Juneau Access Improvements Project
Draft Supplemental Environmental Impact Statement

Appendix FF
User Benefit, Life-cycle Cost, and Total Project Life Cost Analyses

Prepared for:

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Executive Summary

The purpose of this study is to compare the economic costs and benefits of eight Juneau Access Improvements (JAI) Project alternatives. This study is part of the *JAI 2014 Draft Supplemental Environmental Impact Statement* (*SEIS*). It updates the User Benefit Analysis contained in Appendix E of the *January 2006 JAI Final Environmental Impact Statement* (*FEIS*).

The eight JAI alternatives are:

- Alternative 1 – No Action
- Alternative 1B – Enhanced Service with Existing Alaska Marine Highway System (AMHS) Assets
- Alternative 2B – East Lynn Canal Highway to Katzehin with Shuttles to Haines and Skagway
- Alternative 3 – West Lynn Canal Highway
- Alternative 4A – Fast Vehicle Ferry Shuttle Service from Auke Bay
- Alternative 4B – Fast Vehicle Ferry Shuttle Service from Berners Bay
- Alternative 4C – Conventional Monohull Shuttle Service from Auke Bay
- Alternative 4D – Conventional Monohull Shuttle Service from Berners Bay

Scope of Study

In this *SEIS*, JAI alternatives are evaluated by looking at:

- economic efficiency: user benefit analysis; and,
- cost-effectiveness:
  - life-cycle costs (LCC); and,
  - total project life costs.

The user benefit analysis generally follows the methodology set out by the American Association of State Highway and Transportation Officials (AASHTO) for evaluation of highway transportation projects.[1] However, the AASHTO methodology has shortcomings when it comes to evaluating projects that involve modes of travel other than roads and highways, or that would cause large changes in traffic or costs of travel. The Juneau Access project has all of these characteristics.

The user benefit analysis in this report modifies the AASHTO methodology in two ways to address its shortcomings:

1. modal adjustments to users' costs of travel that reflect the different burdens travel costs place on ferry users versus highway users, for a given amount of time or expense; and,

2. a step-wise calculation of user benefits that minimizes the AASHTO methodology's inherent overestimation of user benefits, when there are large changes in traffic or user costs.

The costs and benefits of all evaluation measures are in 2013 dollars. All measures consider the costs of building and operating an alternative over State of Alaska fiscal years (FY) 2015–50.

Only user benefit analysis considers benefits to travelers. Total project life costs on a per vehicle and per user basis are included as a partial measure of efficiency.

The user benefit analysis and total project life costs provide benefits or costs in terms of:

- total funds (State and federal); and,
- State funds.

Cost-effectiveness measures provide both:

- total costs; and,
- net costs (total costs net of government revenues—State and federal highway taxes and AMHS fares).

User benefit analysis deals only in net costs. Otherwise, costs paid by users, such as AMHS fares, would be double-counted.

[1] *User and Non-User Benefit Analysis for Highways*, American Association of State Highway and Transportation Officials, September 2010.

User benefit and LCC measures are stated in present values as of July 1, 2014. Their dollar amounts of future years' benefits or costs are discounted by the time value of money. The present values represent an amount that, invested on July 1, 2014 at a specified rate of interest or return, would grow to equal the amount of the future benefits or costs, in the year they occur.

Total project life costs are unique in this report in three respects:

- they are not discounted for the time value of money;
- they are presented both with and without the residual values of capital improvements deducted from costs; and,
- without residual values deducted, total project life costs are equal to the capital and operating constant dollar appropriations that would be required for the JAI Project during FY 2015–50.

Residual values are the value of capital improvements remaining at the end of the analysis in FY 2050 or when an AMHS vessel is removed from service in Lynn Canal.

Residual values are deducted from total project life costs stated on a per vehicle or per user basis, because the vehicles or users in question are those in Lynn Canal during FY 2015–50.

Risk analyses are provided by:

- identifying the year user benefit net present value (NPV) reaches breakeven;
- gauging the variation in NPV over time; and,
- evaluation of three sensitivity cases, in addition to the base case.

The base case for the analyses in this report includes:

1. modal adjustments to travelers' costs, based on the relative weights of each cost in the model used to forecast traffic;
2. capital costs as estimated by the Alaska Department of Transportation & Public Facilities (DOT&PF) for highways and ferry terminals, and by Coastwise Corporation for vessel construction; and,

3. valuation of travelers' time for non-work purposes at 50 percent of average wages.

The three sensitivity cases alter, in turn, each of the above base case conditions by:

1. use of average user costs, without the modal adjustments;
2. positing 25 percent construction cost overruns; and,
3. valuing travelers' non-work time at 70 percent of wages.

The base case and sensitivity cases share in common the following assumptions:

- essentially no change in traffic levels over the course of the study;
- real discount rates (net of inflation) of:
    - 7.0 percent for user benefit net present values;
    - 1.0 percent for life-cycle cost analysis of capital costs;
    - 4.5 percent for life-cycle cost analysis of operating costs; and,
    - 0.0 percent for total project life costs.

User benefit analysis seeks to answer the question—Do travelers' costs for an "action" alternative decrease more than the State's additional costs to build and operate the alternative, over and above what it would spend anyway (on Alternative 1, the no action alternative)?

User benefit analysis tries to evaluate what alternative offers the greatest net benefit to society, either to the U.S. as a whole, or to the State of Alaska, taking account of the opportunities foregone by spending money on the project. Measurement of the opportunity cost is accomplished by discounting to present value.

The user costs included in calculating user benefits are the costs of:

- travelers' time;
- AMHS fares;
- vehicle operating, maintenance, and ownership costs; and,
- vehicle accident costs.

User costs for Juneau – Haines and Skagway travel are figured to or from Auke Bay as the starting or ending point. This is the case whether arrival at, or departure from, Auke Bay is by highway or marine mode.

Cost-effectiveness measures attempt to answer the question—Which alternative will cost the least to build and operate through FY 2050?

In a life-cycle cost analysis, discounting to present value can cause alternatives with low construction costs, but high future maintenance and operating costs, to be the least costly alternative. However, if constraints on budgets or fund sources are likely to become more severe down the road, operation of such an alternative may not be sustainable in the future.

Total project life costs attempt to answer the question—Which alternative will impose the least fiscal burden over the project's life? The measure's undiscounted, non-incremental costs—equivalent to the real dollar capital and operating appropriations required over the project study period—may be more readily and intuitively judged against expected future fiscal conditions.

For all alternatives, a construction period of six years was assumed to begin July 1, 2014 (FY 2015) and be completed by the end of FY 2020. A 30-year post-construction operation period was evaluated, resulting in a 36-year analysis period (FY 2015–50) for each alternative.

Findings

Table 1 is a summary of the evaluation results for all the alternatives.

The significant findings from this study are as follows:

1. None of the "action" alternatives are worth more than they cost, considering all resources (State and federal) required to build and operate the project. This is true under all sensitivity cases, as well as the base case.

    a. Alternative 4D – Monohull Berners Bay has the smallest loss in net present value (NPV) in all cases—$25.6 million in the base case.

    b. Alternative 4C – Monohull Auke Bay has the second smallest loss.

TABLE 1

Evaluation Summary
Base Case
(2013 $)

Alternative	1	1B	2B	3	4A	4B	4C	4D
Net Present Value of Benefits & Costs ($ Millions)								
Total Funds	0	(151.2)	(309.1)	(339.5)	(217.3)	(214.6)	(72.8)	(25.6)
Rank	1	4	7	8	6	5	3	2
State Funds	0	(84.3)	(21.4)	(91.0)	(155.1)	(100.6)	(60.0)	2.5
Rank	2	5	3	6	8	7	4	1
Life-Cycle Costs								
Life-Cycle Costs ($ Millions)								
Total Funds								
Total Costs	389.6	607.3	785.3	781.2	916.8	986.4	505.6	536.4
Rank	1	4	6	5	7	8	2	3
Net Costs	253.6	463.1	611.0	582.1	689.3	730.0	350.0	301.6
Rank	1	4	6	5	7	8	3	2
Total Project Life Costs								
Total Project Life Costs ($ Millions)								
Total Funds								
Total Costs	789.1	1,188.3	1,506.0	1,506.9	1,776.8	1,844.2	1,018.2	1,078.3
Rank	1	4	5	6	7	8	2	3
Net Costs	515.2	897.3	1,142.5	1,084.9	1,288.5	1,288.1	698.6	573.1
Rank	1	4	6	5	8	7	3	2
State Funds								
Total Costs	585.7	878.1	888.7	926.5	1,278.2	1,238.6	779.5	814.2
Rank	1	4	5	6	8	7	2	3
Net Costs	311.8	587.1	531.4	509.1	790.0	683.2	459.9	309.6
Rank	2	6	5	4	8	7	3	1
Total Project Life Costs less Residual Values per Vehicle ($)								
Total Funds								
Total Costs	467	578	114	146	673	474	535	283
Rank	4	7	1	2	8	5	6	3
Net Costs	276	415	76	91	462	310	336	125
Rank	4	7	1	2	8	5	6	3
State Funds								
Total Costs	401	485	89	116	544	359	475	249
Rank	5	7	1	2	8	4	6	3
Net Costs	210	321	52	62	333	195	277	92
Rank	5	7	1	2	8	4	6	3
Traffic, User Costs per Trip (Juneau), and User Benefits								
Vehicles (FY 2015–50) (Millions)	1.4	1.8	9.6	7.7	2.3	3.4	1.6	3.2
Rank	8	6	1	2	5	3	7	4
Modal User Costs ($)	130	122	87	102	107	97	121	106
Rank	8	7	1	3	5	2	6	4
Benefits (FY 2015–50) ($ Millions)	0	12.7	118.2	38.8	29.6	56.3	9.1	32.6
Rank	8	6	1	3	5	2	7	4
Breakeven								
Total Funds	—	—	—	—	—	—	—	—
State Funds	—	—	—	—	—	—	—	FY 2047

Notes:

1.Total project life cost less residual values rankings on a per user basis are similar to the rankings on a per vehicle basis See Tables 25 and 27 for per user costs and rankings.

c. over the course of the study period, NPV for the road alternatives—Alternatives 2B and 3—and the marine alternative, Alternative 4D—flattens out in terms of total funds NPV. All other alternatives' NPV lose ground over time. This can be seen in Chart IV (the upticks in NPV in 2050 represent residual values). It appears unlikely that any of the alternatives would ever reach NPV breakeven, with the outside possibility of Alternative 4D.

2. In the base case, only Alternative 4D – Monohull Berners Bay produces benefits greater than the State resources required for the project—but just barely.

   a. Alternative 4D has a NPV of $2.5 million, in terms of State funds alone.

   b. Alternative 2B – East Lynn Highway is the second best "action" alternative, but has a loss of $21.4 million in State funds.

3. Only the road alternatives—Alternatives 2B and 3—and Berners Bay marine alternatives—Alternatives 4B and 4D—gain ground in terms of State-funded NPV over time. This can be seen in Charts V and VIII–X.

   a. Alternatives 2B, 3, and 4D consistently have upward sloping NPV curves during FY 2021–50 (following the construction period), in both the base case and all sensitivity cases.

   b. Alternative 4B appears flat in all the charts, but is gaining ground ever so slightly in the average user costs and non-work time at 70 percent of wages sensitivity cases. In the base case and cost overrun case, Alternative 4B is losing ground ever so slightly.

   c. All the other alternatives slope downward. Their operating costs and recurring capital expenditures continue to outrun user benefits throughout the study period.

4. Alternative 4D is unique among "action" alternatives in costing less, in total project life costs, than the no action alternative (Alternative 1), in terms of State funds, net of

State revenues. Net State total project life costs of Alternative 4D are $2.3 million less than doing nothing, or $7.2 million less, taking residual values into account. Alternative 4D increases capital and operating costs compared to Alternative 1, but Alternative 4D's State revenues increase even more markedly, percentage-wise. Alternative 4D more than doubles Alternative 1's number of users.

5. Except for Alternative 4D, measured on the net State total project life cost yardstick, Alternative 1 – No Action, costs less than any other alternative, under either LCC or total project life costs, even after netting out revenues.

6. Looking specifically at operating costs net of State revenues, Alternative 2B's net costs are $357.1 million over FY 2015–50, while Alternative 4D costs $225.3 million—$131.7 million less in 2013 dollars.

7. The two FVF alternatives, Alternative 4A and Alternative 4B, are the most costly alternatives. Alternative 4A and Alternative 4B have total project life costs of $1.8 billion and net total project life costs of $1.3 billion. Their State funds costs are on the order of $1.25 billion in total, and $0.75 billion, net of revenues.

8. The two road alternatives are the next most costly projects, except that Alternative 1B – Enhanced Service with Existing Assets moves into the third most costly place, when talking about net State-funded total project life costs. The road alternatives have total project life costs of $1.5 billion, and about $1.1 billion, net of revenues. On the basis of State funds only, the highway options cost about $0.9 billion in total and $0.5 billion, net of revenues.

9. Looking at total project life costs on a per vehicle basis, Alternative 2B is uniformly the lowest cost alternative, reflecting the more than double number of Alternative 2B vehicles, compared to any marine alternative.

10. Looking at the impacts only on travelers, Alternative 2B – East Lynn Highway also ranks the highest, both in terms of lowest cost to users and greatest total user benefits. User benefits reflect the number of travelers, as well as the travel cost to each user.

11. Under sensitivity analysis, Alternative 2B is the only alternative besides Alternative 4D to show a net benefit on the basis of State funds. Under the average user costs and non-work travel at 70 percent of wages sensitivity cases, Alternative 2B has NPV's of $9.8 million and $3.7 million, respectively. Alternative 2B's NPV surpasses Alternative 4D's NPV, under the average user costs case, and eventually will do so beyond FY 2050, under the higher non-work time value case. Alternative 4D is the only alternative whose NPV remains above water, if barely, in both the base case and all sensitivity cases.

12. Alternative 3 is a weaker road alternative than Alternative 2B in efficiency measures—NPV and total project life costs per vehicle—reflecting its 17 percent higher user costs and resulting 19 percent lower number of vehicles. Alternative 3 has a cost structure on the same order of magnitude as Alternative 2B, with somewhat lower capital costs, but higher operating costs, counterbalanced by higher AMHS revenues.

13. Operating costs are on the order of 60 percent of total costs for FVF's, 70 percent for other marine alternatives, and 50 percent for highway alternatives.

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Purpose and Scope of Study

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- Alternative 4B – Fast Vehicle Ferry Shuttle Service from Berners Bay
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The eight alternatives represent mutually exclusive projects. In other words, they are all ways of addressing the same transportation need. If any one of them is chosen, the other alternatives will not be built or operated.

Thus, the alternative, if any, with the greatest net benefits (benefits minus costs) is the most economically worthwhile project. In terms of the economic measure used in this report, the most worthwhile alternative is the one with the greatest net present value (NPV).

The alternative with the greatest economic value may not be the project with the least costs. If budgets are constrained, either now or expected to be in the future, the costs, either in State funds or total funds, may be an important consideration in project selection.

Benefits and costs included in this analysis are limited to those that are relatively certain, can be quantified and valued in dollars, and for which there is an accepted methodology of calculation.

Benefits are limited to user benefits. User benefits are the reduction in travel costs for persons using a JAI alternative, compared to the no action alternative—Alternative 1.

Users' travel costs are the sum of the costs of travelers' time, passenger and vehicle ferry fares, vehicle operating, maintenance, and ownership costs, and vehicle accident costs.

User costs for Juneau – Haines and Skagway travel are figured to or from Auke Bay as the starting or ending point. This is the case whether arrival at, or departure from, Auke Bay is by highway or marine mode.

Economic development benefits are not included in this study. They are addressed in the socioeconomic report.

Project costs are limited to the construction, operating, and maintenance costs of each alternative. Alternatives' impacts on AMHS capital or operating costs outside northern Lynn Canal are not part of this study.[2]

External costs, including public safety and emergency response-related service costs, pollution and global warming costs, and loss of wildlife or wilderness values are not included in this analysis. They are addressed in the socioeconomic and other SEIS technical reports.

[2] The crediting of residual values of marine vessels against capital costs could be considered an exception to this statement. See the report section entitled "Residual Values".

This analysis provides measuring sticks to judge the most economically valuable alternative and the least fiscally burdensome alternative. But, it does not eliminate the need to consider the other economic, socioeconomic, developmental, and environmental impacts that are outside the scope of the analysis. The benefit/cost analysis does not dictate alternative selection.

In this SEIS, JAI alternatives are evaluated by looking at:

- economic efficiency: user benefit analysis; and,
- cost-effectiveness:
  - life-cycle costs (LCC); and,
  - total project life costs.

The user benefit analysis generally follows the methodology set out by the American Association of State Highway and Transportation Officials (AASHTO) for evaluation of highway transportation projects.[3] However, the AASHTO methodology has shortcomings when it comes to evaluating projects that involve modes of travel other than roads and highways, or that would cause large changes in traffic or costs of travel. The Juneau Access project has all of these characteristics.

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1. modal adjustments to users' costs of travel that reflect the different burdens travel costs place on ferry users versus highway users, for a given amount of time or expense; and,

2. a step-wise calculation of user benefits that minimizes the AASHTO methodology's inherent overestimation of user benefits, when there are large changes in traffic or user costs.

