-2013	COL	2,002	942	47
29-AUG-2013	MAT	1,221	161	8
01-SEP-2013	TAK	1,325	265	13

Source: AMHS, compiled by McDowell Group.

Table 22 (continued). AMHS Lynn Canal Southbound Voyages with Car Deck Use Greater than 1,060 feet, Summer 2013

Date	Vessel	Car Deck Usage (ft)	Over 1,060	ASV
02-SEP-2013	MAL	1,634	574	29
03-SEP-2013	TAK	1,084	24	1
08-SEP-2013	TAK	1,298	238	12
09-SEP-2013	MAL	1,438	378	19
15-SEP-2013	TAK	1,081	21	1
16-SEP-2013	MAL	1,603	543	27
17-SEP-2013	TAK	1,091	31	2
19-SEP-2013	MAT	1,200	140	7
22-SEP-2013	TAK	1,097	37	2
23-SEP-2013	MAL	1,489	429	21
26-SEP-2013	MAT	1,398	338	17
29-SEP-2013	TAK	1,325	265	13
30-SEP-2013	MAL	1,503	443	22

Source: AMHS, compiled by McDowell Group.

Summer Supplemental Service

The following discussion considers how supplemental Lynn Canal ferry service provided by a FVF or additional ACF voyages might meet demand not accommodated by the regular ACF service schedule.

- For the 50 southbound voyages carrying more than ACF capacity during the 2013 study period, an FVF (with car deck capacity of 36 ASV) would have provided adequate additional car deck capacity for all but 11 voyages (all MV Columbia). An additional ACF voyage would have handled all but seven voyages.

- For the 36 northbound voyages carrying more than ACF capacity during the 2013 study period, the FVF would have provided adequate additional capacity for all but 10 voyages. An additional ACF voyage would have accommodated all but two.

- For the 40 southbound voyages carrying more than ACF capacity during the 2014 study period, the FVF would have provided adequate additional car deck capacity for all but nine voyages (all MV Columbia). An additional ACF voyage would have handled all but seven voyages.

- For the 37 northbound voyages carrying more than ACF capacity during the 2014 study period, the FVF would have provided adequate additional capacity for all but five voyages. An additional ACF voyage would have accommodated all but one.

Table 23. Lynn Canal Summer Ferry Capacity Analysis

	Summer 2013 Period		Summer 2014 Period	
	Northbound	Southbound	Northbound	Southbound
Total Voyages	147	148	122	122
No. of Voyages Over ACF Capacity	36	50	37	40
% of Voyages over ACF Capacity	25%	34%	30%	33%
Unmet ASV Traffic	746	1,209	710	1,075
Voyages with Unmet Traffic with Supplemental FVF Service	9	11	5	9
Unmet ASV Traffic with Supplemental FVF Service (ASV)	103	270	67	232
Voyages with Unmet Traffic with Supplemental ACF Service	2	7	1	7
Unmet ASV Traffic with Supplemental ACF Service (ASV)	12	113	11	89

Source: McDowell Group estimates based on AMHS data.

- Strictly in terms of weekly, monthly, and seasonal demand and capacity, daily ACF service supplemented by twice weekly FVF voyages would provide sufficient car deck space to meet current demand. However, this level of service would not meet peak daily demand (as described above).

Winter Service Analysis

As noted above, the hypothetical winter schedule includes four days per week service between Juneau and Haines, three days a week service between Juneau and Skagway, and no service between Haines and Skagway.

No service connecting Haines and Skagway is provided in the hypothetical winter schedule. Therefore, all on/off traffic between the communities would be unaccommodated. In 2013, winter traffic between the two communities totaled 2,362 passengers and 918 vehicles (the data is based on a split winter season, of January through April 2013 and October through December 2013). Passenger traffic in 2014 was 10 percent below 2013, while vehicle traffic was 5 percent lower.

Table 24. Haines/Skagway Winter Passenger and Vehicle Traffic (On-Off)
(Jan. to Apr. 2013 and Oct. to Dec. 2013)

	Passengers	Vehicles
Haines to Skagway	1,305	510
Skagway to Haines	1,057	408
Total	2,362	918

Source: AMHS Annual Traffic Volume Report

Table 25. Haines/Skagway Winter Passenger and Vehicle Traffic (On-Off) (Jan. to Apr. 2014 and Oct. to Dec. 2014)

	Passengers	Vehicles
Haines to Skagway	1,280	515
Skagway to Haines	853	355
Total	2,133	870

Source: AMHS Annual Traffic Volume Report

The hypothetical winter schedule includes four days per week service between Juneau and Haines and three days per week service between Juneau and Skagway. Assessment of potential capacity constraints under this schedule requires analysis at the port level rather than at the Lynn Canal corridor level. The following tables summarize traffic to and from Haines and Skagway, excluding traffic between the two communities.

Table 26. Total Haines Embarkations and Disembarkations (Excluding to/from Skagway) (Jan. to Apr. 2013 and Oct. to Dec. 2013)

	Passengers	Vehicles
Haines Embarkations	10,913	4,113
Haines Disembarkations	11,149	4,050
Total	22,062	8,163

Source: AMHS Annual Traffic Volume Report. Compiled by McDowell Group

Table 27. Total Haines Embarkations and Disembarkations (Excluding to/from Skagway) (Jan. to Apr. 2014 and Oct. to Dec. 2014)

	Passengers	Vehicles
Haines Embarkations	10,855	3,879
Haines Disembarkations	10,789	3,970
Total	21,644	7,849

Source: AMHS Annual Traffic Volume Report. Compiled by McDowell Group

Table 28. Total Skagway Embarkations and Disembarkations (Excluding to/from Haines) (Jan. to Apr. 2013 and Oct. to Dec. 2013)

	Passengers	Vehicles
Skagway Embarkations	4,196	1,220
Skagway Disembarkations	4,332	1,300
Total	8,528	2,520

Source: AMHS Annual Traffic Volume Report. Compiled by McDowell Group.

Table 29. Total Skagway Embarkations and Disembarkations (Excluding to/from Haines) (Jan. to Apr. 2014 and Oct. to Dec. 2014)

	Passengers	Vehicles
Skagway Embarkations	3,693	1,079
Skagway Disembarkations	3,418	1,049
Total	7,111	2,128

Source: AMHS Annual Traffic Volume Report. Compiled by McDowell Group

Winter Capacity/Demand Analysis

Four northbound and four southbound trips each week would provide weekly Haines capacity for 212 vehicles and 1,200 passengers, each direction. Three northbound and three southbound trips each week would provide weekly Skagway capacity for 159 vehicles and 900 passengers, each direction.

The hypothetical schedule would meet Haines and Skagway demand (to/from Juneau) as indicated by 2013 and 2014 traffic. For the winter months of 2013, Haines weekly disembarkations averaged 135 vehicles and 372 passengers in 2013. Haines weekly embarkations averaged 137 vehicles and 364 passengers. Vehicle traffic is about 64 percent of capacity, while passenger traffic is about 30 percent of capacity.

Skagway weekly disembarkations averaged 43 vehicles and 144 passengers in 2013. Skagway weekly embarkations averaged 41 vehicles and 140 passengers. Vehicle traffic is about 26 percent of capacity, while passenger traffic is about 16 percent of capacity.

Table 30. ACF Winter Weekly Scheduled Haines Service Capacity and Winter Average Weekly 2013 and 2014 Traffic

	Voyages	ASV Capacity	Pass. Capacity	2013 Weekly Ave. Vehicles	2013 Weekly Ave. Pass	2014 Weekly Ave. Vehicles	2014 Weekly Ave. Pass
Jun-Hns	4	212	1,200	135	372	132	360
Hns-Jun	4	212	1,200	137	364	129	362

Table 31. ACF Winter Weekly Scheduled Skagway Service Capacity and Winter Average Weekly 2013 and 2014 Traffic

	Voyages	ASV Capacity	Pass. Capacity	2013 Weekly Ave. Vehicles	2013 Weekly Ave. Pass	2014 Weekly Ave. Vehicles	2014 Weekly Ave. Pass
Jun-Skg	3	159	900	43	144	35	114
Skg -Jun	3	159	900	41	140	36	123

Analysis of the number of vehicles carried on each voyage in winter of 2013-2014 provides the number of voyages that carried more vehicles than can be carried by the ACF, and the overage in terms of car-deck feet and number of ASVs. Results are provided in the following tables and summarized below.

For the period between October 1 and April 30, 2014 there were:

- Six northbound voyages where car deck usage was greater than what could be carried by an ACF. Total car deck usage greater than ACF capacity during this period was 462 feet, or 23 ASV.
- Five southbound voyages where car deck usage was greater than what could be carried by an ACF. Total car deck usage greater than ACF capacity during this period was 660 feet, or 34 ASV.
- During the 2013-2014 winter study period, approximately 4 percent of both southbound and northbound voyages carried more than ACF capacity.

Table 32. Lynn Canal Ferry Winter Capacity Analysis

	Winter 2013-2014	
	Northbound	Southbound
Total Voyages	142	141
No. of Voyages Over ACF Capacity	6	5
% of Voyages over ACF Capacity	4%	4%
Unmet ASV Traffic	23	34

Source: McDowell Group estimates based on AMHS data.

The analysis of winter capacity constraints differs from the summer analysis because of the lack of Haines/Skagway connecting service. Without that connecting service Lynn Canal winter traffic will be bifurcated between travel to and from Haines and travel to and from Skagway. In general, three quarters of Lynn Canal winter traffic (excluding traffic between Haines and Skagway) is embarking or disembarking in Haines and the other quarter in Skagway. In the 2013-2014 winter period considered in this analysis, there were five to six voyages each direction carrying more vehicles between Juneau and Haines than an ACF would be capable of accommodating. The number of unaccommodated vehicles is small, however, totaling approximately 23 northbound and 34 southbound. The actual number of unaccommodated vehicles could be higher or lower than these estimates because some voyages may have more or less Haines traffic than the seasonal average.

There are no instances when winter northbound or southbound Skagway traffic alone would exceed ACF capacity.

Table 33. AMHS Lynn Canal Northbound Voyages with Estimated Haines Car Deck Use Greater than 1,060 feet, Winter 2013-2014

Date	Vessel	Car Deck Usage (ft)	Estimated Haines Traffic (ft)	Footage Over 1,060	ASV
07-OCT-13	MAL	1,556	1,167	107	5
14-OCT-13	MAL	1,509	1,132	72	4
10-MAR-14	MAT	1,488	1,116	56	3
17-MAR-14	MAT	1,548	1,161	101	5
24-MAR-14	MAT	1,452	1,089	29	1
21-APR-14	MAT	1,542	1,157	97	5

Source: AMHS, compiled by McDowell Group.

Table 34. AMHS Lynn Canal Southbound Voyages with Estimated Haines Car Deck Use Greater than 1,060 feet, Winter 2013-2014

Date	Vessel	Car Deck Usage (ft)	Estimated Haines Traffic (ft)	Footage Over 1,060	ASV
07-OCT-13	MAL	1,588	1,191	131	7
14-OCT-13	MAL	1,618	1,214	154	8
21-OCT-13	MAL	1,617	1,213	153	8
25-NOV-13	MAL	1,572	1,179	119	6
16-DEC-13	MAL	1,551	1,163	103	5

Source: AMHS, compiled by McDowell Group.

Chapter 4. ACF Revenue Analysis

This chapter addresses the revenue potential associated with the hypothetical ACF schedule considered in this study. All other factors being equal, the hypothetical ACF service would be expected to generate less revenue than the Lynn Canal corridor's potential for the following reasons:

- The maximum physical vehicle capacity of summer ACF service is slightly less than actual southbound traffic (as measured in 2013) and about equal to northbound traffic.
    - During the 106-day summer period in 2013 examined in the study, actual southbound car deck usage totaled 123,305 feet while northbound car deck usage totaled 112,643 feet. With daily service, the ACF could have provided 112,360 feet of car deck space, northbound and southbound, over that same period.
- Travel demand is not uniform over the season, therefore the ACF would be unable to meet demand during peak travel periods, particularly around mainline arrivals and departures in Juneau. For the period between May 25, 2013 and September 9, 2013 there were:
    - 32 northbound voyages where car deck usage was greater than what could be carried by an ACF. Total car deck usage greater than ACF capacity during this period was 14,421 feet, or 721 Alaska Standard Vehicles (ASV).
    - 42 southbound voyages where car deck usage was greater than what could be carried by an ACF. Total car deck usage greater than ACF capacity during this period was 21,921 feet, or 1,096 ASV.
    - During the 2013 study period, approximately 25 percent of northbound Lynn Canal voyages carried more than ACF capacity, while 33 percent of southbound voyages carried more than ACF capacity.
    - The hypothetical ACF service schedule falls short of peak week vehicle demand, for Lynn Canal service to and from Juneau. Summer 2013 peak-week demand was 417 ASV northbound and 460 ASV southbound. The maximum ACF capacity would be 371 ASV each direction.
- The hypothetical winter ACF schedule represents a substantial change from traditional Lynn Canal service, with no service between Haines and Skagway. A portion of traffic through Juneau to and from Skagway, and a portion of traffic through Juneau to and from Haines will require a day's layover in Juneau. As this would increase travel costs, in theory a reduction in traffic will result; however, the market may largely adapt to the new service.
- Vessel capacity may play a small role in constraining winter traffic to and from Haines. The number of potentially unaccommodated vehicles would be small (at approximately 23 northbound and 34 southbound, based on 2013 traffic).