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Total project life costs are unique in this report in three respects:

- they are not discounted for the time value of money;

- they are presented both with and without the residual values of capital improvements deducted from costs; and,

- without residual values deducted, total project life costs are equal to the capital and operating constant dollar appropriations that would be required for the JAI Project during FY 2015–50.

Residual values are the value of capital improvements remaining at the end of the analysis in FY 2050 or when an AMHS vessel is removed from service in Lynn Canal.

Residual values are deducted from total project life costs stated on a per vehicle or per user basis, because the vehicles or users in question are those in Lynn Canal during FY 2015–50.

Risk analyses are provided by:

- identifying the year user benefit net present value (NPV) reaches breakeven;
- gauging the variation in NPV over time; and,
- evaluation of three sensitivity cases, in addition to the base case.

The base case for the analyses in this report includes:

1. modal adjustments to travelers' costs, based on the relative weights of each cost in the model used to forecast traffic;
2. capital costs as estimated by the Alaska Department of Transportation & Public Facilities (DOT&PF) for highways and ferry terminals, and by Coastwise Corporation for vessel construction; and,
3. valuation of travelers' time for non-work purposes at 50 percent of average wages.

The three sensitivity cases alter, in turn, each of the above base case conditions by:

1. use of average user costs, without the modal adjustments;
2. positing 25 percent construction cost overruns; and,
3. valuing travelers' non-work time at 70 percent of wages.

The base case and sensitivity cases share the following assumptions:

- essentially no change in traffic levels over the course of the study;
- real discount rates (net of inflation) of:
    - 7.0 percent for user benefit net present values;
    - 1.0 percent for life-cycle cost analysis of capital costs;
    - 4.5 percent for life-cycle cost analysis of operating costs; and,
    - 0.0 percent for total project life costs.

User benefit analysis seeks to answer the question—Do travelers' costs for an "action" alternative decrease more than the State's additional costs to build and operate the alternative, over and above what it would spend anyway (on Alternative 1, the no action alternative)?[4]

[4] It should be noted that user benefit analysis, unlike the cost-effectiveness measures, is incremental:

User benefit analysis tries to evaluate what alternative offers the greatest net benefit to society, either to the U.S. as a whole, or to the State of Alaska, taking account of the opportunities foregone by spending money on the project. Measurement of the opportunity cost is accomplished by discounting to present value.

Cost-effectiveness measures attempt to answer the question—Which alternative will cost the least to build and operate through FY 2050?

In a life-cycle cost analysis, discounting to present value can cause alternatives with low construction costs but high future maintenance and operating costs, to be the least costly alternative. However, if constraints on budgets or fund sources are likely to become more severe down the road, operation of such an alternative may not be sustainable in the future.

Total project life costs attempt to answer the question—Which alternative will impose the least fiscal burden over the project's life? The measure's undiscounted, non-incremental costs—equivalent to the real dollar capital and operating appropriations required over the project study period—may be more readily and intuitively compared to current or expected future levels of appropriations or revenues.

For all alternatives, a construction period of six years was assumed to begin July 1, 2014 (FY 2015) and be completed by the end of FY 2020. A 30-year post-construction operation period was evaluated, resulting in a 36-year analysis period (FY 2015–50) for each alternative.

- user benefits are measured as the difference (presumably reduction) between an alternative's users costs and what user costs would be under the no action alternative—Alternative 1;

- the same is true of project costs in user benefit analysis: they are the additional capital and operating costs that would be required for an alternative, compared to what would be spent anyway if nothing is done (Alternative 1).

Because of the incremental analysis, as well as present value discounting, project costs shown for user benefit analysis will not be the same as the project costs shown for the total project life cost measures.

Similarly, because of the incremental analysis, as well as use of different discount rates, project costs shown for user benefit analysis will not be the same as the costs shown for LCC analysis.

Alternatives

Alternative 1 – No Action

This alternative is based on the most likely AMHS operations in the absence of any capital improvements specific to the JAI Project. AMHS would continue to be the National Highway System (NHS) route from Juneau to Haines and Skagway.

Alternative 1 includes:

1. a continuation of mainline ferry service in Lynn Canal;
2. two Day Boat Alaska Class Ferries (ACF);
3. improved vehicle and passenger staging areas at the Auke Bay and Haines ferry terminals to optimize traffic flow on and off the Day Boat ACF's; and,
4. expansion of the Haines Ferry Terminal to include two new bow berths to accommodate the Day Boat ACF's.

No new roads or ferry terminals would be built.

During the summer,

- one Day Boat ACF would make one round-trip between Auke Bay and Haines six days per week; and,
- a second Day Boat ACF would make 2 round-trips per day between Haines and Skagway six days per week and one round-trip on the seventh day.

The Day Boat ACF's schedules are curtailed on the seventh day because the mainliner is on a similar schedule.

In the winter,

- one Day Boat ACF would make one round-trip between Auke Bay and Haines three days per week; and,
- a second Day Boat 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.

The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal after FY 2016. The second Day Boat ACF would be in service beginning July 1, 2016.

Alternative 1B – Enhanced Service with Existing AMHS Assets

Alternative 1B includes all of the components of Alternative 1 – No Action, but enhances service using existing AMHS assets, without major initial capital expenditures. The additional components of Alternative 1B are:

1. the *M/V Malaspina* remains in service as a Lynn Canal summer shuttle after the second Day Boat ACF is brought online, to provide additional capacity in Lynn Canal;
2. a 20 percent reduction in fares for trips in Lynn Canal; and,
3. extended hours of operations for the reservation call center.

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 Day Boat ACF service in Lynn Canal increases the capacity and frequency provided. Otherwise, Alternative 1B's scheduled service remains the same as Alternative 1.

Alternative 2B – East Lynn Canal Highway to Katzehin with Shuttles to Haines and Skagway

Alternative 2B would provide ferry service to Haines and Skagway from a new ferry terminal two miles north of the Katzehin River. A new East Lynn Canal Highway would run around Berners Bay and connect the terminal to Echo Cove.

This alternative would construct:

1. 50.8 miles of road, including 47.9 miles of new highway and widening of 2.9 miles of the existing Glacier Highway;
2. the Katzehin Ferry Terminal;
3. a new end berth at the Skagway Ferry Terminal; and,
4. a new conventional monohull ferry to operate between Haines and Skagway.

Mainline ferry service would end at Auke Bay after FY 2020.

This alternative assumes the Alternative 1 – No Action improvements will have been made independent of the JAI Project before Alternative 2B comes on-line. This includes termination of the *M/V Malaspina* summer day boat service after FY 2016.

During the summer months,

- one Day Boat ACF would make 8 round-trips per day between Haines and Katzehin;
- a second Day Boat ACF would make 6 round-trips per day between Skagway and Katzehin; and,
- the Haines – Skagway shuttle ferry would make 2 round-trips per day.

During the winter,

- one Day Boat ACF would make 6 round-trips per day between Haines and Katzehin;
- a second Day Boat ACF would make 4 round-trips per day between Skagway and Katzehin; and,
- the Haines – Skagway shuttle would not operate; travelers going between Haines and Skagway would travel to Katzehin and transfer ferries.

Alternative 3 – West Lynn Canal Highway

Alternative 3 would construct:

1. 5.2 miles of road from Echo Cove to Sawmill Cove in Berners bay (2.3 miles of new highway and widening of 2.9 miles of existing Glacier Highway);

2. new ferry terminals at Sawmill Cove in Berners Bay and at William Henry Bay on the west shore of Lynn Canal;
3. a new end berth at the Skagway Ferry Terminal;
4. a new 38.9-mile highway from the William Henry Bay Ferry Terminal to Haines with a bridge across the Chilkat River/Inlet connecting to Mud Bay Road; and,
5. a new conventional monohull ferry that would operate between Haines and Skagway.

Mainline ferry service ends at Auke Bay after FY 2020.

This alternative assumes the Alternative 1 – No Action improvements will have been made independent of the JAI Project before Alternative 3 comes on-line. This includes termination of the *M/V Malaspina* summer day boat service after FY 2016.

During the summer months,

- two Day Boat ACF's would each make 6 round-trips per day between Sawmill Cove and William Henry Bay (a total of 12 trips each direction); and,
- the Haines – Skagway shuttle ferry would make 6 round-trips per day.

During the winter,

- one Day Boat ACF would make 4 round-trips per day between Sawmill Cove and William Henry Bay; and,
- the Haines – Skagway shuttle would make 4 round-trips per day.

Marine Alternatives 4A through 4D

Marine Alternatives 4A through 4D would generally provide increased ferry service in Lynn Canal, compared to alternatives 1 and 1B. There would be daily direct ferry service between all Lynn Canal communities in the summer, though not in the winter.

Table 2 compares the weekly service schedules between Juneau and Haines and Skagway.

TABLE 2

AMHS Weekly Round-Trips Connecting with Juneau[1]

Alternative	Haines		Skagway	
	Summer	Winter	Summer	Winter
1 - No Action	8.0	4.0	8.0	4.0
1B - Enhanced Service[2]	8.0	4.0	15.0	4.0
2B - East Lynn Highway	56.0	42.0	42.0	28.0
3 - West Lynn Highway[3]	84.0	28.0	38.5	21.0
4A - Fast Ferry Auke Bay	16.0	8.0	16.0	8.0
4B - Fast Ferry Berners Bay	16.0	8.0	16.0	8.0
4C - Monohull Auke Bay	9.0	4.5	9.0	4.5
4D - Monohull Berners Bay	16.0	4.5	16.0	4.5

Notes:

1. Includes mainline service.
2. *M/V Malaspina* homeported in Skagway puts it on a different schedule than Day Boat ACF-1, homeported in Auke Bay. Travel between Auke Bay and Skagway is more than 7 hours for either vessel.
3. Juneau travelers will be unable to make the first of 6 summer round-trips or 4 winter round-trips per day on the Haines - Skagway shuttle.

Marine alternatives 4A through 4D each include a new conventional monohull shuttle that would make;

- 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.

Marine Alternatives 4A through 4D would continue the mainline ferry service in Lynn Canal provided under Alternatives 1 and 1B. These marine "build" alternatives assume the Alternative 1 – No Action improvements will have been made independent of the JAI Project before the marine "build" alternatives come on-line. The AMHS would continue to be the NHS route from Juneau to Haines and Skagway.

Alternative 4A – Fast Vehicle Ferry Shuttle Service from Auke Bay

Alternative 4A would construct;

1. two new fast vehicle ferries (FVF's);
2. two new stern berths at the Auke Bay Ferry Terminal; and,
3. a new conventional monohull ferry that would operate between Haines and Skagway.

No new roads would be built for this alternative.

The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal after FY 2016, and the Day Boat ACF's would no longer operate in Lynn Canal after FY 2020. The new monohull ferry would replace the Day Boat ACF on the Haines – Skagway shuttle run in 2020.

Each day in the summer, the FVF's would make

- 2 round-trips between Auke Bay and Haines; and,
- 2 round-trips between Auke Bay and Skagway.

Each day during the winter, one FVF would make:

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

Mainline service would be as scheduled under Alternative 1. Haines – Skagway shuttle service would be as described under the preceding "Marine Alternatives 4A through 4D" heading.

Alternative 4B – Fast Vehicle Ferry Shuttle Service from Berners Bay

Alternative 4B would construct;

1. 5.2 miles of road from Echo Cove to Sawmill Cove in Berners Bay (2.3 miles of new highway and widening of 2.9 miles of existing Glacier Highway);
2. a new Sawmill Cove Ferry Terminal;
3. two new FVF's;
4. two new stern berths at the Auke Bay Ferry Terminal; and,
5. a new conventional monohull ferry that would operate between Haines and Skagway.

The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal after FY 2016, and the Day Boat ACF's would no longer operate in Lynn Canal after FY 2020. The new monohull ferry would replace the Day Boat ACF on the Haines – Skagway shuttle run in 2020.

Each day in the summer[5], the FVF's would make

- 2 round-trips between Sawmill Cove and Haines; and,
- 2 round-trips between Sawmill Cove and Skagway.

Each day during the winter, one FVF would make:

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

Mainline service would be as scheduled under Alternative 1, out of Auke Bay. Haines – Skagway shuttle service would be as described under the preceding "Marine Alternatives 4A through 4D" heading.

Alternative 4C – Conventional Monohull Shuttle Service from Auke Bay

Alternative 4C would construct;

1. two new stern berths at the Auke Bay Ferry Terminal;
2. a new end berth at the Skagway Ferry Terminal; and,
3. a new conventional monohull ferry that would operate between Haines and Skagway.

No new roads would be built for this alternative.

The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal after FY 2016. The new monohull ferry would replace the Day Boat ACF on the Haines – Skagway shuttle run in 2020, allowing the Day Boat ACF to begin Auke Bay – Skagway service.

Each day in the summer, the Day Boat ACF's would make:

[5] Due to environmental concerns in Berners Bay during the spring herring and eulachon spawning, as well as humpback whale and Stellar sea lion concentrations, the summer schedule for Alternatives 4B and 4D would start on May 15, rather than May 1.

- one round-trip between Auke Bay and Haines; and,
- one 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 be as described under the preceding "Marine Alternatives 4A through 4D" heading.

Alternative 4D – Conventional Monohull Shuttle Service from Berners Bay

Alternative 4D would construct;

1. 5.2 miles of road from Echo Cove to Sawmill Cove in Berners Bay (2.3 miles of new highway and widening of 2.9 miles of existing Glacier Highway);
2. a new Sawmill Cove Ferry Terminal;
3. a new end berth at the Skagway Ferry Terminal;
4. two new stern berths at the Auke Bay Ferry Terminal; and,
5. a new conventional monohull ferry that would operate between Haines and Skagway.

The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal after FY 2016. The new monohull ferry would replace the Day Boat ACF on the Haines – Skagway shuttle run in 2020, allowing the Day Boat ACF to begin Sawmill Cove – Skagway service.

Each day in the summer[5], the Day Boat ACF's would make:

- one round-trip between Sawmill Cove and Haines; and,
- one round-trip between Sawmill Cove 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 be as described under the preceding "Marine Alternatives 4A through 4D" heading.

State Funds

Reducing State costs is one of the five elements of the "Purpose and Need" for the JAI Project in the *JAI 2014 DSEIS*. The State's fiscal duress may make evaluation based on State costs, both operating and capital, one of the more important considerations in alternative selection.

The user benefit analysis and total project life costs are presented in terms of both total funds and State funds.

The difference is that:

- capital costs on a State funds basis do not include federal aid to highways for construction costs; and,
- State revenues do not include the federal highway tax on gasoline (estimated at the current rate of 18.4 cents per gallon).

State-funded project costs for each alternative consist of:

1. operating costs (100 percent State-funded);
2. non-match State general funds (GF) for capital costs; and,
3. the State's matching general fund share of capital costs, equal to 9.03 percent of the remainder of capital costs, after netting out the State non-match general funds.

State non-match general funds will be used only for acquisition costs. Acquisition costs include highway, AMHS terminal, and AMHS new vessel construction during the initial six-year construction period. Residual values and AMHS vessel refurbishment and replacement costs are not included.

State non-match general funds available or expected to be available for various alternatives are shown in Table 3. No State non-match general funds will be used for Alternatives 1 and 1B, because these alternatives entail no acquisition costs.

Available or anticipated State non-match general funds include:

2006 State appropriation	$43 million
2014 State appropriation	$10 million
Total available	$53 million
FY 2015 Governor's proposed budget	$5 million
FY 2016–19 annual State appropriations	$10 million
FY 2020 State appropriation	$15 million
Expected appropriations	$60 million
Total available and expected GF	$113 million

We assume federal aid covers 90.97 percent of all capital costs not funded by State non-match general funds, including road construction, new vessel construction, vessel refurbishment, and ferry terminal construction. DOT&PF expects federal aid to come from the National Highway Performance Program (NHPP) (USC Title 23, section 119) and the Ferry Boat Program (USC Title 23, section 147), and existing appropriations from other past federal highway aid programs. [6]

[6] Section 2.5 Funding Considerations, Chapter 2 Project Alternatives, *Juneau Access Improvements Project Draft SEIS*, January 2014 draft and January 27, 2014 email from Reuben M. Yost, DOT, to Jim Calvin, McDowell Group re: initial state capital funds for JA Alts.

TABLE 3

State General Fund
Non-Match Capital Expenditures
for Acquisition Costs[1]
(2013 $000)

Fiscal Year	Acquisition Costs[1]	State Non-Match General Funds Expenditures	Cumulative Expenditures	Available	Acquisition Costs[1]	State Non-Match General Funds Expenditures	Cumulative Expenditures	Available
	Alternative 2B				**Alternative 3**			
2015	56,679	11,162	11,162	58,000	48,166	10,526	10,526	58,000
2016	109,958	21,654	32,816	68,000	93,331	20,397	30,923	68,000
2017	109,958	21,654	54,470	78,000	93,331	20,397	51,320	78,000
2018	109,958	21,654	76,124	88,000	93,331	20,397	71,717	88,000
2019	121,116	21,876	98,000	98,000	117,784	25,741	97,458	98,000
2020	66,137	15,000	113,000	113,000	71,118	15,542	113,000	113,000
Total	573,806	113,000			517,062	113,000		
	Alternative 4A				**Alternative 4B**			
2015	4,061	2,019	2,019	58,000	6,761	2,666	2,666	58,000
2016	8,122	4,037	6,056	68,000	13,523	5,333	7,999	68,000
2017	8,122	4,037	10,093	78,000	13,523	5,333	13,332	78,000
2018	8,122	4,037	14,131	88,000	13,523	5,333	18,665	88,000
2019	101,483	50,444	64,575	98,000	122,989	48,501	67,166	98,000
2020	97,422	48,425	113,000	113,000	116,228	45,834	113,000	113,000
Total	227,333	113,000			286,547	113,000		
	Alternative 4C				**Alternative 4D**			
2015	4,919	3,646	3,646	53,000	7,619	4,486	4,486	58,000
2016	9,838	7,292	10,938	53,000	15,239	8,972	13,458	58,000
2017	9,838	7,292	18,230	53,000	15,239	8,972	22,431	58,000
2018	9,838	7,292	25,522	53,000	15,239	8,972	31,403	58,000
2019	20,996	15,562	41,084	53,000	26,397	15,542	46,945	58,000
2020	16,077	11,916	53,000	53,000	18,777	11,055	58,000	58,000
Total	71,508	53,000			98,510	58,000		

Notes:

1. Acquisition costs include highway, AMHS terminal, and AMHS new vessel construction during the initial six-year construction period. Residual values and AMHS vessel refurbishment and replacement costs are not included.

Economic Efficiency

User benefit analysis measures the increase in benefits and costs of each of the seven "action" alternatives compared to Alternative 1—the no action alternative. If the incremental benefits of an "action" alternative exceed its incremental costs, the project is economically worth doing.

Benefits and costs are estimated for each year of a 36-year study period, from FY 2015 to FY 2050. We then compute the present value of each year's benefits and each year's costs. The total of the present values of an alternative's benefits and costs for all years is the net present value (NPV) of an alternative.

Present value is a value at a particular point in time. It is the amount of money that, invested at that point in time at a specified rate of return, would compound to the amount of the benefit or cost in the year in which the benefit or cost occurs. The rate of return is called the discount rate. All present values in this study are as of July 1, 2014.

For example, the present value of total project costs is the amount of money needed on July 1, 2014 to fund all of the project expenditures, both capital and operating, over the entire construction period and project life. It assumes unspent balances are invested at the discount rate.

The discount rate for benefit-cost analysis represents the costs to society as a whole for the funds used. Specifically, the rate is the marginal pre-tax real return on private sector investments. It is the opportunity cost—the income or benefits foregone—of money spent, in this case, on JAI.

Net Present Value (NPV) of User Benefits

Generally, the present value of user benefits minus project costs is the best measure of economic efficiency.

If there are no budgetary constraints, the optimal alternative is the one with the highest net present value. The optimal alternative, in comparison with any other alternative, will provide more incremental benefits than it costs (incrementally).

For example, consider alternatives A, B, and C in Table 4 below. Is B optimal? B provides more benefits than A. But, to get an additional $5 in benefits, you have to spend an additional $10. Thus, B has a lower net present value than A. One would be better off doing A and putting B's extra $10 for costs in your pocket. Your total worth would then be $85.

Does this make A optimal? Well, C has a higher NPV. And, our logical test indicates it must be a better choice than A. C only costs an additional $10, but provides $15 more in return. So clearly, C would be the best choice, if you have or can raise the $60 it would cost.

TABLE 4

Alternative Ranking
Net Present Value vs. Benefit Cost Ratio
Hypothetical Example

Alternative	Costs	Benefits	NPV	B/C
A	50	125	75	2.50
B	60	130	70	2.17
B-A	10	5	(5)	
C	60	140	80	2.33
C-A	10	15	5	

Benefit/Cost (B/C) Ratios

The ratio of benefits to cost (both measured incrementally from the no action alternative) provides a measure of the bang for the buck. As such, it may be of interest. But, it is a fallible guide to project selection because it is a relative measure of benefits and costs, not an absolute measure.

In our example above, the optimal project does not have the highest benefit/cost ratio. C has a lower benefit/cost ratio—2.33—than A—2.50. But, C is still optimal because its additional cost more than pays for itself in terms of additional benefits. As long as there are no limits on funding, it makes sense to allocate whatever additional funds are required to achieve the additional benefits.

One reason B/C ratios can fail as a project selection guide is that they are insensitive to scale. For example, if A in our example were 20 percent larger, costs and benefits would be 60 and 150, respectively, and NPV would be 90. Thus, scaling A up to the size of C (in costs) makes A optimal, and its choice consistent with the B/C ratio ranking.

Another way B/C ratios can be a false guide to project selection is that they can be sensitive to whether amounts are included as benefits in the numerator or as costs in the denominator. An example would be if a decrease in operating costs were treated as an increased benefit, rather than as a decrease in project costs. This might be done in looking at a rate of return on a project's capital costs.

This study includes AMHS fares in the tabulation of both user benefits and net project costs. From a broad perspective, user fees and charges, such as AMHS fares, are just a transfer price that shifts who pays for project costs.

For example, a decrease in AMHS fares increases user benefits, but also increases net project costs. As a result, there may be little change in NPV.

In reality, including user charges, such as AMHS fares, does change NPV and B/C ratios for two reasons:

1. the effect on traffic projections of including user charges as a user costs; the elasticity of demand with respect to user costs will determine how much traffic changes; and,

2. the change in consumer surplus is not equal to the change in revenue; the difference is aggravated by the linearity of the AASHTO user benefit formula.

To use B/C ratios as a proper guide for project selection, a second order incremental calculation of the B/C ratios is needed.

Mutually Exclusive Alternative Selection

When selecting among alternatives that are mutually exclusive, as is the case with JAI, one procedure employing B/C ratios would be to:

1. rank the projects in ascending order of project cost;

2. select the first efficient alternative (that fits within the budget if funds are limited); an alternative is efficient if its:

    a. B/C ratio≥ 1, and its numerator and denominator are positive (increase in benefits exceeds increase in costs);

    b. B/C ratio≤ 1, and its numerator and denominator are negative (decrease in benefits is less than decrease in costs); or,

    c. numerator is positive and the denominator is negative (more benefits for less money);

3. calculate a second order B/C ratio for the next highest cost alternative—the incremental benefits divided by the incremental cost of the next highest cost alternative, in comparison with the selected alternative;

4. if the next higher cost alternative:

    a. is efficient, according to the criteria in step 2 applied to its second order B/C ratio; and,

    b. the alternative fits within the budget,

    replace the selected alternative with the next highest cost alternative;

5. continue testing all higher cost alternatives against the selected one until all alternatives have been tested or the budget limit has been reached.

Second-order B/C ratios employed to select among mutually exclusive alternatives will produce the same result as selecting among them on the basis of NPV.

If in fact, budgets are constrained, NPV may still work as the criterion for project selection. If the constraint were on funds that would only be used for JAI, the optimal alternative could still be determined by net present value. An example would be an appropriation of federal highway aid specifically for Juneau Access. In such a case, the best alternative would be the one with the highest NPV whose federal costs do not exceed the appropriation.

Non-Mutually Exclusive Project Selection

If the constraint were on funds—such as State general funds—that could be used for both Juneau Access and other projects, B/C ratios could be needed. A "bang per buck" concept only becomes a deciding issue when the amount of funds is limited and has alternative uses.

In that case, the best JAI alternative, and the other projects, would all be selected according to second order B/C ratios.[7] The entire constellations of selected projects would have to fit within the specified budget.

In this study, neither the limits on funds nor the B/C ratios of competing non-Juneau Access transportation projects are known. Therefore, no substantial use is made of B/C ratios in this report for project evaluation.

B/C ratios are reported in this study as:

- first order ratios, only for informational purposes, should they be needed in evaluations against other projects the State might undertake; and,

- second order ratios as part of a demonstration that project selection among JAI alternatives would be the same as using

[7] The project selection procedure can become rather complex, but basically proceeds similarly to selecting mutually exclusive alternatives, as follows:

1. rank all projects and alternatives in descending order of B/C ratios;
2. select projects in rank order until the budget is exhausted;
3. upon selection of any JAI alternative, calculate an incremental B/C ratio for the next highest cost JAI alternative, as in step 3 of the mutually exclusive alternative selection process;
4. if:
    a. the incremental B/C ratio is:
        i. efficient according to the criteria in step 2 of the mutually exclusive alternative selection process; and,
        ii. greater than the B/C ratio for any unselected non-JAI projects; and,
    b. the alternative fits within the budget,

    replace the selected JAI alternative with the next highest cost JAI alternative;
5. continue testing all higher cost JAI alternatives against the selected one until all higher cost JAI alternatives have been tested or the budget has been exhausted.

NPV. This demonstration is contained in Appendix Tables A-1 and A-2.

Cost-Effectiveness

This report provides two measures of cost-effectiveness:

- life-cycle costs (LCC); and,
- total project life costs.

Both measures are evaluated in terms of total costs and net costs. Total project life costs are provided on a total funds and State funds basis. Total project life costs are also provided on a per vehicle and a per user basis, as a measure of efficiency.

Life-Cycle Costs

The study presents each alternative's life-cycle costs. These are the project costs standing alone—i.e., without benefits. This is one way of evaluating the alternatives from the standpoint of the State's budgetary constraints. Aside from the benefits, the State may want to pick an alternative that costs less, for purely budgetary reasons.

The purpose of life-cycle cost analysis is different than benefit-cost analysis. Benefit-cost analysis is done to determine if a project is worth doing. It is a comprehensive evaluation of not only project costs, but also benefits and the opportunity costs to society.

The objective of LCC analysis is to identify the least cost alternative for achieving some purpose. It treats the decision to undertake a project as a done deal, and seeks to find the least cost method of achieving it.

Different discount rates are used for LCC analysis than for user benefit analysis. The discount rates for life-cycle costs represent the costs to the State government for the funds used. Specifically, the State's cost of capital is used for construction costs and the State's return on invested funds is used for operating and maintenance costs.

Life-cycle costs are shown as total costs for each alternative, rather than as incremental costs in comparison to the no action alternative—Alternative 1. They could be shown as incremental costs from the no action alternative. Doing so would produce the same project ranking

as using non-incremental costs. But, showing the non-incremental costs may make the figures more useful for judging their fiscal burden.

Total Project Life Costs

Total project life costs are sometimes referred to as "costs of ownership". In this study, total project life costs are the total capital and operating costs of an alternative over FY 2015–50.

Total project life costs are undiscounted 2013 dollars. They also are not the incremental costs of building and operating the project, in comparison to the no action alternative. Rather, they are the total costs during the FY 2015–50 period of building and operating the project.

The undiscounted total project life cost measure may be more useful than life-cycle costs in gauging fiscal burden when there are expectations that:

- future budgets will be more constrained as time goes by, than they are in the near-term; or,

- the State will have little or no savings, which provide a demonstrable opportunity cost to the expenditure of funds on the project.

Alaska is currently facing tightening budgets as oil production declines, in the midst of oil price stagnation. Budget reserve funds are being drawn upon in FY 2014, and in FY 2015 in the Governor's proposed budget, for the first time in some years. But, the Alaska Permanent Fund may be around for a long time, if not permanently.

Judging JAI alternatives on the basis of total project life costs could be a hallmark of prudence, in terms of avoiding fiscal risks to the State. But, by ignoring the time value of money, it could shortchange the State's future, either in terms of the Juneau Access alternative selected, or in other projects or programs foregone.

Discount Rates

This study uses different discount rates for benefit-cost analysis and LCC analysis. The discount rate for benefit-cost analysis represents

the opportunity cost of funds to society as a whole. The rates for LCC analysis represent the cost of funds to State government.

In addition, the discount rates used in LCC analysis differ for capital costs and operating costs. They both represent opportunity cost to State government. But, the federal tax-exemption of interest on state debt offers the State a lower, subsidized opportunity cost for capital projects funded with State debt. The State of Alaska Constitution permits issuance of State and municipal debt only for capital improvement projects.

User Benefit Analysis

For purposes of benefit-cost analysis, this study uses a discount rate of 7.0 percent per annum to calculate net present values and B/C ratios. OMB Circular No. A-94[8] establishes this rate as a guideline for evaluating federal programs whose benefits and costs are distributed over time.

The 7.0 percent rate applies to benefit-cost analyses of public investments that are done in constant dollars. In other words, the rate is a real rate of return that bears no premium for inflation. It is to be used in analyses that do not increase future costs and benefits for general inflation. This analysis is done with constant 2013 dollars.

The 7.0 percent rate approximates the marginal pre-tax rate of return on an average investment in the private sector. It represents the opportunity costs in real dollars of spending money on a public project.

The 7.0 percent rate includes a risk premium. If all the costs and benefits of JAI alternatives were known with certainty, a real risk-free rate of return would be an appropriate discount rate. As of December 2013, this would be around 1.7 percent, as reflected by yields on inflation-indexed long-term U.S. Treasury bonds.

But, the JAI Project entails great uncertainties. The magnitude of the costs and traffic changes, the concentration of demand in personal travel, especially of a recreational and tourist nature, the predominance of induced traffic, particularly for the road alternatives, and the more general uncertainties about population, employment,

[8] OMB Circular No. A-94 Revised, U.S. Office of Management and Budget, October 29, 1992.

average wages, and economic growth in the region and nationally all argue for a significant risk premium in the discount rate.

Life-Cycle Costs

For life-cycle costs, this study uses discount rates of 1.0 percent for capital costs and 4.5 percent for operating costs and revenues.

The discount rates distinguish between capital and operating costs because of the different funding sources for each. 90.97 percent of capital project costs, over and above State non-match general funds expended for capital costs, are assumed to be paid with federal funds. The least cost source of State funds for the remaining capital costs is State general obligation (GO) bonds, because of the federal income tax exemption on their interest paid. Operating costs are entirely State-funded.

The 1.0 percent rate for capital costs is both:

- an estimate of the State of Alaska's real borrowing cost for capital improvement projects; and,

- the 1.1 percent calendar 2013 federal guideline for a discount rate to be used for life-cycle cost analyses of federal programs over an analysis period of 30 years or more, rounded to the nearest half-percent.

For the State, the 1.0 percent is an estimate of the expected interest rate on State tax-exempt GO bonds, net of inflation. It is also a measure of the opportunity cost of using federal funds on JAI, given that the amount of federal funds is fixed. In other words, any State highway projects displaced by funding JAI with federal funds might have to be funded with GO bonds at a cost of 1.0 percent.

The 1.1 percent federal guideline[9] was the forecasted real rate of interest on 30-year U.S. Treasury bonds for 2013.

As seen in Table 5, since about a year before the June 1977 onset of North Slope production of crude oil, the State of Alaska has typically issued GO bonds with average maturities shorter than 10 years. This

[9] Appendix C (Revised December 2012), OMB Circular A-94 at http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-04.pdf.

has reflected a policy of scheduling maturities within the productive life of its major oil fields.

TABLE 5

State of Alaska
Tax-Exempt
General Obligation Bond Sales

Date	Average Life
1-Feb-75	14.60
1-May-75	15.10
1-Oct-75	12.50
1-Mar-76	9.50
1-Jul-76	9.50
1-Feb-77	9.50
1-Oct-77	7.00
1-Apr-78	7.00
1-Jan-79	5.50
1-May-79	5.50
1-Jul-80	5.50
1-Apr-82	5.00
1-Nov-82	5.00
1-Oct-83	5.00
1-May-94	2.30
1-Apr-03	9.09
14-Apr-09	12.22
7-Dec-10	1.52
8-Feb-12	5.87
15-Jan-13	7.24

Sources: Alaska Public Debt 2012-2013, State of Alaska, January 2013 and Official Statements for Series 2010 and 2013 bonds.

State of Alaska GO bonds have had a AA or better rating since 1980, in part due to the tailoring of average life to prime years of oil production. The State currently has AAA ratings from all three major credit rating agencies—Moody's, Standard & Poor's, and Fitch.

As of October 11, 2013, 10-year AAA municipal bonds yielded 2.60 percent.[10] Over the last decade, they have averaged 3.18 percent.[11]

[10] The Municipal Market Monitor (TM3), Thomson Reuters, at https://www.tm3.com/homepage/homepage.jsf on October 13, 2013.
[11] *Municipal Bond Monthly*, Morgan Stanley, September 12, 2013.

Net of 2.72 percent inflation in the Anchorage Consumer Price Index (CPI) over the last decade, the real cost to the State of additional GO debt issuance would have been 0.46 percent per annum.

A somewhat higher estimate of 1.0 percent is used as the real discount for State capital costs in recognition of the facts that:

- interest rates have recently been at historic lows, but have been moving upward and are expected to continue to do so as the economy continues to recover;
- production from the State's oil fields is declining and next year's proposed budget will be in deficit;
- credit ratings can only go down for the State, and might do so, depending on how the State manages it finances down the road;
- declining oil production or budget duress could cause the State to stretch out maturities on its GO bonds; longer maturities would bear higher interest rates.

The 4.5 percent discount rate for operating costs and revenues represents the opportunity cost to the State of spending its own money or revenues, as opposed to federal or borrowed funds. 4.5 percent is the projected total real return on Alaska Permanent Fund investments over the long-term.[12]

If State funds were not spent on State programs, they could earn 4.5 percent (net of inflation), invested in the Permanent Fund. Presumably, if they were spent on programs other than JAI, rather than invested, they would be worth at least 4.5 percent to the State, if not more.

Excess Burden

OMB Circular No. A-94 also calls for public investments that have social benefits apart from decreased federal costs to bear an excess burden for their justification. Taxes generally distort relative prices, thereby causing inefficient allocation of resources and less than optimal economic production.

[12] "Alaska Permanent Fund, Fund Financial History & Projections as of August 31, 2013", Alaska Permanent Fund Corporation.