- No winter service connecting Haines and Skagway will leave that market unserved. In 2013, winter traffic between the two communities totaled 2,362 passengers and 918 vehicles (the data is based on a split winter season, of January through April 2013 and October through December 2013).

ACF Revenue Estimates

In Chapter 2 the revenue potential of Lynn Canal ferry service was estimated at $7.9 million annually, based on 2013 traffic and 2016 fares. This includes $5.2 million in summer revenue and $2.7 million in winter revenue.

Table 37. Lynn Canal Ferry Revenue Potential, Based on 2013 Traffic and 2016 Fares

	Vehicles	Passengers	Total
Summer	$2,105,737	$3,104,457	$5,210,194
Winter	$1,178,256	$1,521,918	$2,700,173
Total	$3,283,993	$4,626,375	$7,910,367

Source: McDowell Group estimates.

A detailed forecast of revenue associated with ACF service in Lynn Canal is beyond the scope of this project. However, it is possible to broadly estimate those revenues, based on simplifying assumptions about market capture and utilization rates. For example:

- If none of potentially unaccommodated (because of vessel capacity limitations) summer traffic is otherwise served, ACF revenues would be approximately 7 percent ($340,000) below potential summer revenue, or approximately $4.9 million.

- If summer ACF service linking Juneau and Haines/Skagway operated at 80 percent car deck utilization and 40 percent passenger utilization, while service linking Haines and Skagway operated at 50 percent car deck utilization and 25 percent passenger utilization, summer revenue would total approximately $4.9 million.

- If vessel capacity limitations and alternating daily service to and from Juneau act as minor constraints on traffic, resulting in an initial traffic decline of about 5 percent, winter revenues would total about $2.5 million (not including revenue from Haines/Skagway connecting service).

- Winter revenue would be approximately $125,000 lower than potential revenue without Haines/Skagway connecting service.

In total the hypothetical ACF service schedule would be expected to generate approximately $7.4 million in annual revenue. The estimate is based on 2013 traffic and 2016 fares and are approximately $500,000 below the estimated potential for Lynn Canal, as currently served. Sources of uncertainty in this estimate include the following:

- How the market responds to not having Juneau through-service: the inconvenience and potential expense associated with disembarking in Juneau then embarking on another ferry could act as a constraint on the volume of traffic originating and terminating in communities other than Juneau.

- Depending on the price sensitivity of potential travelers, higher fares introduced in 2016 could act to reduce demand for Lynn Canal ferry travel.
- The AMHS schedule for service northbound to Juneau and southbound from Juneau will play a role in Lynn Canal ACF traffic volume. More frequent service between Juneau and ports to the south would likely result in more Lynn Canal traffic, and vice versa.

In summary, ACF car deck capacity will constrain peak day and peak week traffic, however, over time travelers can be expected to adjust to slightly lower capacity but more consistent Lynn Canal service, adjusting their travel plans in conformance with available space. Looking forward, of concern is the limited capacity to accommodate increased demand, especially during peak travel periods.

Appendix 1: Car Deck Traffic

Figure 1. Sum of Cardeck Length for Trips with Cardeck Length > 1,060 feet, Northbound, 2013