According to the Circular, "Recent studies of the U.S. tax system suggest a range of values for the marginal excess burden, of which a reasonable estimate is 25 cents per dollar of revenue".

Thus, the Circular advises, "public investments that are not justified on cost-saving grounds should include a supplementary analysis with a 25 percent excess burden. Thus, in such analyses, costs in the form of public expenditures should be multiplied by a factor of 1.25 and the net present value recomputed."

To the extent the choice of a JAI alternative is dictated by life-cycle costs or total project life costs, this excess burden would not be relevant. But, if user benefits enter into the choice, a supplementary analysis of excess burden would be appropriate.

User Benefits

User benefits are measured by the aggregate reduction in user costs of each alternative, from the no action alternative. User benefits reflect both the reduction in costs per user and the change in the volume of users.

User costs consist of travel time, including delays in the case of ferries; AMHS fares; and vehicle operating, maintenance, ownership, and accident costs.

User costs for Juneau – Haines and Skagway travel are figured to or from Auke Bay as the starting or ending point. This is the case whether arrival at, or departure from, Auke Bay is by highway or marine mode.

Modal User Costs

User costs for Juneau – Haines and Skagway traffic have been adjusted in this study to reflect the different values users have for different modes of travel. The adjustments are the relative weights of user costs, by mode, in the model used to produce the traffic estimates for each alternative.

Table 6 shows average user costs for Juneau – Haines and Skagway traffic.

The costs in Table 6 treat ferry travel the same as if it were highway travel. The Table 6 user costs reflect blanket application of the AASHTO approach, which has been designed for highway project evaluation.

TABLE 6

Average Cost per User
Juneau - Haines & Skagway

Alternative	Ferry Delay Time	Ferry Travel Time	Ferry Fare	Highway Travel Time	Highway Vehicle Cost	Total
Existing Service	$25.08	$51.13	$71.29	$ 0.58	$ 0.81	$148.89
1 - No Action	$16.29	$48.05	$70.83	$ 0.60	$ 0.85	$136.61
1B - Enhanced Service	$17.68	$45.84	$57.58	$ 0.55	$ 0.77	$122.41
2B - East Lynn Highway	$ 8.10	$ 6.10	$14.41	$16.84	$35.63	$81.08
3 - West Lynn Highway	$12.34	$10.02	$21.83	$15.78	$33.37	$93.34
4A - Fast Ferry Auke Bay	$12.77	$27.39	$72.36	$ 0.53	$ 0.74	$113.79
4B - Fast Ferry Berners Bay	$12.49	$19.60	$52.50	$ 5.21	$ 7.70	$97.50
4C - Monohull Auke Bay	$12.13	$47.12	$72.10	$ 0.54	$ 0.76	$132.66
4D - Monohull Berners Bay	$11.79	$33.41	$50.43	$ 5.68	$ 8.40	$109.72

User costs in Table 6 are what the costs would be in users' eyes if they were literally at the wheel, driving down the Alaska Marine Highway in a car. They do not reflect any of the amenities of being on a ferry, such as the ability to use a restroom while underway.

This user benefit analysis makes modal adjustments for:

- ferry travel delay at 224.4 percent of the average dollar value of time;
- ferry travel time at 79.5 percent of the average dollar value of time; and,
- ferry fares at 76.6 percent of the dollar fare costs;

The average user costs in Table 6 use an average value of time, across both highway and ferry modes, and average values of other costs (AMHS fares and highway vehicle costs), at their dollar cost, regardless of mode.

In fact, or at least according to the *Traffic Forecast Report*, a minute spent waiting for a ferry is not the same thing to a user as a minute spent riding on a ferry, even if the two are of the same temporal duration and could be costed out at the same average value of time. Transportation economic research has generally found wait times to be

more costly to travelers than time spent underway. For example, AASHTO's user benefit guidelines recommend valuing wait time for buses at twice the cost of time in transit on the bus.[13]

Time spent traveling on a ferry may be seen by users as less costly than time in a car because of greater opportunities to engage in other activities—e.g., reading, eating, walking about, etc.—particularly for a driver. Similarly, a dollar for an AMHS fare may not be the same to a user as a dollar spent on gas if there is greater aesthetic enjoyment or, as the *Traffic Forecast Report* states, less stress associated with ferry travel.[14]

Modal adjustments for the user benefit analysis are derived from the *Traffic Forecast Report's* formula for the utility of JAI alternatives. The *Report's* formula coefficients (the weights for each user cost) are based on:

1. the Puget Sound Regional Council (PSRC) travel demand forecasting model; the PSRC model is one of the few U.S. travel demand models that incorporates a substantial amount of ferry travel; and,

2. Washington State Ferries choice model parameters.

The coefficients were calibrated in the *Traffic Forecast Report* to match observed travel patterns in Lynn Canal.

The modal percentage adjustments are the ratios of the formula's weights for each user cost shown in Table 7, to the weights for the corresponding category of highway costs, i.e.,

- the weights for ferry delay and travel times to that for highway travel time; and,

- the weight for ferry fares to the weight for vehicle operating and maintenance dollar costs.

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[13] Table 5-1: Guidelines for Assigning Values of Time in Highway Project Analysis, *User and Non-User Benefit Analysis for Highways*, American Association of State Highway and Transportation Officials, September 2010.
[14] *Juneau Access Improvements Project, Supplemental Environmental Impact Statement, Traffic Forecast Report Draft Revision 4*, Fehr & Peers, July 2013, page 8, Appendix D.

The percentage adjustments are calculated against highway costs as the base because:

- the hypothetical All-Road Alternative is the reference point in the traffic estimates—the alternative with the greatest utility and traffic, against which all other alternatives are calibrated as some fraction of the All-Road Alternative; and,

- AASHTO's guidelines for user benefit analysis, such as the percentage of wages or compensation to be used to value time, are formulated for highway projects.

Table 7 shows the calculation of the adjustments and the resulting modal user costs.

TABLE 7

Modal Cost per User
Juneau - Haines & Skagway

	User Cost Weights in Traffic Model					
	Ferry Delay Time	Ferry Travel Time	Ferry Fare	Highway Travel Time	Highway Vehicle Cost	
Weight	-0.0028500	-0.0010100	-0.0000973	-0.0012700	-0.0001270	
Ratio of Weight to						
Highway Travel Time Weight	224.4%	79.5%		100.0%		
Highway Vehicle Cost Weight			76.6%		100.0%	
	Modal Cost per User					
Alternative	Ferry Delay Time	Ferry Travel Time	Ferry Fare	Highway Travel Time	Highway Vehicle Cost	Total
Existing Service	$56.29	$40.66	$54.62	$ 0.58	$ 0.81	$152.96
1 - No Action	$36.55	$38.21	$54.26	$ 0.60	$ 0.85	$130.47
1B - Enhanced Service	$39.67	$36.45	$44.11	$ 0.55	$ 0.77	$121.56
2B - East Lynn Highway	$18.18	$ 4.85	$11.04	$16.84	$35.63	$86.54
3 - West Lynn Highway	$27.70	$ 7.97	$16.73	$15.78	$33.37	$101.54
4A - Fast Ferry Auke Bay	$28.67	$21.78	$55.44	$ 0.53	$ 0.74	$107.16
4B - Fast Ferry Berners Bay	$28.04	$15.59	$40.22	$ 5.21	$ 7.70	$96.75
4C - Monohull Auke Bay	$27.23	$37.47	$55.24	$ 0.54	$ 0.76	$121.25
4D - Monohull Berners Bay	$26.46	$26.57	$38.64	$ 5.68	$ 8.40	$105.75

With these adjustments, user benefits more accurately reflect the actual values to users of reductions in user costs. The adjustments allow user benefit analysis to capture the differences in utility or disutility users attach to specific costs associated with particular modes of travel. The analysis then provides a more accurate assessment of user benefits, when an alternative reduces user costs.

The modal adjustments are akin to the variations in AASHTO's guidelines for valuing travelers' time.[15] AASHTO's guidelines range, for example, from 40 percent to 100 percent of average wages, depending on the mode of highway conveyance (automobile, bus, or truck), wait time vs. travel time, passenger vs. driver status, etc.

The AASHTO guidelines all pertain to road travel.

No modal adjustments have been made to Haines – Skagway local traffic. The *Traffic Forecast Report's* utility formula coefficients were not tailored with the Haines – Skagway traffic in mind, nor used to forecast it.

Modified AASHTO Methodology

This study computes user benefits in a step-wise fashion, starting with the highest user cost "action" alternative.

User benefits for the highest cost "action" alternative are computed by comparison to Alternative 1, the no action alternative. In succession, each alternative is compared to the next lowest user cost alternative to compute the incremental user benefits for that next lowest cost alternative. The total user benefits for an alternative are the sum of:

1. the incremental benefits for that alternative; plus,

2. the cumulative amount of incremental benefits for all higher cost "action" alternatives.

The incremental user benefits for each alternative, in comparison to the next higher user cost alternative, are computed according to the

[15] See Table 5-1: Guidelines for Assigning Values of Time in Highway Project Analysis contained in *User and Non-User Benefit Analysis for Highways*, American Association of State Highway and Transportation Officials, September 2010.

AASHTO methodology.[16] The AASHTO calculation of user benefits for a highway improvement project is:

$$(U_0 - U_1) \times (V_0 + V_1)/2$$

where,

U_0 is the user cost per person, vehicle, or trip without the improvement;

U_1 is the user cost per person, vehicle, or trip with the improvement;

V_0 is the traffic volume in persons, vehicles, or trips without the improvement; and,

V_1 is the traffic volume in persons, vehicle, or trips with the improvement.

The AASHTO formula computes user benefits as the cost savings per user, due to an improvement, times the average number of users, with and without, the improvement.

The AASHTO formula was designed primarily for evaluating highway projects that make marginal changes to existing highways or highway networks. Such projects include additional lanes, traffic signalization, ramp metering, geometric improvements, access control, etc. Most of the improvements cause only small changes in costs and traffic.

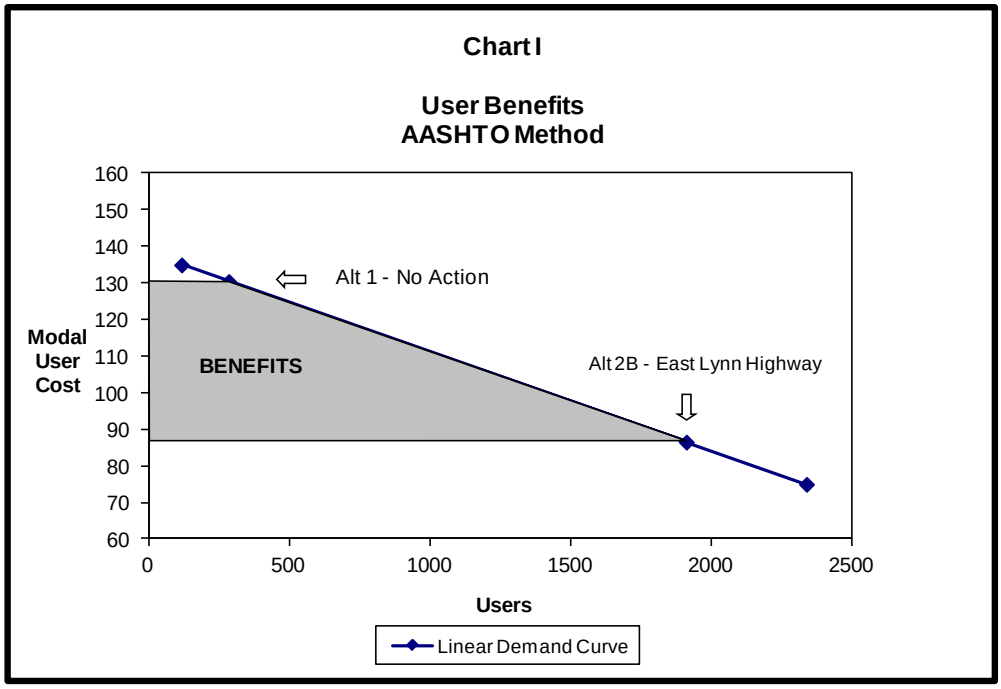
JAI Alternative 2B on the other hand, would drop user costs as much as 34 percent and increase use to as much as 5.0 times the levels expected under the no action alternative. Other alternatives would cause lesser, but still large, changes in costs and traffic.

For changes of the magnitude of Juneau Access, the AASHTO formula overestimates user benefits. The greater the savings in user costs and the greater the induced traffic, the more severe the overestimation is. The step-wise calculation procedure used in this study minimizes the overestimation of user benefits.

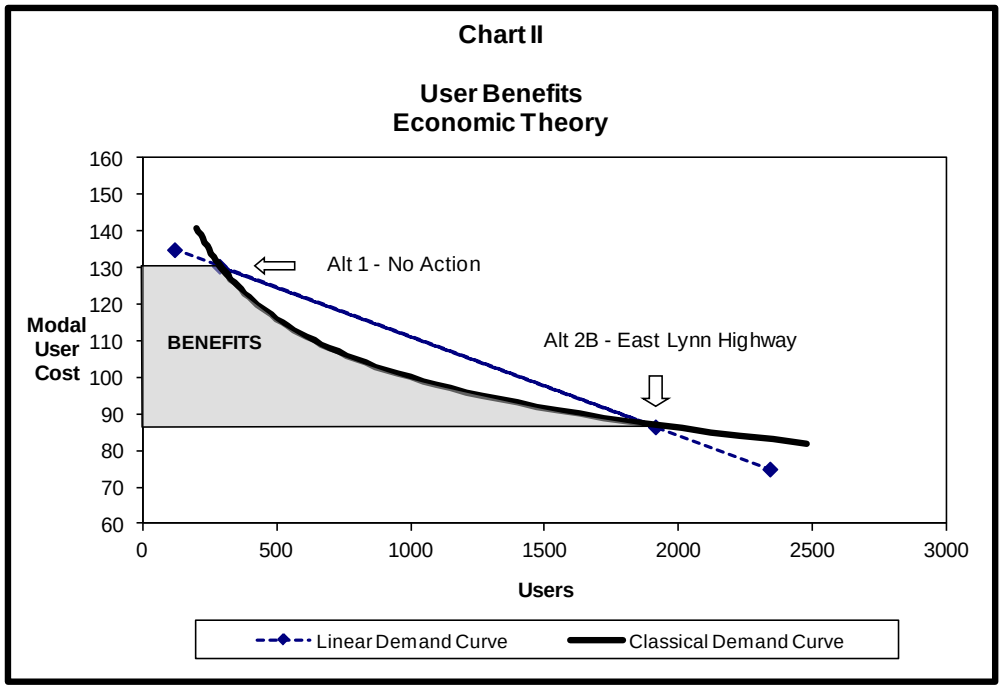
[16] *User and Non-User Benefit Analysis for Highways*, American Association of State Highway and Transportation Officials, September 2010.

For example, under the AASHTO formula, user benefits for Alternative 2B for FY 2021 are 35.7 percent greater than computed according to economic theory. But, using the step-wise calculation, they are overestimated by only 6.9 percent.

The AASHTO formula assumes that demand is a linear function of user cost. Graphically, it would look like Chart I, below.



Generally, demand is more closely related to the percentage change in user cost. This gives rise to a classically-shaped demand curve, such as Chart II, below.



The *Traffic Forecast Report's* traffic estimates, paired with the modal user costs, still provide a close approximation to a classical demand curve, as Chart III below shows.

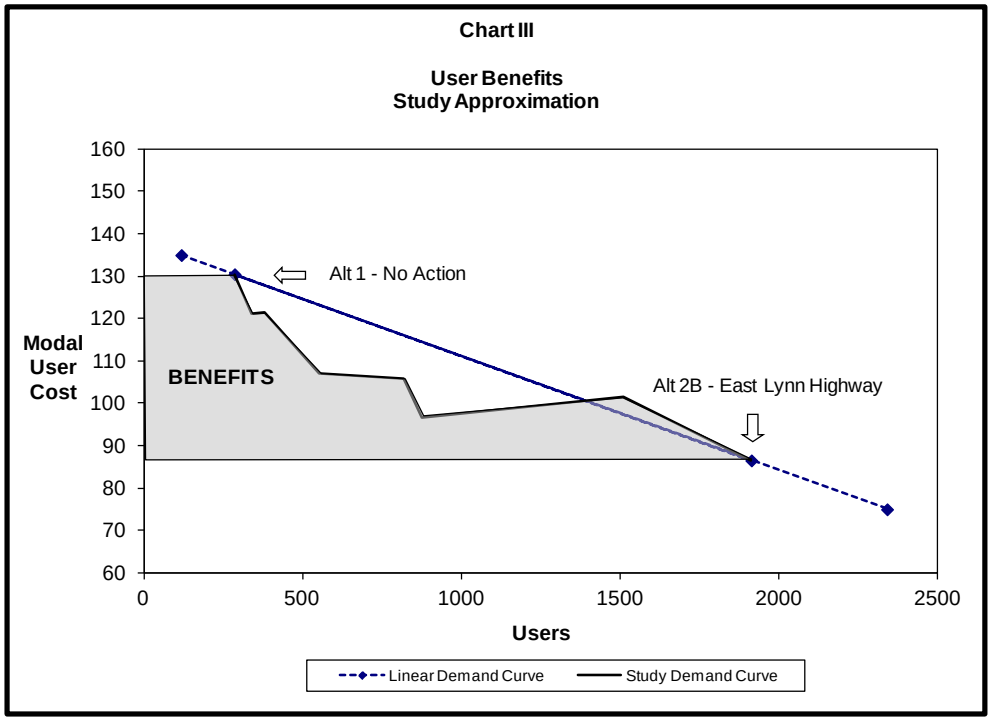


Chart III does not show a monotonically declining user cost curve. That is, some points with greater numbers of users have higher modal costs. They should have lower costs.

In fact, they do. It's just that the *Traffic Forecast Report's* utility formula contains two variables that AASHTO user costs do not include. These are a service index and a modal constant. In the *Traffic Forecast Report's* tabulation of utilities, alternatives with lower total utility costs have greater numbers of users. See Appendix Table A-3.

The *Report's* service indices and modal constants cannot readily be assigned a dollar value. Otherwise, they could be incorporated into AASHTO's user benefit calculation.

Charts I–III use actual estimates contained in this report. The charts accurately portray in graphical form the different approaches to estimation of user benefits for an average day in FY 2021.

User Costs

This report's user costs are based to a great extent on the user costs developed by Fehr & Peers for the *Traffic Forecast Report*.[17] The differences between this analysis' user costs and those from the *Traffic Forecast Report* are:

1. vehicle ownership and accident costs are included in this analysis, but not the *Traffic Forecast Report*;

2. vehicle costs are on a per user basis;[18] the *Traffic Forecast Report's* vehicle costs are per vehicle;

3. vehicle costs are updated from 2012 to 2013 in this analysis;

4. gasoline prices specific to Lynn Canal (Juneau, Haines, and Skagway), rather than an Alaska average, are used to adjust national data on vehicle fuel costs;

[17] Fehr & Peers' user costs are contained in Appendix Table A-13, except that FVF capacities and highway vehicle costs have been revised. Table A-13 contains only Juneau – Haines and Skagway summer season user costs.
[18] Costs per vehicle are divided by the 3.3 or 2.3 persons per vehicle assumed in the *Traffic Forecast Report*.

5. travel time costs are in dollars, whereas the *Traffic Forecast Report's* time costs were in hours and minutes;

6. the *Traffic Forecast Report* provided user times and costs only for summer Juneau – Haines and Skagway traffic; this analysis developed winter user costs for the same origins and destinations, based on the *Traffic Forecast Report's* costs and methodology;[19]

7. user costs for origin-destination traffic between Haines and Skagway are included in this report, again based on the *Traffic Forecast Report's* costs and methodology. Haines – Skagway traffic, user costs, and benefits are estimated independently of the Juneau traffic. The *Juneau Access Haines/Skagway Traffic Forecast*, McDowell Group, November 2012 study addressed Haines – Skagway local traffic, but did not estimate the user costs.

8. FVF vehicle capacities have been revised from the *Traffic Forecast Report* to reflect the capacities contained in "Attachment C – JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013. These capacities are used to weight ferry user costs by vessel.

This study uses the traffic estimates from the *Traffic Forecast Report*. Differences between this study's user costs and those of the *Traffic Forecast Report* should not make a material difference in the forecasted traffic.

Ferry travel, load, and unload times in this report and the *Traffic Forecast Report* differ in most instances from those in Coastwise Corporation's Attachment C to their December 2013 *JAI – Marine Segments* report.

The greatest difference is an extra 48 minutes of travel time in Coastwise' Alternative 1B estimate for the *M/V Malaspina's* runs between Auke Bay and Skagway. Other than that, almost all differences are less than 10 minutes in travel times. Coastwise' Day Boat load and unload times are often 5 minutes longer each.

[19] Weighted average delay and travel times were developed to reflect different wintertime vessels and schedules, using average daily round-trip capacities as weights.

At this report's value of $9.65 per hour of user time, a 10 or 20 minute difference in user time would change user costs $1.61 or $3.22.

At this point, an alternate valuation of user benefits, using Coastwise' times, has not been done. Doing so might not improve the precision of estimated user benefits unless traffic were also re-estimated using Coastwise' ferry travel and load/unload times.

User costs by alternative, route, season, marine and road segment, and vessel for Juneau to Haines and Skagway are contained in Appendix Tables A-4 through A15.

User costs by alternative, season, marine and road segment, and vessel for Haines and Skagway local traffic are contained in Appendix Tables A-16 through A-23.

User costs are calculated as follows:

Time

Time per user for road legs of travel is estimated as the road mileage divided by an average vehicle speed of 45 miles per hour.

Ferry time per user is the sum of frequency delay, check-in time, load time, travel time, and unload time. This is the breakdown of ferry user time contained in the *Traffic Forecast Report*.[20] The *Traffic Forecast Report* provided user times only for summer Juneau – Haines and Skagway traffic. The *Traffic Forecast Report's* times were used to estimate Juneau – Haines and Skagway winter user times, as well as Haines – Skagway summer and winter user times.

The *Traffic Forecast Report* measured user time costs in hours and minutes and did not estimate a dollar value for user time. Time is valued in this report at an average of $9.65 per hour. The average value for time used in the *2006 FEIS* is $8.02.

[20] Coastwise Corporation's Attachment C to their December 2013 *JAI – Marine Segments* report does not include or address frequency delay or check-in times, because their report is only concerned with AMHS's costs, not users'. Coastwise' "time underway" corresponds to the *Traffic Forecast Report's* "travel time". Time underway is further broken down by Coastwise into maneuver (both outbound and inbound) and cruise at speed times. Coastwise' "transit time" equals time underway plus load and unload times.

The estimation of the average time value is shown in Table 8. It is based on the following assumptions:

1. Alaska residents comprise 55.7 percent of traffic on all alternatives. This is their percentage of AMHS Lynn Canal traffic in 2011, as presented in Table 6, Appendix B of the *Traffic Forecast Report*. Non-residents comprised 44.3 percent.

2. May 2011 mean hourly wages for Alaska and the U.S. are used as the time value, respectively, for Alaska residents and non-residents. These hourly wages of $24.80 and $21.74, respectively, are from the U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics (OES). They correspond to mean annual wages of $51,590 and $45,230, respectively.

TABLE 8

Average Time Value

	Alaska Residents		Nonresidents (U.S. Averages)		
	$	Persons	$	Persons	All Travelers
All Travelers		55.7%		44.3%	100.0%
Average Hourly Wage					
2011	24.80		21.74		
2013 dollars	25.96		22.57		
Benefits/Wages					
2013 U.S. Average	30.8%		30.8%		
Average Total Compensation, 2013	33.96		29.52		
Marginal Tax Rate	25.0%		25.0%		
After-Tax Opportunity Cost					
Work-Related Travel (based on Total Compensation)	25.47	20.0%	22.14	5.0%	
Non-Work Travel (based on Hourly Wage)	19.47	80.0%	16.93	95.0%	
Non-Work Travel @ 50% of Value	9.74		8.46		
Adults	9.74	80.0%	8.46	80.0%	
Children	0.00	20.0%	0.00	20.0%	
All Non-Work Travelers	7.79		6.77		
Average Work & Non-Work Travel	11.32		7.54		9.65

3. 2011 wages for Alaska residents and non-residents are adjusted to 2013 dollars using the Anchorage and U.S. CPI, respectively. On an hourly basis, 2013 average wages would be $25.96 and $22.57, respectively. On an annual basis, they would be $54,004 and $46,952.

4. The June 2013 U.S. average employer cost for total benefits as a percentage of wages and salaries for all civilian workers, 30.8 percent, is used to estimate average total compensation of Alaska residents and non-residents of $33.96 and $29.52 an hour, respectively. The ratio is from the U.S. Department of Labor, Bureau of Labor Statistics data series, "Employer Cost for Employee Compensation".

5. The after-tax cost of average total compensation and average wages is estimated by deducting 25 percent. This produces after-tax total compensation for Alaska residents and non-residents of $$25.47 and $22.14 per hour, respectively, and after-tax wage costs of $19.47 and $16.93 per hour, respectively.

   After-tax costs to employers for work-related travel would have to reflect an amalgam of individual (proprietorship, partnership, etc.) and corporate tax schedules, as well as the considerable tax-exempt non-profit and government employment in Lynn Canal. 2013 individual and corporate federal tax rates range up to 39.6 percent and 38 percent, respectively. We have not attempted to directly estimate the marginal rate for work-related travel. We use a 25 percent tax cost as a reasonable approximation.

   We use a 25 percent tax cost for non-work travel because the 2013-dollar mean annual wages—$54,004 and $46,952 for Alaska and the U.S., respectively—generally fall within the 25 percent tax brackets. The 2013 U.S. individual income tax 25 percent brackets are:

single :	$36,250 – $87,850
married filing jointly:	$72,500 – $146,400
married filing separately:	$36,250 – $73,200
head of household:	$48,600 – $125,450

In the case of the higher bracket amounts for married filing jointly, 25 percent may still be a reasonable estimate, given the prevalence of two-income families. No attempt is made to estimate an average state income tax marginal rate for non-resident wages.

6. The *Alaska Visitor Statistics Program VI: Summer 2011* report indicates 4 percent of summer 2011 non-resident ferry travelers were traveling for business or business and pleasure. The Fall/Winter 2011–12 report indicates 20 percent of non-resident ferry travel was business-related.

   Table 9 shows an 85.6 percent/14.4 percent summer/winter split of non-Alaska resident ferry travel. Weighting the summer/winter business travel percentages by these seasonal shares of non-resident traffic produces a 6.3 percent work-related travel share for non-Alaska residents on a year-round basis. This is rounded down to 5 percent in recognition of non-paid "business" travel, e.g., travel to/from work being included in the survey statistics' definition of "business" travel, as well as the inclusion of pleasure in the business/pleasure category of the survey statistics.

TABLE 9

2011 AMHS Lynn Canal Passengers
by Alaska Residency

	Passengers[1]				Seasonal Shares	
	Summer	Winter	Total	% of Total	Summer	Winter
Total	86,379	35,151	121,530	100.0%	71.1%	28.9%
Other US Residents	27,338	4,409	31,747	26.1%	86.1%	13.9%
Other Country Residents	18,775	3,328	22,103	18.2%	84.9%	15.1%
Non-Alaska Residents	46,113	7,737	53,850	44.3%	85.6%	14.4%
Alaska Residents	40,266	27,414	67,680	55.7%	59.5%	40.5%

Note:
1. Summed from Table 6, Appendix B, "Lynn Canal Ferry Market Segments", *JAI SEIS Traffic Forecast Report*.

Table 10 estimates that 22.6 percent of AMHS Lynn Canal Alaska resident passengers are traveling on work-related business, as defined in surveys undertaken as part of the *2000 Alaska Marine Highway System Marketing and Pricing Study*. The *Study* published only seasonal (spring, summer, and winter) statistics on business travel. The 22.6 percent year-round business travel percentage is calculated from Alaska residents' summer/winter seasonal shares, shown in Table 9, and a further breakdown of summer travel into the *Study's* spring and summer periods using monthly Southeast AMHS traffic from 2011 (for both Alaska residents and nonresidents).

TABLE 10

Lynn Canal Alaska Resident Work-Related Travel

	Spring (May)	Summer (Jun - Sep)	Spring & Summer (May - Sep)	Winter (Oct - Apr)	Total
Southeast Passengers 2011[1]	22,700	134,889	157,589	95,965	253,554
Spring & Summer Proportions	14.4%	85.6%	100.0%		
Lynn Canal Passengers 2011					
Alaska Residents					
Table 9			40,266	27,414	67,680
Estimated	5,800	34,466			
Alaska Residents Work-Related Travel[2]					
Business Only	13.0%	10.0%		15.0%	
Business Meeting or Event		1.0%		0.0%	
Business and Pleasure	4.0%	9.0%		12.0%	
Total	17.0%	20.0%		27.0%	
Lynn Canal Alaska Resident Work-Related Travel					
Year-Round Weighted Average					22.6%

Notes:

1. *2011 Annual Traffic Volume Report*, Alaska Marine Highway System.
2. *Alaska Marine Highway System Marketing and Pricing Study, Volume 2*, McDowell Group, September 2000.

The 22.6 percent year-round business travel percentage is rounded down to 20 percent to estimate average time value (Table 8). Again, this is in recognition of non-paid "business" travel, e.g., travel to/from work being included in the survey statistics' definition of "business" travel, as well as the inclusion of pleasure in the business/pleasure category of the survey statistics.

7. We assume the value of time for adults traveling for non-work purposes is 50 percent of the after-tax wage cost. This is generally consistent with AASHTO's user benefit analysis guidelines.[21] The recommendations are based on revealed preference studies by transportation economists. The 50 percent discount produces estimated after-tax non-work time values of $9.74 and $8.46 for adult Alaska residents and non-residents, respectively.

8. We assume that there is no opportunity cost for children's time and that children make up 20 percent of non-work travelers. The 20 percent estimate is based on:

    a. 10.41 percent of 2012 AMHS passenger tickets were for 12 and under; and,

    b. in 2012, a minority of the civilian population under age 20 were employed (only 37.2 percent of persons ages 18 and 19 were employed in 2012). Roughly speaking, we double the 10 percent proportion of travelers under age 12 to account for all travelers under age 20.

These assumptions produce estimated average time values of $7.79 and $6.77 for Alaska residents' and non-residents' non-work travel, respectively.

The weighted average time value of all Alaska travelers would be $11.32 an hour. This is the product of 80.0% non-work travel @ $7.79 per hour and 20.0% work-related travel @ $25.47 per hour. Similarly, non-residents time would be valued at $7.54 an hour—95.0% non-work travel @ $6.77 an hour and 5.0% work-related travel @ $22.14 per hour.

[21] Table 5–1: Guidelines for Assigning Values of Time in Highway Project Analysis, *User and Non-User Benefit Analysis for Highways*, American Association of State Highway and Transportation Officials, September 2010.

The weighted average time value of all travelers would be $9.65 per hour. This is the product of 55.7% Alaska residents @ $11.32 per hour and 44.3% non-residents @ $7.54 per hour. See Table 8.

AMHS Fares

AMHS fares are the fares used in the *Traffic Forecast Report*. See Appendix Tables A–13, A–14, and A–22. Fares are based on a 16–19 foot vehicle. The fares are updated from the *2006 FEIS*.

Vehicle Costs

Vehicle operating, maintenance, and ownership costs are calculated at 89.36 cents per mile, as shown in Table 11.

Table 11

Vehicle Operating & Ownership Costs[1]

	Small Sedan	Medium Sedan	Large Sedan	4WD SUV	Minivan	Fleet Average
Operating Costs per Mile (cents)						
US Fuel Cost @ $3.486 per gallon	11.46	15.08	16.80	19.40	16.70	
Lynn Canal Fuel Cost @ $4.122 per gallon[2]	13.55	17.83	19.87	22.94	19.75	19.32
Maintenance Cost	4.60	4.92	5.40	5.55	4.86	
Tires Cost	0.64	1.09	1.28	1.20	0.83	
Subtotal	18.79	23.84	26.55	29.69	25.44	
Dollars per Year @ 10,000 Mile	1,879	2,384	2,655	2,969	2,544	
Ownership Costs per Year (dollars)						
Full-Coverage Insurance	1,002	1,020	1,064	967	931	
License, Registration, Taxes	452	600	780	790	646	
Depreciation	2,222	3,244	4,450	4,523	3,682	
Finance Charge	606	831	1,106	1,121	902	
Subtotal	4,282	5,695	7,400	7,401	6,161	
Total Cost per Year	6,161	8,079	10,055	10,370	8,705	
Cents per Mile @ 10,000 Miles/Year	61.61	80.79	100.55	103.70	87.05	89.36
Lynn Canal Fleet Mix[3]	15%	25%	20%	30%	10%	

Notes:
1. All costs are U.S. data from AAA's "Your Driving Costs, 2013 Edition", except Lynn Canal fuel cost.
2. $4.122 is the average monthly price of regular gasoline in Juneau, Haines, and Skagway for October 2012 through October 2013 from GasPriceData.com.
3. Table 7, Appendix A, *JAIP, SEIS, Traffic Forecast Report DRAFT*, Fehr & Peers, July 2013, Revision 4.

Vehicle costs are based on AAA 2013 data, assuming 10,000 average vehicle miles traveled per year. In 2011, cars, light trucks, vans, and SUV's as a group averaged 11,318 miles per vehicle. All motor vehicles, including motorcycles, trucks, and buses averaged 11,640 miles for the year.[22]

Accident Cost

Accident costs are calculated at 14.8 cents per statute mile. This is the average cents per mile accident cost, net of insurance reimbursement, for all vehicles in 2013 dollars from AASHTO's user benefit analysis guidebook.[23]

Total Average User Cost

This is a total one-way trip cost per user. For each alternative, the average user cost is:

$$UC_i = T_i \times V + PF_i + (VF_i + (VC + AC) \times M_i)/PPV_i$$

where,

- UC_i = average total user cost for the *i*th alternative;
- T_i = average total time for the *i*th alternative;
- V = average time value—$9.65 per hour in the base case;
- PF_i = total AMHS passenger fares per person for the *i*th alternative;
- PPV_i = average number of persons per vehicle for the *i*th alternative;
- VF_i = total AMHS vehicle fares for the *i*th alternative;
- VC = vehicle operating, maintenance, and ownership cost per mile—89.3 cents per mile;
- AC = accident cost per mile—14.8 cents per mile; and,
- M_i = total statute road miles for the *i*th alternative.