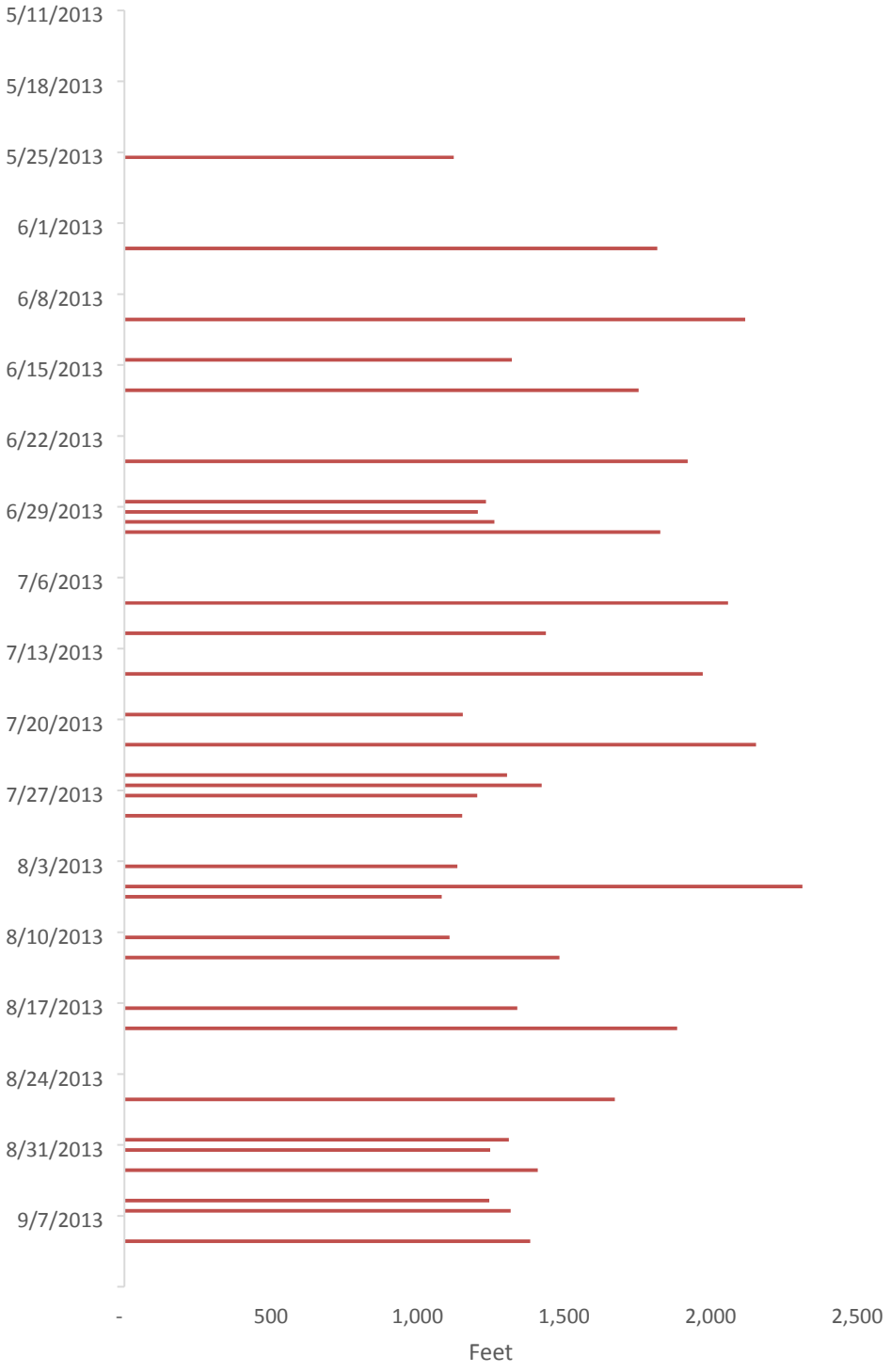


Figure 2. Sum of Cardeck Length for Trips with Cardeck Length > 1,060 feet, Southbound, 2013

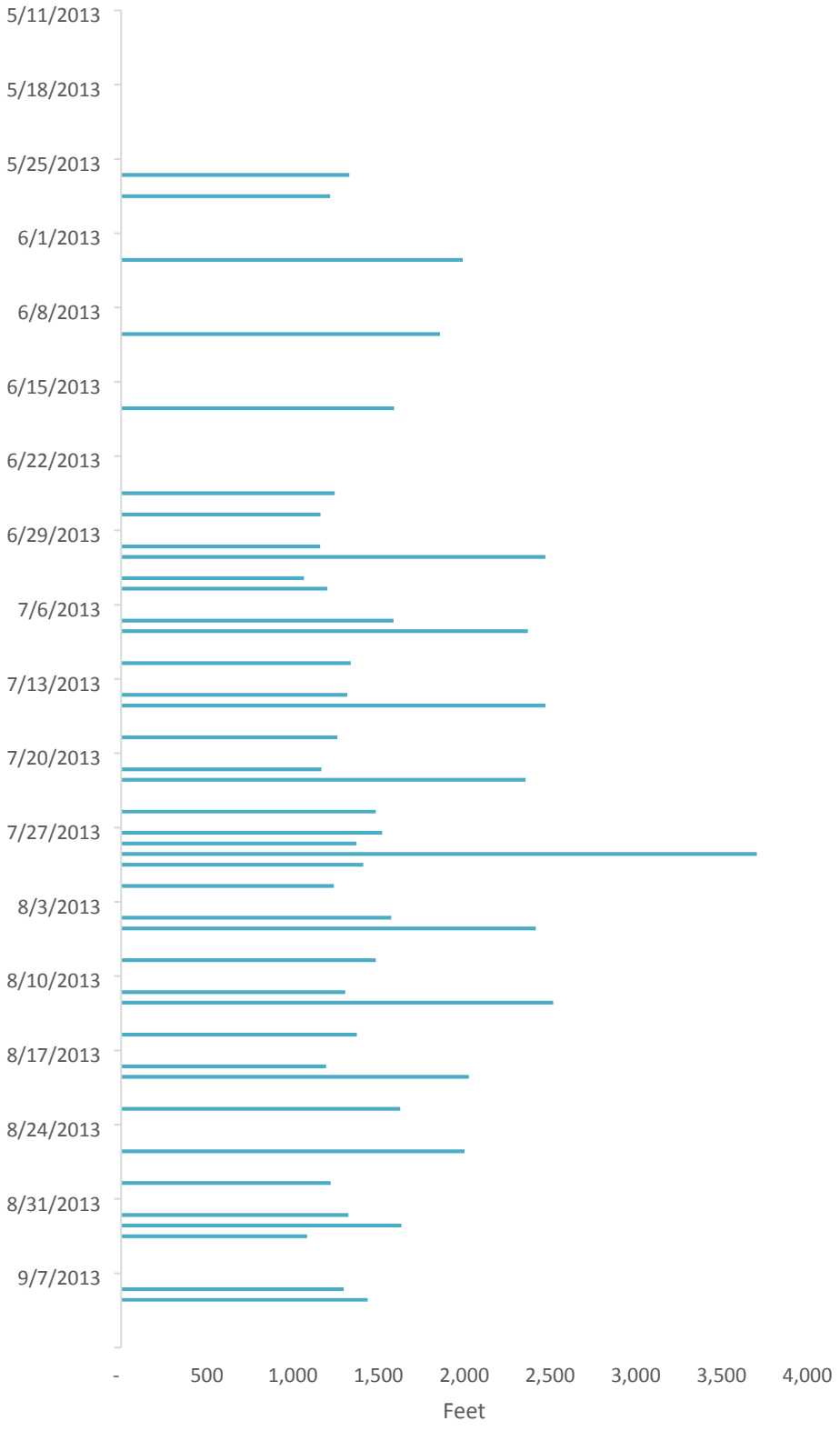


Figure 3. Cardeck Length Greater than 1,060 Feet, Northbound, 2013

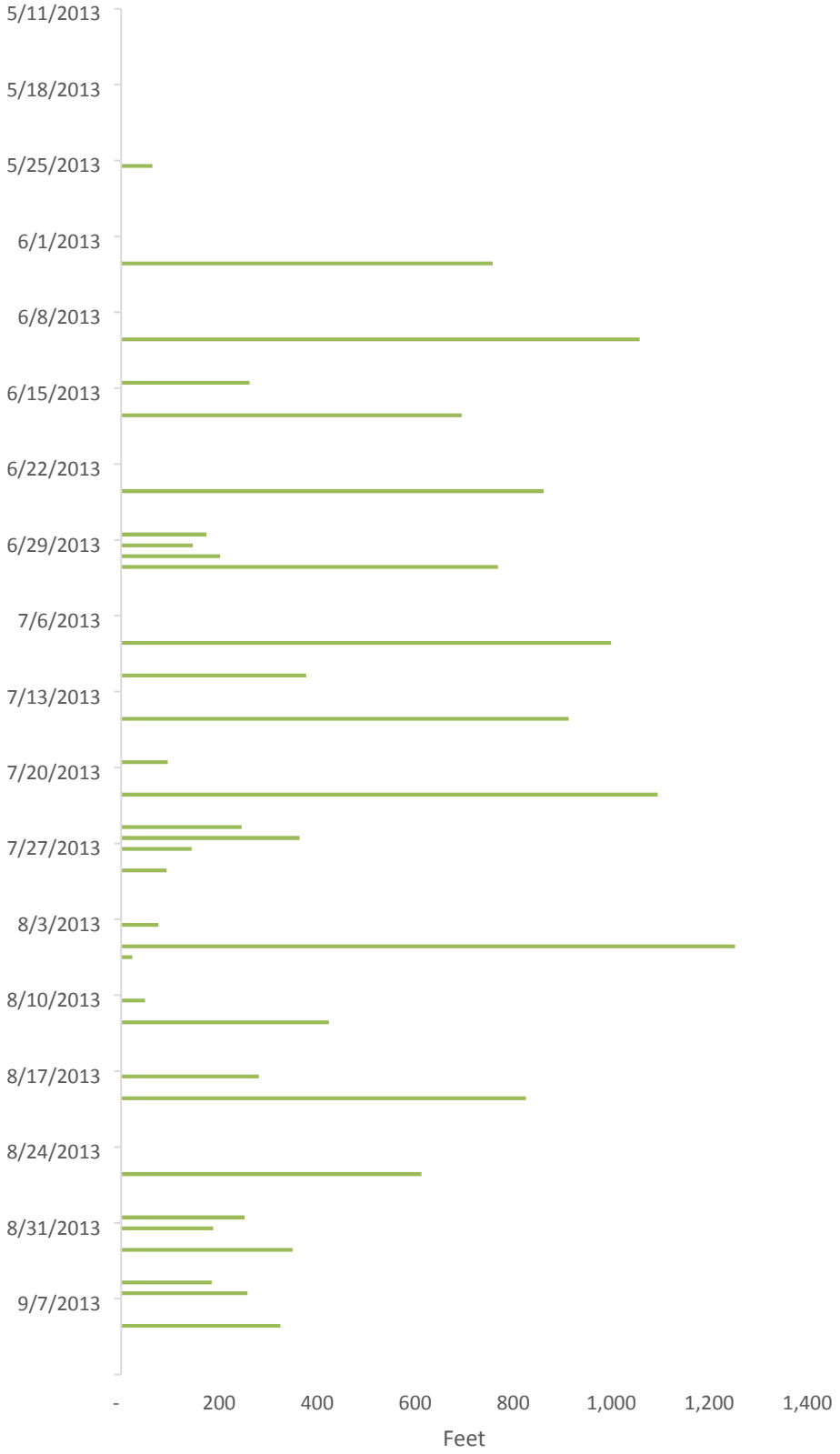


Figure 1. Cardeck Length Greater than 1,060 feet, Southbound, 2013

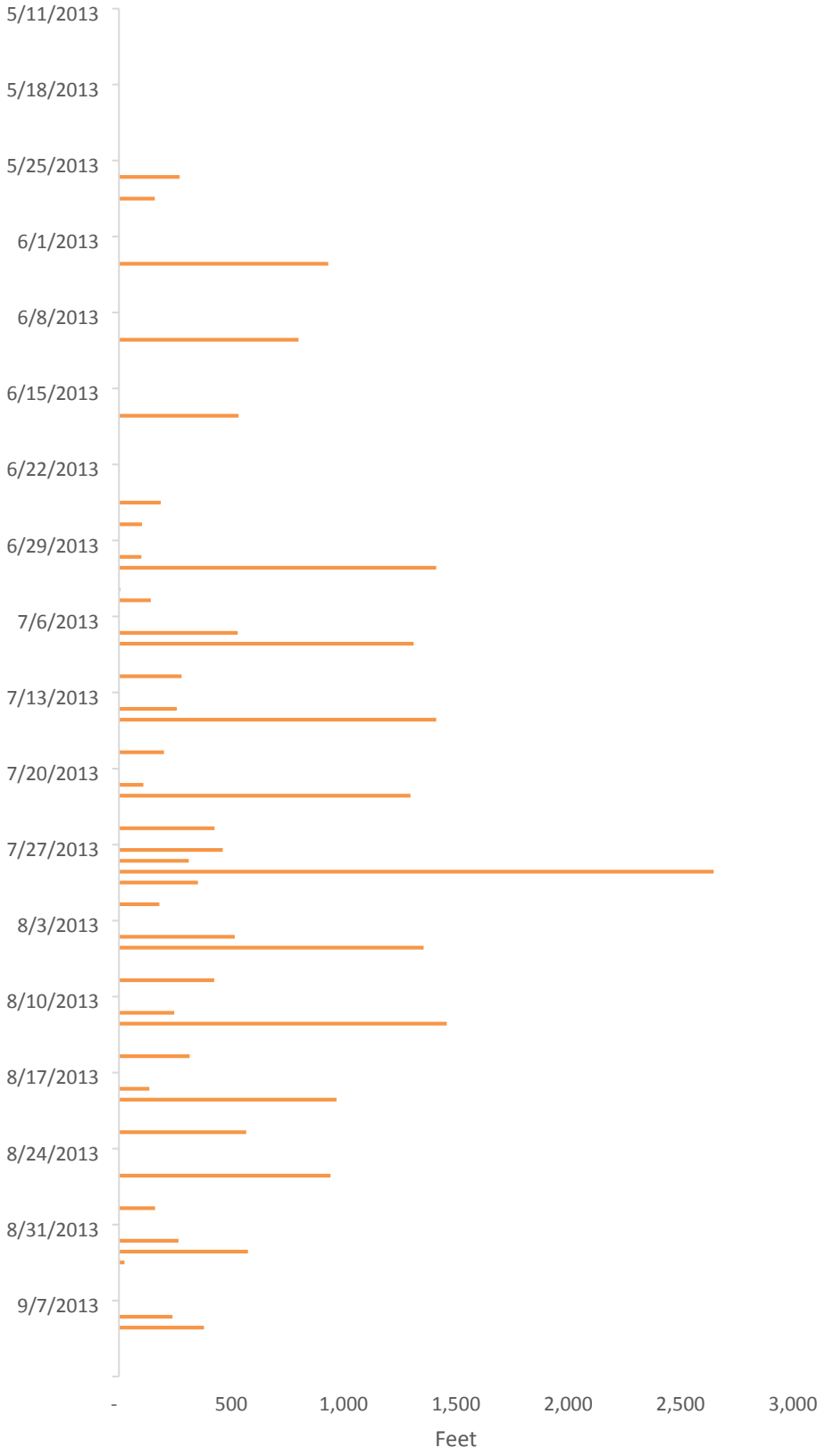


Figure 5. Sum of Cardeck Length for Trips with Cardeck Length > 1,060 feet, Northbound, 2014