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[22] Table VM–1, *Highway Statistics 2011*, Federal Highway Administration, March 2013 at http://www.fhwa.dot.gov/policyinformation/statistics/2011/vm1.cfm.

[23] Table 5–7, *User and Non-User Benefit Analysis for Highways*, American Association of State Highway and Transportation Officials, September 2010.

Total Modal User Cost

The total one-way modal user cost per trip for each alternative is:

$$MUC_i = T_i \times V + 0.766\ PF_i + (0.766\ VF_i + (VC + AC) \times M_i)/PPV_i$$

where,

- MUC_i = average total modal user cost for the *i*th alternative;
- T_i, the average total time for the *i*th alternative,
  $= 2.244\ FDTi + 0.795\ FTT_i + VTTi$;
- FDT_i = average ferry delay time for the *i*th alternative;
- FTT_i = average ferry travel time for the *i*th alternative;
- VTT_i = average vehicle travel time for the *i*th alternative; and,

other variables are the same as for total average user cost.

User Benefit Calculations

User benefit calculations were performed separately for Juneau traffic and Haines – Skagway local traffic. The two estimated amounts of user benefits were summed to produce total user benefits for a given alternative. User benefits for both Juneau traffic and Haines – Skagway traffic were calculated according to the same methodology described below.

Appendix Tables A–24 through A–30 show the calculation of each "action" alternative's user benefits for Juneau traffic. Appendix Tables A–31 through A–37 show the calculations for Haines – Skagway local traffic.

User benefits for each "action" alternative are calculated as follows. The specific calculation steps, for each year from FY 2015 through FY 2050, as shown in the tables, are:

- The modal costs per user for Juneau traffic are from Table 7. Average costs per user for Haines – Skagway local traffic are from Appendix Table A–16.

- AADT is average annual daily traffic. It is a count of the number of vehicles per day going in either direction between origin and destination city pairs.

  AADT for Juneau traffic is from the *Traffic Forecast Report's* 2011 estimates.

  Juneau traffic for FY 2015–50 is calculated using the following annual rates of growth, which are equivalent to those in the *Traffic Forecast Report*, without its overlapping periods of years:

  - 2011–20: 0.065 percent; and,
  - 2021–50: negative 0.025 percent.[24]

  2011 local traffic between Haines and Skagway is estimated in Appendix Table A–18. The estimates are based on the *Juneau Access Haines/Skagway Traffic Forecast*, McDowell Group, November 2012. This user benefit analysis assumes no growth in Haines – Skagway traffic from the 2011 levels.

- The "Annual Average Daily Users" column is computed by:

  - converting AADT to users, using the *Traffic Forecast Report's* assumptions for Juneau traffic of 3.3 users per vehicle for marine alternatives and 2.3 users per vehicle for highway alternatives. Haines – Skagway local traffic is assumed to be AMHS' 2011 average of 2.2 users per vehicle, reported in the McDowell Group 2012 *Juneau Access Haines/Skagway Traffic Forecast*; and,
  - taking the average of the two alternatives' user figures.

This report's traffic projections in AADT and numbers of travelers for fiscal years 2021 and 2050 are shown in Table 12 below.

[24] Calculated from the 2011–20 rate of 0.065 percent and the *Traffic Forecast Report's* 2011–50 rate of negative 0.004 percent.

TABLE 12

Traffic and Users

Alternative	AADT[1]									Annual Average Daily Users	
	2011			FY 2021			FY 2050			FY 2021	FY 2050
	Haines	Skagway	Total	Haines	Skagway	Total	Haines	Skagway	Total		
Juneau - Haines & Skagway											
Existing Service	41	27	68	41	27	68	41	27	68	226	224
1 - No Action	53	33	86	53	33	86	53	33	86	285	283
1B - Enhanced Service	62	52	114	62	52	115	62	52	114	378	376
2B - East Lynn Highway	450	377	827	453	379	832	449	376	826	1,913	1,899
3 - West Lynn Highway	418	235	653	420	236	657	417	235	652	1,511	1,500
4A - Fast Ferry Auke Bay	91	75	166	92	75	167	91	75	166	551	547
4B - Fast Ferry Berners Bay	145	119	264	146	120	266	145	119	264	876	870
4C - Monohull Auke Bay	57	45	102	57	45	103	57	45	102	339	336
4D - Monohull Berners Bay	136	111	247	137	112	248	136	111	247	820	814

Notes:

1. Table 7 for Existing Service and Table 9 for Alternatives, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT*, Fehr & Peers, July 2013 Revision 4.

Haines - Skagway	2011	FY 2021	FY 2050	FY 2021	FY 2050
Existing Service	17	17	17	37	37
1 - No Action	24	24	24	54	54
1B - Enhanced Service	24	24	24	54	54
2B - East Lynn Highway	24	24	24	54	54
3 - West Lynn Highway	30	30	30	65	65
4A - Fast Ferry Auke Bay	24	24	24	54	54
4B - Fast Ferry Berners Bay	24	24	24	54	54
4C - Monohull Auke Bay	24	24	24	54	54
4D - Monohull Berners Bay	24	24	24	54	54

Under "Total Annual User Benefits", the pairs of columns show:

- for the first pair, the alternative under evaluation compared to the next highest cost alternative;
    - user benefits under "Year of Travel" is computed as the "Cost Reduction" multiplied by the "Annual Average Daily Users"; and,
    - user benefits under "Present Value @ 7.0% 7/1/14" is computed so that the figure in that column, compounded from July 1, 2014 to the year of travel at a 7.0 percent rate of return, produces the "Year of Travel" user benefits;
- the figures for the second pair, the next highest cost alternative compared to the no action alternative, are the last pair of figures shown in the preceding User Benefits table for the next higher cost alternative; and,
- the figures for the last pair, the alternative under evaluation compared to the no action alternative, are the sum of the figures for the first two pairs of columns.

"Total Annual User Benefits" for FY 2015–50 is simply the sum of user benefits for all the years.

Project Costs

Project costs consist of capital and operating costs. This report refers to the sum of capital and operating costs as "total costs".

Government revenues from operation of the project are an offset to project costs. They reduce the funds government must otherwise provide to pay for operation of the project.

Users of the transportation project pay the government revenues. They are part of the costs to users that figure in the calculation of user benefits. If revenues were not deducted from project costs, the portion of project costs charged to users would be double-counted.

This report refers to the sum of capital and operating costs minus project revenues as "net costs".

Capital Costs

Capital costs are made up of:

- acquisition costs of new facilities or vessels;
- refurbishment and replacement costs for acquired or existing facilities or vessels; and,
- residual values of facilities and vessels at the end of the analysis period or, in the case of vessels, when they are removed from service in Lynn Canal.

Construction costs of existing vessels or ones that would have been built regardless of whether the Juneau Access Project goes ahead are sunk costs. They do not need to be considered. These sunk costs will exist for all alternatives and can be factored out of the analysis. There will be no net difference between alternatives on their account.

In user benefit analysis, sunk costs are explicitly factored out: the analysis is incremental. The project costs that are compared to user benefits are the increase in costs, compared to the no action alternative—Alternative 1.

In life-cycle cost or total project life cost analyses, sunk costs are implicitly factored out: the no action alternative is defined to exclude any JAI Project costs. No acquisition costs are included in Alternative 1.

Acquisition Costs

Acquisition costs are generally assumed to occur during the six State of Alaska fiscal years 2015 through 2020. Each alternative is scheduled to commence operation July 1, 2021, except Alternatives 1 and 1B, which are assumed to begin operating July 1, 2016, upon completion of the two Day Boats ACF–1 and ACF–2.

Table 13 sets out the acquisition costs for new facilities or vessels. Road[25] and terminal[26] construction costs were provided by DOT&PF.

[25] "Estimate cost categorization.xls", June 18, 2013, contained in an August 29, 2013 email from L. Pat Carroll, P.E., Southeast Region Design Group Chief, AK DOT&PF to Jim Calvin, McDowell Group.

New vessel acquisition costs are from Coastwise Corporation's *JAI – Marine Segments* report.[27]

TABLE 13

Acquisition Costs
(2013 $000)

Alternative	Road Construction	AMHS New Vessel Acquisition	AMHS Terminal Construction	AMHS Total	Road & AMHS
1 - No Action		0	0	0	0
1B - Enhanced Service		0	0	0	0
2B - East Lynn Highway	522,731	22,315	28,760	51,075	573,806
3 - West Lynn Highway	421,562	48,906	46,595	95,500	517,062
4A - Fast Ferry Auke Bay		186,721	40,612	227,333	227,333
4B - Fast Ferry Berners Bay	8,021	218,932	59,593	278,526	286,547
4C - Monohull Auke Bay		22,315	49,192	71,508	71,508
4D - Monohull Berners Bay	8,021	22,315	68,174	90,489	98,510

Table 14 below shows the specific terminal improvements and their capital costs, by alternative.

Appendix Tables A–38 through A–45 break out road and terminal acquisition costs into:

- earthwork;
- structures;
- other costs; and,
- right of way.

Road right of way costs are assumed to occur during the first year of construction—FY 2015. All other road and terminal acquisition costs are assumed to occur over the six years prior to FY 2021. 10 percent of road and terminal acquisition costs are assumed to occur in the first

[26] Juneau Access Ferry Terminals, Project Construction Cost Estimate, Project Number 71100, SE Region – Marine Engineering, AK DOT&PF, October 2, 2013.
[27] Attachment C, *JAI – Marine Segments*, JAI Marine Alternatives Operating and Capital Costs 12/3/13 Draft, Coastwise Corporation, December 2013.

and sixth years of construction, and 20 percent of such costs in each of the intervening four years.

TABLE 14

Terminal Acquisition Costs[1]
(2013 $000)

Terminal Improvements by Alternative	Earthwork	Structures	Other	Total
1 - No Action				0
1B - Enhanced Service				0
2B - East Lynn Highway				
Katzehin Ferry Terminal & Breakwaters	6,071	9,040	5,068	20,180
Skagway End Berth		5,446	3,134	8,580
Total	6,071	14,487	8,202	28,760
3 - West Lynn Highway				
Sawmill Cove Twin Stern Berths	2,171	12,632	4,179	18,981
William Henry Bay End Berth	1,819	12,819	4,395	19,033
Skagway End Berth		5,446	3,134	8,580
Total	3,990	30,898	11,707	46,595
4A - Fast Ferry Auke Bay				
Auke Bay Twin Stern Berths	1,643	35,783	3,186	40,612
4B - Fast Ferry Berners Bay				
Auke Bay Twin Stern Berths	1,643	35,783	3,186	40,612
Sawmill Cove Twin Stern Berths	2,171	12,632	4,179	18,981
Total	3,813	48,415	7,365	59,593
4C - Monohull Auke Bay				
Auke Bay Twin Stern Berths	1,643	35,783	3,186	40,612
Skagway End Berth		5,446	3,134	8,580
Total	1,643	41,229	6,320	49,192
4D - Monohull Berners Bay				
Auke Bay Twin Stern Berths	1,643	35,783	3,186	40,612
Skagway End Berth		5,446	3,134	8,580
Sawmill Cove Twin Stern Berths	2,171	12,632	4,179	18,981
Total	3,813	53,861	10,499	68,174

Notes:

1. Juneau Access Ferry Terminals, Project Construction Cost Estimate, Project Number 71100, SE Region - Marine Engineering, Alaska Department of Transportation & Public Facilities, October 2, 2013.

Replacement costs for "other" road and terminal improvements are required during the life of the project and are included in Appendix Tables A–38 through A–45. They are not included in Table 13.

New acquisition vessels are assumed to be constructed during the two years prior to fiscal year 2021. Construction expenditures will occur in equal amounts each year.

Refurbishment Costs

Appendix Tables A–46 and A–47 show refurbishment costs for new and existing vessels, by year for each Juneau Access alternative. Appendix Table A–48 shows vessel replacement costs. These refurbishment and replacement costs are included in Appendix Tables A–38 through A–45.

We assume that refurbishment costs maintain the value of a vessel according to a straight-line depreciation schedule. We assume that refurbishment does not wholly or partially restore a vessel's value to its original acquisition cost or extend its economic life.

Refurbishment costs for AMHS vessels are based on schedules contained in Attachment D of Coastwise Corporation's *JAI – Marine Segments* report.[28] These schedules relate expenditures for refurbishment to a vessel's economic life and acquisition cost.

In Appendix Table A–47, existing vessels' refurbishment costs are pro-rated based on the percent of time vessels operated in Lynn Canal in 2012. Except for the *M/V Malaspina*, the percentages are contained in Attachment A of Coastwise Corporation's *JAI – Marine Segments* report.[29] The actual vessels that would serve Lynn Canal may vary from the ones shown in Appendix Table A–47.

M/V Malaspina refurbishment costs allocated to Lynn Canal are 55.0 percent. The percentage is based on *M/V Malaspina's* operation as a day boat in Lynn Canal during the summer season (22 weeks out of 40 weeks available annually for operation). It is assumed that the rest of *M/V Malaspina's* operations are outside Lynn Canal.

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[28] Attachment D, *JAI – Marine Segments*, Capital Improvements Plan (CIP), Coastwise Corporation, December 2013, 12/3/13/ draft.

[29] Attachment A, *JAI – Marine Segments*, JAI AMHS Mainline Operating Costs, Lynn Canal Annual Operating Expenditures – 2012, Coastwise Corporation, December 2013, 12/3/13/ draft.

M/V Malaspina is replaced by a *M/V Taku*-equivalent vessel in 2023. A *M/V Taku*-sized vessel will be a better match for the expected Alternative 1B summer day boat traffic, as well as other alternatives' winter mainline traffic if the *M/V Malaspina* is used on those routes. *M/V Taku* refurbishment costs are used in place of *M/V Malaspina's* Alternative 1B refurbishment costs for 2024 and later years, again pro-rated by 55.0 percent.

In all alternatives, the *M/V LeConte* is assumed to provide winter service in Lynn Canal until she is removed from Lynn Canal in FY 2017, upon completion of Day Boats ACF–1 and ACF–2. For each alternative, the refurbishment costs scheduled to occur before her removal are included as project costs.

Replacement Costs

Table 15 below shows construction periods and useful lives for each type of capital improvement.

TABLE 15

Capital Improvements
Construction Periods and Useful Lives

Capital Improvement	Construction Period (Years)	Useful Life (Years)
Road & Ferry Terminals		
Earthwork	6	80
Structures	6	60
Other	6	25
Right of Way	1	100
New Vessels		
Steel displacement vessel	2	60
Aluminum fast vessel	2	32

Of all capital acquisitions, only "Other" costs for roads and ferry terminals have a useful life shorter than the 30 years of project operation from FY 2021–50. We assume that replacement costs for these improvements are the same as their original acquisition costs in 2013 dollars. We assume half of the replacement costs are expended in

each of the two years prior to the end of the original improvements' useful lives.

No new vessels acquired for Juneau Access will need to be replaced before FY 2050, based on their ages in that year and useful lives.

Appendix Table A–48 shows the year and cost of existing vessels' replacements that will occur within the FY 2015–50 analysis period. The year of replacement is based on the vessels' age and useful life—60 years for steel displacement vessels and 32 years for FVF's. Replacement costs are from Coastwise Corporation's Attachment B, *JAI – Marine Segments* report.[30]

Only a portion of existing vessels' replacement costs, based on each vessel's service in Lynn Canal, is included in the various alternatives' capital costs. The pro-ration percentages and basis are the same as for refurbishment costs.

We assume replacement costs are expended equally in the two years prior to a vessel's retirement.

Residual Values

Each capital improvement has a useful economic life. The value of a capital improvement declines over the course of its life, until there is no value remaining at the end of its useful life. At any point in time, the capital asset's remaining value is also referred to as its residual value.

In this analysis, residual values are credited against other capital project costs;

1. when a marine vessel is removed from Lynn Canal service; and,

2. when any capital improvement still has a remaining useful life at the end of the study period.

The residual value is a negative number. It is an offset to other capital improvement costs. Appendix Tables A–49 and A–50 show AMHS new and existing vessels' and their replacements' residual values for each

[30] Attachment B, *JAI – Marine Segments*, AMHS Vessel Replacement Costs, Coastwise Corporation, December 2013, 12/3/13/ draft.

year in which a vessel is removed from Lynn Canal service and for FY 2050.

Residual values are included in the analysis to compensate for the fact the FY 2015–50 analysis period does not begin and end with the beginning and end of all capital assets' useful lives. Residual values account for the facts that:

1. in some alternatives, some AMHS vessels leave Lynn Canal service before the end of their useful lives; residual value in the year of removal gives recognition to the economic value made available for uses outside Lynn Canal; and,

2. different capital assets have different useful lives; in FY 2050, many assets will still have remaining useful lives; it would be the rare improvement whose useful life happens to end in FY 2050; residual values in FY 2050 allocate capital costs between the study period and the post-study period; this preserves comparability between alternatives whose acquisitions or replacements have different useful lives.

We generally assume capital improvements have a residual value in FY 2050 equal to their acquisition or replacement cost, multiplied by the ratio of their remaining useful life to their original useful life. Salvage costs or restoration costs are ignored.

Only a portion of existing vessels' residuals, based on each vessel's service in Lynn Canal, is included in the various alternatives' capital costs. The pro-ration percentages and basis are the same as for refurbishment costs.

The residual value is an estimate of market value. It represents what the proceeds might be from sale of an asset if it were removed from service in the Juneau Access project. It also represents what another party, or AMHS in the case of ferry vessels, might pay to acquire the asset for use in another transportation project.