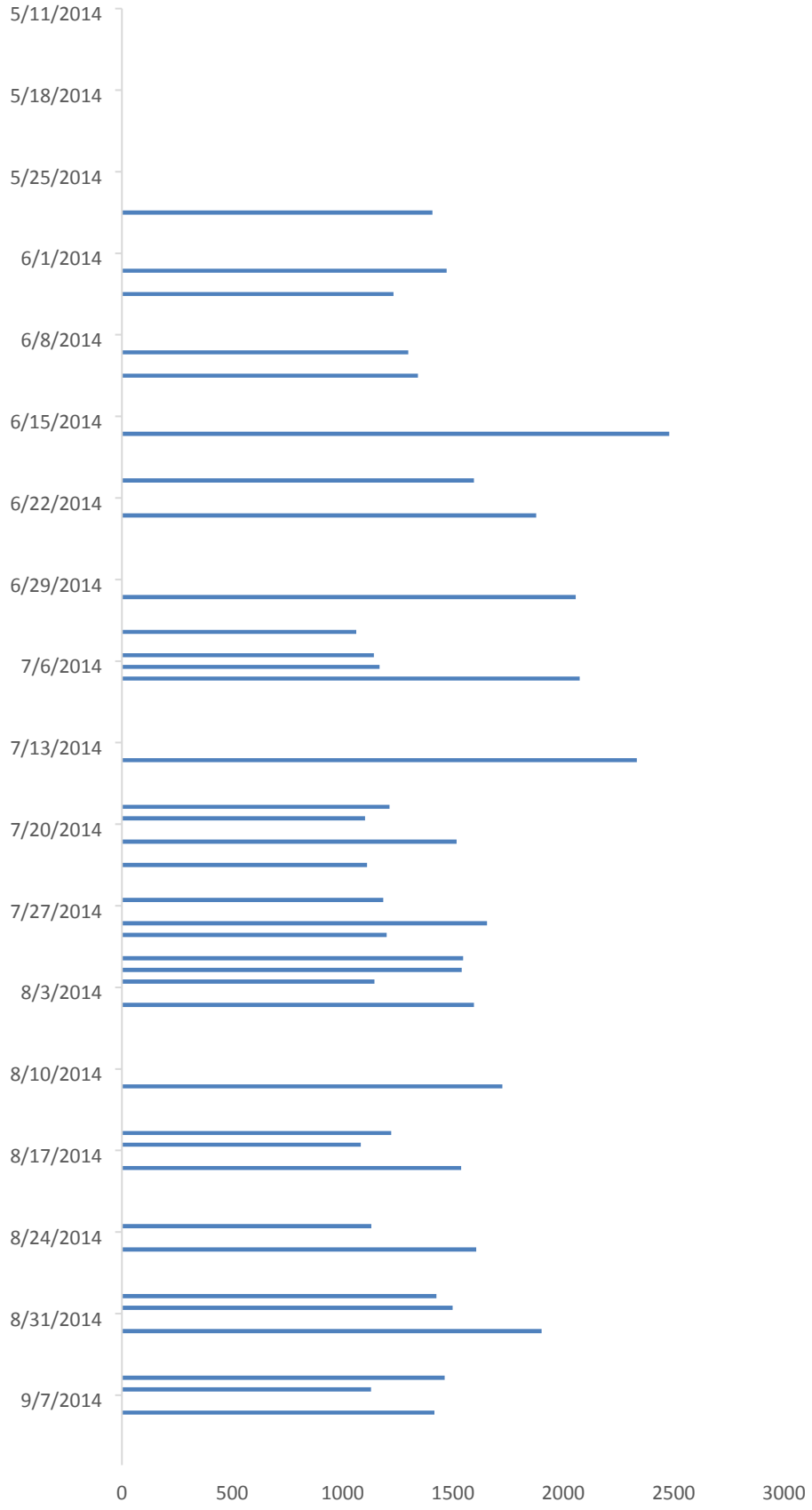


Figure 6. Sum of Cardeck Length for Trips with Cardeck Length > 1,060 feet, Southbound, 2014

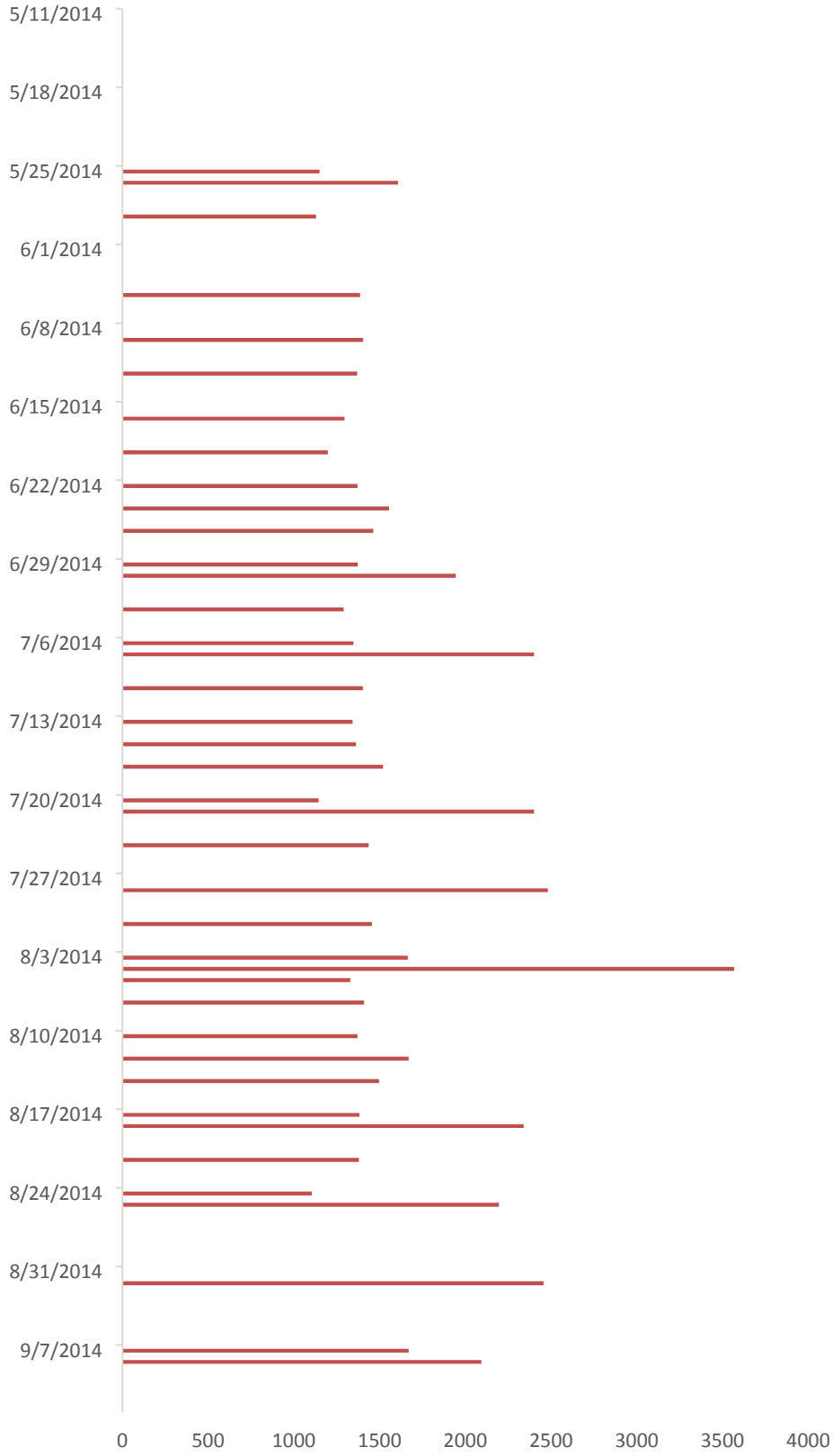
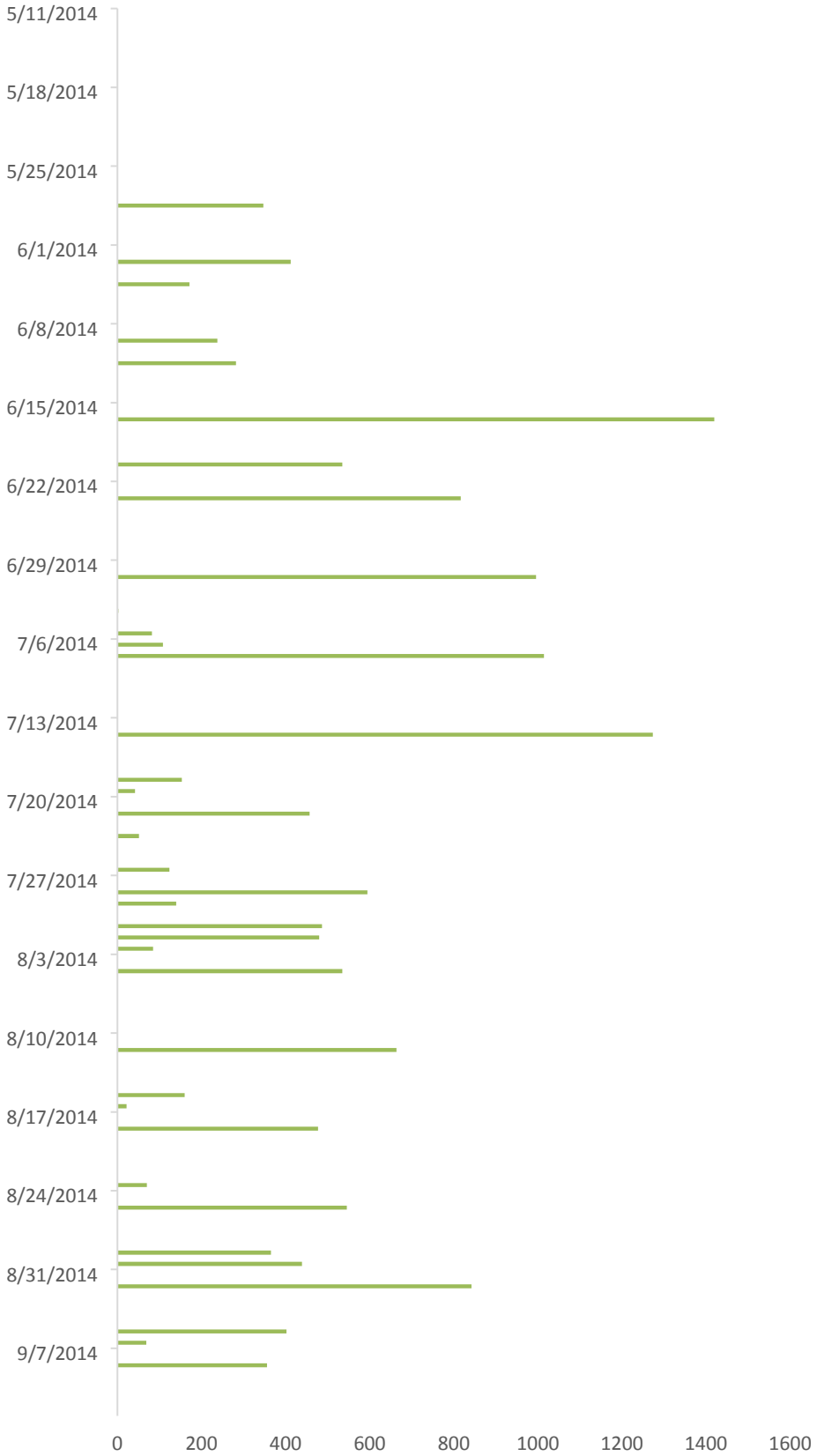


Figure 7. Cardeck Length Greater than 1,060 Feet, Northbound, 2014



Source:

Figure 8. Cardeck Length Greater than 1,060 feet, Southbound, 2014

Appendix 2: Excerpt from McDowell Group 2014 Lynn Canal Ferry Service Analysis

The following material is excerpted from McDowell Group's June 2014 *North Lynn Canal Ferry Service Analysis*, which was prepared for the Municipality of Skagway. The excerpt is provided here at the request of the Skagway Ad Hoc Marine Highway Committee.

Day Boat/Alaska Class Ferry Operating Cost Analysis

The question of whether day boat/ACF service in Lynn Canal will result in lower overall corridor costs to the AMHS than current costs is a complex one, with no simple answer. The July 2013 Design Study Report provided estimates of day boat/ACF annual operating costs (see following table).