It may well be that assets used in Juneau Access would have little market value for another party, or in another project. The market for U.S.-built ferry vessels can be non-existent at times. It is not readily apparent what, if any, alternative use might be made of highway improvements. Still, the depreciated replacement cost approach used in this study to estimate residual values provides a reasonable estimate of market value to the extent:

1. marine vessels might be employed elsewhere in AMHS service; or,

2. the Juneau Access project remains in place beyond FY2050.

Despite its shortcomings, depreciated replacement cost serves as an unbiased cost allocation scheme for comparability among Juneau Access alternatives. It also approximates what actual cash flows would be for each alternative, if unexpired capital assets were liquidated when removed from Lynn Canal service or when FY 2050 arrived. Cash flow is the basis for measuring benefits and costs in a benefit-cost analysis. It correctly accounts for the opportunity cost or time value of money.

The method used to estimate residual value is the same as the accounting procedure for straight-line depreciation. This does not mean that capital costs are the same as the cumulative depreciation for a project.

Most capital costs occur during the first six years of the project. Their present values will be close to the actual cash outlays. The credit for residual value will be very small in present value because the residual value is realized so far in the future. The net capital costs—the present value of acquisition costs minus the present value of residual value—will be much greater than the present value of the annual depreciation charges during the life of the project.

Costing capital improvements through an annual depreciation charge over the life of a project would be at odds with present value analysis. Present value analysis measures costs as of the time resources are expended—i.e., on a cash basis. This is appropriate for economic evaluation.

Terminal Values

An alternative to residual values would be to estimate the costs and benefits of the project to infinity. Pragmatically, this usually requires cutting off the detailed analysis after some finite number of years. When the residual value represents the net present value of the project from the end of the study period to infinity, it is often called the terminal value.

Given the complexity of the model used to estimate Juneau Access benefits and costs and the alternatives' varying useful lives, there are

no simple algorithms to estimate net present values to infinity. The difference between a residual value of capital assets and a terminal project value is minimized because both values are realized in FY 2050, 36 years into the future. Such distant values have very small present values. Their effect on the rankings of alternatives is likely to be de minimus.

One might assume that the residual value approach stumbles when the end of the analysis period occurs around the time major capital expenditures would occur for replacement of assets. For example, what if alternative Z required $50 million to replace a marine vessel in FY 2053? Wouldn't it rank better than it should against other alternatives that did not require such expenditure? Aren't the costs for alternative Z understated in the big picture because of the arbitrary study cut-off of FY 2050?

No. If one extended the analysis to FY 2053, it would indeed recognize the additional expenditures of $50 million during FY 2051–52. But, it would also recognize an offsetting residual value of $50 million, less one year's depreciation, in FY 2053. The net result would be very little change in the capital costs for the alternative, especially in present value in FY 2015.

Extending the analysis beyond FY 2053 to capture a more significant portion of the replacement vessel's useful life would merely perpetuate the problem. At some point along the way, another capital asset with a different useful life will expire and need replacement.

Operating Costs

Appendix Tables A–51 through A–58 show the operating costs for each alternative. Ferry terminal operating costs are included in the estimates of vessel operating costs as an overhead item.

Highways

Highway operating costs consist of highway maintenance and avalanche control costs. Highway maintenance costs were provided by Southeast Region, AK DOT&PF.[31]

[31] "Juneau Access, Highway Maintenance Cost Estimates", Southeast Region Maintenance & Operations, AK DOT&PF, July 8, 2013.

Their estimate states that the East Lynn and West Lynn Highways would have total maintenance costs, including avalanche control, of

> "$14,352 and $12,033 per lane mile, respectively. This is 25 to 40% higher than the average cost for highway maintenance throughout Southeast Alaska. However, it reflects additional personnel and assets assigned to the highway to address the high snowfall and avalanche activity expected on this route."

The report's $14,352 and $12,033 per lane mile costs for the East Lynn and West Lynn Highways, respectively, appear to be closer to 50 percent and 33 percent more than the Southeast average.

The "Juneau Access, Highway Maintenance Cost Estimates" document states,

> "These cost estimates are intended to represent the cost of providing seven day per week highway maintenance during winter, and routine summer maintenance….Staffing levels for each alternative are estimated to provide an adequate winter level of service, but do not provide active snow plowing and patrolling 24 hours per day. During major snow storms and heavy avalanches, staffing is not adequate to ensure trafficable roads at all times, and highway closures for avalanche monitoring and clean up will be necessary."

Avalanche control costs are from Alaska Avalanche Specialists.[32]

Vessels

Operating costs for vessels are also shown in Appendix Tables A–51 through A–58. They are delineated in three categories—Haines – Skagway shuttle, Lynn Canal, and Mainline. Lynn Canal is everything other than the shuttles and mainline vessels. These costs are from Coastwise Corporation's Attachment A, *JAI – Marine Segments* report for mainline vessels[33] and Attachment C for all other

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[32] Alaska Avalanche Specialists August 19, 2013 email to Reuben Yost re: Juneau Access budget changes due to avalanche explosives recalculation, with attached file "20130813LCMasterBudgetCompilationUpdatedNoContractRevExplosives.xls".

[33] Attachment A, *JAI – Marine Segments*, JAI AMHS Mainline Operating Costs, Lynn Canal Annual Operating Expenditures – 2012, Coastwise Corporation, December 2013, 12/3/13/ draft.

vessel operating costs,[34] except FY 2015–16 Existing Service operating costs.

Only a portion of operating costs are allocated to Lynn Canal for existing vessels—mainline pro-ration is shown in the aforementioned Attachment A, while the pro-ration of the rest of FY 2015–16 Existing Service is shown in Table 16.

TABLE 16

Operating & Maintenance Costs
Existing Lynn Canal Service
(Excluding Mainliner Service)
(2013 $000)

	Lynn Canal[1]					Lynn Canal	
Vessel	Non-Fuel Operating Costs	Fuel Costs	Shoreside Costs	% of Operating Days	Total Overhaul Costs[2]	Overhaul Costs	Total Costs
Fairweather	173	195		2.5%	848	21	
LeConte	3,697	535		40.4%	818	331	
Malaspina	7,593	939		63.8%	1,098	700	
Total	11,463	1,669	2,391			1,052	16,575

Notes:

1. Attachment A: *JAI - Marine Segments*, JAI AMHS Mainline Operating Costs, Lynn Canal Annual Operating Expenditures - 2012, Coastwise Corporation, December 2013.

2. AMHS FY 2012 "state capital overhaul" costs, which exclude operating overhaul costs, provided by AMHS.

M/V Malaspina's operating costs in Lynn Canal are not pro-rated. Rather they are calculated directly in Attachment C of *JAI – Marine Segments*. They reflect *M/V Malaspina's* post-FY 2016 Alternative 1B Auke Bay – Skagway Day Boat service.

[34] Attachment C, *JAI – Marine Segments*, JAI Marine Alternatives Operating and Capital Costs 12/3/13 Draft, Coastwise Corporation, December 2013.

Revenues

Project revenues consist of highway fuel taxes and AMHS ferry fares. Appendix Tables A–59 through A–66 show the calculation of revenues for each alternative from traffic in and out of Juneau. Appendix Tables A–67 through A–74 show the revenue calculations for Haines – Skagway local traffic.

No AMHS revenue from berths, food, or beverage sales is included. Such revenues will be minor. Most AMHS traffic will be on shorter Day Boat or shuttle routes or high-speed ferries.

Highway fuel taxes are estimated using the current federal tax rate of 18.4 cents per gallon of gasoline and 8 cent per gallon for the State. Gallons taxed are estimated from each alternative's average road miles, and gallons of fuel consumed per mile, derived from Table 11.

Table 11 indicates the average fuel cost per mile for the assumed Lynn Canal fleet is 19.32 cents per mile, at a fuel cost of $4.122 per gallon. This equals 0.047 gallons per mile or 21.3 miles per gallon. Table 5.5 of AASHTO's user benefit guidebook[35] estimates average automobile fuel consumption at 45 mph at 0.042 gallons per mile. 0.047 gallons per mile is used to estimate gasoline consumption, recognizing that a small un-estimated portion of the Lynn Canal fleet would consist of trucks with higher fuel consumption. The 0.047 gallons per mile fuel consumption maintains consistency with the fuel costs per mile used in the user benefit calculations.

Fuel tax revenue is estimated for each alternative by multiplying each year's projected traffic (AADT x 365) by the:

1. average number of road miles between origin and destination;

2. weighted average fuel consumption of 0.047 gallons per mile; and,

3. the appropriate federal or State tax rate.

AMHS revenue for each year is computed as the product of the average fare between origin and destination and the number of users (AADT x 365 x users per vehicle). Users per vehicle for Juneau – Haines and Skagway are 2.3 and 3.3 for road and marine alternatives,

[35] Table 5–5, *User and Non-User Benefit Analysis for Highways*, AASHTO, September 2010.

respectively. Users per vehicle are 2.2 for Haines – Skagway local travelers.

Appendix Tables A–13 and A–14 show the calculation of the average road miles and average fares between Juneau and Haines or Skagway. Appendix Table A–22 shows the average miles and fares for Haines and Skagway local traffic.

The Juneau Access alternatives can be evaluated by a number of measures. Some are measures of economic efficiency. They consider the benefits received as well as project costs. Other measures look at project cost alone.

As explained in the introduction, net present value is the best measure of a project's economic value to society as a whole. But, if budgets constrain what can be spent, other measures such as benefit/cost ratios, life-cycle cost, total project life costs, or State funds may be relevant to project selection.

One can also look at the projects' impact on users, without considering project costs. Of course, since users do not pay the full costs of the project, this is not a sufficient basis for making a decision.

Economic Efficiency

Project selection based on economic efficiency would be guided by net present value (NPV), or if funding were constrained, but available for projects besides Juneau Access, by benefit/cost (B/C) ratios. Tables 17 and 18 below show NPV and B/C ratios for all alternatives.

NPV

The tables break out the present values of user benefits and project costs to provide a more comprehensive picture of the alternatives. User benefits minus project costs equals net present value. User benefits divided by project costs equals the B/C ratio. Appendix Table A–75 provides a breakdown of project cost present values into capital costs, operating costs, and government revenues.

Table 17 shows the results when all fund sources are included in project costs. This provides the alternatives' economic efficiency with respect to the U.S. economy.

Table 18 shows the results when only State funds are included in project costs. This table's NPV's and B/C ratios might be of interest in more narrowly evaluating alternatives from the standpoint of the State's self-interest. But, use of federal or other fund sources is rarely

without cost, either in terms of other projects foregone or drawing down the State's political capital in the competition for funds.

TABLE 17

Economic Efficiency
Total Funds
(2013 $000)

Alternative	2015-50 Present Value as of 7/1/14 @ Private Sector Rate of Return: User Benefits	Incremental Net Project Costs (vs. No Action)	NPV	Benefit/Cost Ratio
1 - No Action	0	0	0	1.00
1B - Enhanced Service	12,716	163,885	(151,170)	0.08
2B - East Lynn Highway	118,182	427,305	(309,123)	0.28
3 - West Lynn Highway	38,779	378,293	(339,514)	0.10
4A - Fast Ferry Auke Bay	29,562	246,844	(217,283)	0.12
4B - Fast Ferry Berners Bay	56,325	270,968	(214,643)	0.21
4C - Monohull Auke Bay	9,069	81,884	(72,815)	0.11
4D - Monohull Berners Bay	32,553	58,110	(25,557)	0.56

Considering all funds, none of the alternatives have benefits that exceed their costs. Of the "action" alternatives, Alternative 4D would produce the smallest economic loss. The road alternatives show the greatest losses, followed by the FVF alternatives.

If one were using B/C ratios to evaluate Juneau Access alternatives against other projects, Alternative 4D also would have the best B/C ratio, but a ratio below 1.0, meaning it wouldn't be in the running, if economic efficiency is the criterion. What project, if any, to select under a budget constraint would, of course, depend as well on the amount of funds available and the B/C ratios for projects other than Juneau Access.

Looking only at State funds (Table 18), only Alternative 4D has a positive NPV.

TABLE 18

Economic Efficiency
State Funds
(2013 $000)

Alternative	2015-50 Present Value as of 7/1/14 @ Private Sector Rate of Return: User Benefits	Incremental Net Project Costs (vs. No Action)	NPV	Benefit/Cost Ratio
1 - No Action	0	0	0	1.00
1B - Enhanced Service	12,716	97,038	(84,322)	0.13
2B - East Lynn Highway	118,182	139,564	(21,382)	0.85
3 - West Lynn Highway	38,779	129,738	(90,959)	0.30
4A - Fast Ferry Auke Bay	29,562	184,627	(155,065)	0.16
4B - Fast Ferry Berners Bay	56,325	156,974	(100,649)	0.36
4C - Monohull Auke Bay	9,069	69,077	(60,008)	0.13
4D - Monohull Berners Bay	32,553	30,005	2,548	1.08

Table 19 below shows the rankings of the alternatives' NPV's, in terms of both total funds and State funds. The rankings reflect the NPV's in Tables 17 and 18, with "1" being the greatest NPV.

TABLE 19

Alternative Rankings
Economic Efficiency (highest = 1)

Alternative	Net Present Value: Total Funds	State Funds
1 - No Action	1	2
1B - Enhanced Service	4	5
2B - East Lynn Highway	7	3
3 - West Lynn Highway	8	6
4A - Fast Ferry Auke Bay	6	8
4B - Fast Ferry Berners Bay	5	7
4C - Monohull Auke Bay	3	4
4D - Monohull Berners Bay	2	1

B/C Ratios

B/C rankings are omitted in Table 19. The B/C rankings can produce misleading results because B/C ratios are not sensitive to scale. For example, in Table 17, Alternative 2B has a higher B/C ratio than Alternative 1B, but Alternative 2B's NPV loss is more than double Alternative 1B's.

The B/C ratios shown in Tables 17 and 18 would probably be useful only as a starting point for evaluating a given Juneau Access alternative against projects other than Juneau Access, under limited budgets. See the discussion under "Benefit Cost (B/C) Ratios" in the Introduction.

Appendix Tables A–1 and A–2 show how second order incremental B/C ratios can be used to compare the mutually exclusive Juneau Access alternatives against each other. Use of second order B/C ratios would result in Alternative 1 – No Action in the case of total funds, or Alternative 4D in the case of State funds, being preferred on economic grounds. The result is the same as using NPV for evaluation.

Cost-Effectiveness

Project selection could be made on the basis of cost-effectiveness. An alternative is cost-effective if it has the lowest life-cycle cost (LCC) or total project life cost among all alternatives with a given amount of benefits.

Cost-effectiveness may be an appropriate criterion in the face of budgetary constraints. It would be the most practical criterion if all alternatives have the same benefits, or if it is impractical to assign dollar values to benefits.

If near-term, i.e., construction period, budgetary constraints are looming larger in importance, one can use B/C ratios, rather than LCC or total project life costs for alternative selection. This would bring economic efficiency into the picture, but still allow budgetary limits to be placed on project selection. It would explicitly weigh the project's benefits to its users, against its costs.

Another way to bring an element of efficiency into cost-effectiveness is to put cost-effectiveness measures on a per vehicle or per user basis. This study provides total project life cost measures on a per vehicle and per user basis. They are a partial measure of efficiency because they

reflect the differing traffic demand under the various alternatives' differing user costs, but omit the savings to users from the differing user costs.

If budgetary constraint is expected to become more severe over time, then total project life costs may be the most relevant criterion. This avoids discounting future costs for the time value of money.

Too much uncertainty about benefits might also argue for use of a cost-effectiveness standard, though there are analytical methods to address uncertainty. In this report, risk analyses and sensitivity analyses provide some feel for the project's uncertainty.

Life-Cycle Costs (LCC)

Table 20 shows the present values of the life-cycle costs of each alternative, in terms of total funds.

TABLE 20

Life-Cycle Costs
Total Funds
(2013 $000)

	2015-50 Present Value as of 7/1/14 @ State Cost of Capital & Opportunity Cost				
Alternative	Capital Costs	Operating Costs	Total Costs	Revenue	Net Costs
1 - No Action	100,101	289,519	389,621	(136,048)	253,573
1B - Enhanced Service	183,972	423,320	607,292	(144,173)	463,119
2B - East Lynn Highway	432,250	353,001	785,251	(174,284)	610,967
3 - West Lynn Highway	410,592	370,649	781,240	(199,179)	582,061
4A - Fast Ferry Auke Bay	392,729	524,030	916,759	(227,502)	689,257
4B - Fast Ferry Berners Bay	483,751	502,610	986,361	(256,399)	729,962
4C - Monohull Auke Bay	157,533	348,044	505,577	(155,562)	350,016
4D - Monohull Berners Bay	176,769	359,602	536,371	(234,728)	301,643

Looking at total costs in Table 20, we see that Alternative 1 – No Action involves the smallest amount of government outlays, followed by Alternative 4C – Monohull Juneau.

If we consider net project costs, Alternative 1 is still the cheapest, but Alternative 4D – Monohull Berners Bay moves into second place—or first place among the "action" alternatives. Whether project revenues are considered or not, all of the road alternatives cost less than the two fast ferry alternatives—Alternatives 4A and 4B, but more than the other marine alternatives—Alternatives 1B, 4C, and 4D.

Table 21 shows LCC rankings. Alternative 1 – No Action is the lowest cost alternative. Either Alternative 4C or 4D would be the least cost alternative among the "action" candidates.