Table 1. Day Boat/ACF Annual Operating Costs ($millions)

	Juneau-Haines	Haines-Skagway	Total
Manning	$2.84	$2.45	$5.29
Fuel	$2.25	$1.15	$3.40
Maintenance	$0.67	$0.67	$1.34
Total	$5.76	$4.27	$10.03

Source: Day Boat ACF Design Study Report, July 10, 2013.

These cost estimates are based on a service frequency of seven days per week for a 20-week summer period and four days per week for a 28-week winter period. The estimates also include a four-week overhaul. Cost estimates are based on the assumption that one day boat/ACF would make a single round trip each day Auke Bay-Haines-Auke Bay, while the other vessel would make two Haines-Skagway-Haines trips each service day.

Juneau Access alternatives include various options for using the day boat/ACF. In all of the "no-build" alternatives, mainliners would continue to serve northern Lynn Canal, in addition to day boat/ACF service.

As illustrated in the following tables, utilization of the day boat/ACF should result in an overall reduction in the cost of providing North Lynn Canal (NLC) ferry service. In FY2012, AMHS spent $17.2 million providing service to NLC, excluding any shore-side costs. That included a total of 32,800 service miles, for all vessels combined, equating to an average per-mile cost of $527. Per-mile costs ranged from a low of $135 for the Fairweather to $874 for the Columbia. The Malaspina (which provided 40 percent of all NLC service miles) had a per-mile cost of $649, while the LeConte (33 percent of all NLC service miles) had a cost of $395 per-mile.

Based on annual operating cost data provided in the Design Study Report, day boat/ACF costs should average $173 per-mile for Juneau-Haines service and $336 per-mile for the Haines-Skagway service. The Juneau-Haines estimate is based on 252 total round trips of 132.5 nautical miles, for a total of 33,390 nautical miles traveled (with total annual cost of $5.76 million). The Haines-Skagway estimate is based on 504 total round trips of 25.2 nautical miles, for a total of 12,701 nautical miles traveled (with total annual cost of $4.27 million).

Table 2. AMHS North Lynn Canal Non-Fuel Operating Costs, FY2012 (000$)

Vessel	Total Vessel Days	NLC Days	% NLC	Total Non-Fuel Ops Costs	NLC Non-Fuel Ops Costs
Aurora	105.2	-	0.0%	$4,969.7	$-
Chenega	136.7	-	0.0%	6,526.4	-
Columbia	122.6	15.3	12.5%	15,170.6	1,894.2
Fairweather	226.8	5.8	2.5%	6,797.6	172.9
Kennicott	176.4	-	0.0%	14,983.8	-
LeConte	274.3	110.9	40.4%	9,145.5	3,697.0
Lituya	289.5	-	0.0%	1,410.6	-
Malaspina	156.3	99.7	63.8%	11,908.4	7,593.2
Matanuska	241.3	24.8	10.3%	16,609.6	1,707.9
Taku	276.8	0.8	0.3%	15,171.5	45.7
Tustumena	245.7	-	0.0%	10,688.8	-
Contract Vessels	8.6	-	0.0%	77.0	-
Total	2,260.0	257.2	11.4%	$113,459.4	$15,110.9

Source: AMHS.

Table 3. AMHS North Lynn Canal Fuel Costs, FY2012 (000$)

Vessel	Total Vessel Miles	NLC Miles	% NLC	Total Fuel Costs	NLC Fuel Costs
Aurora	27,010	-	0.0%	$1,225.3	$-
Chenega	40,874	-	0.0%	3,638.6	-
Columbia	53,193	2,444	4.6%	5,272.4	242.2
Fairweather	56,979	2,728	4.8%	4,071.4	194.9
Kennicott	61,911	-	0.0%	6,137.2	-
LeConte	53,825	10,708	19.9%	2,688.5	534.9
Lituya	16,608	-	0.0%	329.4	-
Malaspina	39,601	13,147	33.2%	2,827.6	938.7
Matanuska	79,750	3,640	4.6%	4,882.4	222.8
Taku	80,286	94	0.1%	4,262.5	5.0
Tustumena	57,198	-	0.0%	2,745.2	-
Contract Vessels	2,908	-	0.0%	-	-
Total	570,143.0	32,761.0	5.7%	$38,080.6	$2,138.6

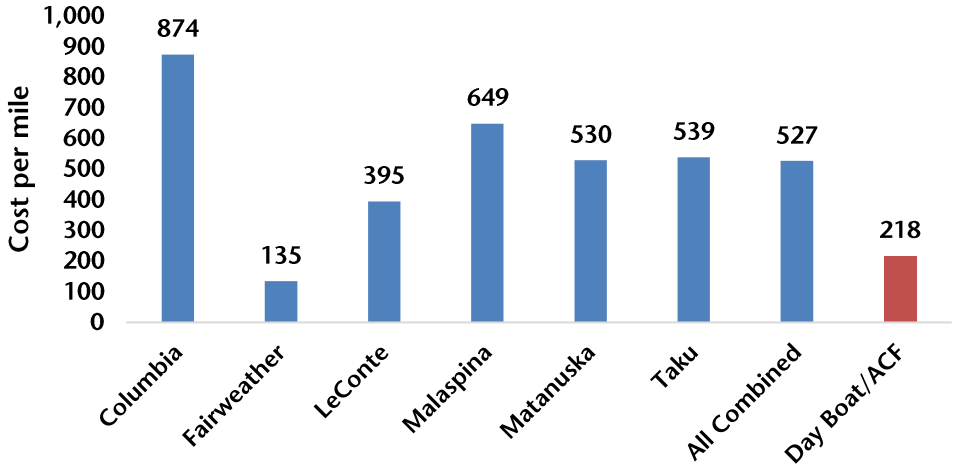
Source: AMHS.

Table 4. AMHS North Lynn Canal Vessel Per-Mile Costs, FY2012

Vessel	Total NLC Miles	Total NLC Costs ($000)	Cost Per Mile
Aurora	-	-	-
Chenega	-	-	-
Columbia	2,444.0	$2,136.5	$874
Fairweather	2,728.0	$367.9	$135
Kennicott	-	-	-
LeConte	10,708.0	$4,231.9	$395
Lituya	-	-	-
Malaspina	13,147.0	$8,531.9	$649
Matanuska	3,640.0	$1,930.7	$530
Taku	94.0	$50.7	$539
Tustumena	-	-	-
Contract Vessels	-	-	-
Total	32,761.0	$17,249.5	$527

Source: AMHS, compiled by McDowell Group.

Figure 2. AMHS North Lynn Canal Vessel Per-Mile Costs, FY2012, and Anticipated Day Boat ACF Per-Mile Costs



Source: AMHS, compiled by McDowell Group.