TABLE 21

Alternative Rankings
Life-Cycle Costs
Total Funds
(lowest cost = 1)

Alternative	Total Cost	Net Cost
1 - No Action	1	1
1B - Enhanced Service	4	4
2B - East Lynn Highway	6	6
3 - West Lynn Highway	5	5
4A - Fast Ferry Auke Bay	7	7
4B - Fast Ferry Berners Bay	8	8
4C - Monohull Auke Bay	2	3
4D - Monohull Berners Bay	3	2

Total Project Life Costs

Table 22 shows the total project life costs of each alternative. The costs in Table 22 are unique in this report in three respects:

- they are not discounted for the time value of money;
- they are presented both with and without the residual values of capital improvements deducted from costs; and,

- without residual values deducted, total project life costs are equal to the capital and operating constant dollar appropriations that would be required for the JAI Project during FY 2015–50.

Residual values are the value of capital improvements remaining at the end of the analysis in FY 2050 or when an AMHS vessel is removed from service in Lynn Canal.

In contrast to Table 22, the total project life costs in Table 23 do have residual values deducted from capital project costs. The residual values of capital improvements serve travelers using the Juneau Access improvements beyond FY 2050, or not using Juneau Access at all, in the case of vessels removed from Lynn Canal service.

TABLE 22
Total Project Life Costs[1]
FY 2015-50
(2013 $000)

	Total Funds					State Funds				
Alternative	Capital Costs	Operating Costs	Total Costs	Revenue	Net Costs	Capital Costs[2]	Operating Costs	Total Costs	Revenue	Net Costs
1 - No Action	223,560	565,532	789,092	(273,919)	515,174	20,187	565,532	585,720	(273,881)	311,838
1B - Enhanced Service	340,996	847,309	1,188,305	(291,014)	897,291	30,792	847,309	878,101	(290,971)	587,130
2B - East Lynn Highway	791,552	714,474	1,506,025	(363,559)	1,142,467	174,273	714,474	888,747	(357,388)	531,358
3 - West Lynn Highway	750,992	755,880	1,506,871	(421,924)	1,084,947	170,611	755,880	926,491	(417,355)	509,135
4A - Fast Ferry Auke Bay	661,080	1,115,747	1,776,827	(488,322)	1,288,505	162,492	1,115,747	1,278,239	(488,269)	789,970
4B - Fast Ferry Berners Bay	778,673	1,065,490	1,844,163	(556,066)	1,288,097	173,110	1,065,490	1,238,600	(555,442)	683,159
4C - Monohull Auke Bay	315,388	702,845	1,018,233	(319,667)	698,566	76,694	702,845	779,538	(319,628)	459,910
4D - Monohull Berners Bay	348,370	729,963	1,078,333	(505,262)	573,071	84,220	729,963	814,183	(504,625)	309,559

Notes:

1. Residuals are not subtracted from capital costs. The figures in the Capital Costs, Operating Costs, and Total Costs columns for Total Funds and State Funds are the amounts of appropriations that would be required in constant dollars.

2. State Funds Capital Costs for all alternatives except Alternatives 1 and 1B include $53 million in existing State general fund appropriations that will be used in addition to the required 9.03 percent State match for Federal funds. Alternative 4D includes an additional $5 million of non-match State general funds, which is included in the Governor's proposed FY 2015 budget, for a total of $58 million of non-match State general funds. Alternatives 2B, 3, 4A, and 4B include an additional $55 million of non-match State general funds, which are assumed to be appropriated during FY 2016-20, for a total of $113 million of non-match State general funds.

TABLE 23

Total Project Life Costs less Residual Values
FY 2015-50
(2013 $000)

	Total Funds					State Funds				
Alternative	Capital Costs	Operating Costs	Total Costs	Revenue	Net Costs	Capital Costs[1]	Operating Costs	Total Costs	Revenue	Net Costs
1 - No Action	103,855	565,532	669,387	(273,919)	395,469	9,378	565,532	574,910	(273,881)	301,029
1B - Enhanced Service	182,762	847,309	1,030,071	(291,014)	739,057	16,503	847,309	863,812	(290,971)	572,841
2B - East Lynn Highway	378,531	714,474	1,093,004	(363,559)	729,446	136,977	714,474	851,451	(357,388)	494,063
3 - West Lynn Highway	369,258	755,880	1,125,138	(421,924)	703,213	136,140	755,880	892,020	(417,355)	474,665
4A - Fast Ferry Auke Bay	439,975	1,115,747	1,555,722	(488,322)	1,067,400	142,526	1,115,747	1,258,273	(488,269)	770,004
4B - Fast Ferry Berners Bay	539,307	1,065,490	1,604,797	(556,066)	1,048,731	151,496	1,065,490	1,216,986	(555,442)	661,544
4C - Monohull Auke Bay	157,828	702,845	860,673	(319,667)	541,006	62,466	702,845	765,311	(319,628)	445,683
4D - Monohull Berners Bay	174,563	729,963	904,526	(505,262)	399,263	68,526	729,963	798,489	(504,625)	293,864

Notes:

1. State Funds Capital Costs for all alternatives except Alternatives 1 and 1B include $53 million in existing State general fund appropriations that will be used in addition to the required 9.03 percent State match for Federal funds. Alternative 4D includes an additional $5 million of non-match State general funds, which is included in the Governor's proposed FY 2015 budget, for a total of $58 million of non-match State general funds. Alternatives 2B, 3, 4A, and 4B include an additional $55 million of non-match State general funds, which are assumed to be appropriated during FY 2016-20, for a total of $113 million of non-match State general funds.

Table 24 contains the total AADT, vehicles, and users over the 36-year analysis period of FY 2015–50.

TABLE 24

Vehicles and Users
FY 2015-50

Alternative	AADT	Vehicles	Users
1 - No Action	3,929	1,433,968	4,386,316
1B - Enhanced Service	4,883	1,782,293	5,535,788
2B - East Lynn Highway	26,206	9,565,348	22,144,767
3 - West Lynn Highway	21,138	7,715,197	17,883,497
4A - Fast Ferry Auke Bay	6,334	2,311,849	7,283,326
4B - Fast Ferry Berners Bay	9,280	3,387,255	10,832,163
4C - Monohull Auke Bay	4,410	1,609,544	4,965,718
4D - Monohull Berners Bay	8,769	3,200,705	10,216,548

The table reflects the 3.3 and 2.3 users per vehicle for the Juneau – Haines and Skagway marine and highway alternatives, respectively, and the 2.2 users per vehicle for Haines – Skagway local traffic.

The total project life costs in Table 23 can be used to calculate total project life costs on a per vehicle and per user basis, in Table 25 below. The Table 23 figures are the appropriate costs for this purpose, given that we are talking about vehicles and travelers using Juneau Access during FY 2015–50.

TABLE 25

Total Project Life Costs less Residual Values
per Vehicle and User
FY 2015-50
(2013 $)

	Total Costs				Net Costs			
	per Vehicle		per User		per Vehicle		per User	
Alternative	Total Funds	State Funds	Total Funds	State Funds	Total Funds	State Funds	Total Funds	State Funds
1 - No Action	467	401	153	131	276	210	90	69
1B - Enhanced Service	578	485	186	156	415	321	134	103
2B - East Lynn Highway	114	89	49	38	76	52	33	22
3 - West Lynn Highway	146	116	63	50	91	62	39	27
4A - Fast Ferry Auke Bay	673	544	214	173	462	333	147	106
4B - Fast Ferry Berners Bay	474	359	148	112	310	195	97	61
4C - Monohull Auke Bay	535	475	173	154	336	277	109	90
4D - Monohull Berners Bay	283	249	89	78	125	92	39	29

Table 26 shows the alternatives' rankings for total project life costs, and total project life costs less residual values. The rankings are similar, with Alternative 1 – No Action generally having the lowest costs. Alternatives 4C and 4D, the monohull ferry alternatives are generally the least costly "action" alternatives, with Alternative 4D – Monohull Berners Bay being the lowest cost alternative on a net cost, State funds basis.

With residuals deducted, the total project life costs are the same as life-cycle costs with a zero discount rate. The total project life costs rankings in Table 26 are essentially a sensitivity case for LCC with a zero discount rate. As such, the total funds rankings, whether residuals are deducted or not, are little changed from the LCC total funds rankings in Table 21. By either measure, the no action alternative is the least costly, and either Alternative 4C or 4D is the least costly "action" alternative.

TABLE 26

Alternative Rankings
Total Project Life Costs
(lowest cost = 1)

Alternative	Total Project Life Costs				Total Project Life Costs less Residual Values			
	Total Costs		Net Costs		Total Costs		Net Costs	
	Total Funds	State Funds	Total Funds	State Funds	Total Funds	State Funds	Total Funds	State Funds
1 - No Action	1	1	1	2	1	1	1	2
1B - Enhanced Service	4	4	4	6	4	5	6	6
2B - East Lynn Highway	5	5	6	5	5	4	5	5
3 - West Lynn Highway	6	6	5	4	6	6	4	4
4A - Fast Ferry Auke Bay	7	8	8	8	7	8	8	8
4B - Fast Ferry Berners Bay	8	7	7	7	8	7	7	7
4C - Monohull Auke Bay	2	2	3	3	2	2	3	3
4D - Monohull Berners Bay	3	3	2	1	3	3	2	1

When we look at rankings for total project life costs (less residuals) per vehicle and user, Table 27 indicates Alternative 2B – East Lynn Highway is the least costly under all the cost metrics. Alternative 3 – West Lynn Highway is the next least costly alternative by all but one measure.

TABLE 27

Alternative Rankings
Total Project Life Costs less Residual Values
per Vehicle and User
(lowest cost = 1)

Alternative	Total Cost				Net Cost			
	per Vehicle		per User		per Vehicle		per User	
	Total Funds	State Funds	Total Funds	State Funds	Total Funds	State Funds	Total Funds	State Funds
1 - No Action	4	5	5	5	4	5	4	5
1B - Enhanced Service	7	7	7	7	7	7	7	7
2B - East Lynn Highway	1	1	1	1	1	1	1	1
3 - West Lynn Highway	2	2	2	2	2	2	3	2
4A - Fast Ferry Auke Bay	8	8	8	8	8	8	8	8
4B - Fast Ferry Berners Bay	5	4	4	4	5	4	5	4
4C - Monohull Auke Bay	6	6	6	6	6	6	6	6
4D - Monohull Berners Bay	3	3	3	3	3	3	2	3

Annual Revenues during Operations

Table 28 shows average annual revenues during the years after all alternatives would be in operation. As with total project life costs, these revenues are not discounted for the time value of money

TABLE 28

Average Annual Revenues
FY 2021-50
(2013 $000)

Alternative	Total Funds	State Funds	AMHS Revenue
1 - No Action	7,696	7,695	7,694
1B - Enhanced Service	8,198	8,197	8,197
2B - East Lynn Highway	10,684	10,478	10,389
3 - West Lynn Highway	12,629	12,477	12,411
4A - Fast Ferry Auke Bay	14,843	14,841	14,840
4B - Fast Ferry Berners Bay	17,101	17,080	17,071
4C - Monohull Auke Bay	9,221	9,220	9,219
4D - Monohull Berners Bay	15,407	15,386	15,377

User Costs and Benefits

User cost is the cost per one-way trip to the individual users. It is a prime determinant of an alternative's frequency of use. User cost is the basis of the Juneau traffic projections for all alternatives, contained in the *Traffic Forecast Report*.

Haines and Skagway local traffic is not calibrated to user cost. It is estimated in the *Juneau Access Haines/Skagway Traffic Forecast* based on 2011 traffic and changes in service frequency under each alternative.

Table 29 summarizes user costs and compares them to the *2006 FEIS* user costs, adjusted for inflation. For Juneau traffic, *2014 SEIS* user costs are modestly higher for the road alternatives, but sharply lower for marine alternatives.

TABLE 29

User Cost Comparisons
2014 SEIS vs. *2006 FEIS*

Alternative	*2006 FEIS*[1] (2004 $)	*2006 FEIS* (2013 $)	*2014 SEIS* User Costs (2013 $) Average Cost	Modal Cost	% of *2006 FEIS* (2013 $) Average Cost	Modal Cost
Juneau - Haines and Skagway						
Existing Service	NA	NA	148.89	152.96		
1 - No Action	155.55	198.05	136.61	130.47	69%	66%
1B - Enhanced Service	NA	NA	122.41	121.56		
2B - East Lynn Highway	60.83	77.45	81.08	86.54	105%	112%
3 - West Lynn Highway	67.16	85.51	93.34	101.54	109%	119%
4A - Fast Ferry Auke Bay	116.20	147.95	113.79	107.16	77%	72%
4B - Fast Ferry Berners Bay	100.38	127.81	97.50	96.75	76%	76%
4C - Monohull Auke Bay	152.37	194.01	132.66	121.25	68%	62%
4D - Monohull Berners Bay	124.05	157.96	109.72	105.75	69%	67%
Haines - Skagway						
Existing Service	NA	NA	53.78			
1 - No Action	42.74	54.41	41.85		77%	
1B - Enhanced Service	NA	NA	38.35			
2B - East Lynn Highway	37.65	47.94	43.00		90%	
3 - West Lynn Highway	34.01	43.30	39.96		92%	
4A - Fast Ferry Auke Bay	43.80	55.77	41.22		74%	
4B - Fast Ferry Berners Bay	43.80	55.77	41.22		74%	
4C - Monohull Auke Bay	43.80	55.77	41.22		74%	
4D - Monohull Berners Bay	43.80	55.77	41.22		74%	

Notes:

1. *Juneau Access Improvements, Final Environmental Impact Statement*, Appendix E, User Benefit Analysis, McDowell Group, Inc. and MB Barker, LLC, October 2004.

The decline in marine alternative user costs is in spite of an increase in real AMHS fare costs. For example, the *2006 FEIS* Juneau – Skagway fares for Alternative 4C – Monohull Auke Bay were $35 per person and $83 per vehicle. In 2013 dollars, they would be about $44.50 and $105.50, somewhat less than the $50 per person and $111 per vehicle fares in the *2014 SEIS*.

The main source of the decline in marine user costs is reduction in user time attributed to frequency delay. For example, *2006 FEIS* Juneau – Skagway frequency delay for Alternative 4C – Monohull Auke Bay was 7 hours and 25 minutes. In the *2014 SEIS*, it is 1 hour and 15 minutes.

Average user costs for the two road alternatives are less than any marine alternative. The road alternatives have lower costs mainly because of the inclusion of time as a user cost. The ferry alternatives have a higher cost for time because of the slower travel speeds, as well as the trip frequency delays.

User costs for roads also are lower than for ferries because of the absence of tolls. Ferries charge fares for both passengers and vehicles.

Table 30 below summarizes projected traffic, Juneau user costs, and user benefits for FY 2015–50.

TABLE 30

Traffic and User Costs & Benefits
FY 2015-50
(2013 $)

Alternative	Vehicles	Users	Modal User Costs (Juneau)	User Benefits ($000)
Existing Service			152.96	
1 - No Action	1,433,968	4,386,316	130.47	0
1B - Enhanced Service	1,782,293	5,535,788	121.56	12,716
2B - East Lynn Highway	9,565,348	22,144,767	86.54	118,182
3 - West Lynn Highway	7,715,197	17,883,497	101.54	38,779
4A - Fast Ferry Auke Bay	2,311,849	7,283,326	107.16	29,562
4B - Fast Ferry Berners Bay	3,387,255	10,832,163	96.75	56,325
4C - Monohull Auke Bay	1,609,544	4,965,718	121.25	9,069
4D - Monohull Berners Bay	3,200,705	10,216,548	105.75	32,553

User benefits are an aggregate measure of all users' user cost savings for an alternative, compared to the no action alternative's user costs. They take traffic into account.

The road alternatives have higher benefits than marine alternatives because they generally reduce user costs more than do marine alternatives. But, road alternatives' benefits are also higher because their lower costs induce more travel.

Because traffic is largely a function of travel cost, it is not surprising that project ranking based on user benefits largely mirrors the ranking based on user cost to or from Juneau, the largest generator of traffic.[36] See Table 31 below.

TABLE 31

Alternative Rankings
Traffic and User Costs & Benefits
FY 2015-50

Alternative	Vehicles (highest = 1)	Users (highest = 1)	Modal User Costs (Juneau) (lowest = 1)	User Benefits (highest = 1)
1 - No Action	8	8	8	8
1B - Enhanced Service	6	6	7	6
2B - East Lynn Highway	1	1	1	1
3 - West Lynn Highway	2	2	3	3
4A - Fast Ferry Auke Bay	5	5	5	5
4B - Fast Ferry Berners Bay	3	3	2	2
4C - Monohull Auke Bay	7	7	6	7
4D - Monohull Berners Bay	4	4	4	4

Whether ranked by traffic, user costs, or user benefits, Alternative 2B – East Lynn Highway comes out on top. Alternative 3 – West Lynn Highway is the second greatest generator of traffic, but Alternative 4B

[36] Modal user cost (Juneau) and user benefit rankings are not exactly the same because:

- an additional service index and modal constants were used in the *Traffic Forecast Report's* projections of Juneau traffic; and,
- Haines – Skagway traffic is not related to the Juneau user costs cited in Tables 30 and 31.

– Fast Ferry Berners Bay outranks it in terms of user costs and benefits.

Risk Analyses

Two measures of project risk are an alternative's breakeven point and the variation in its net present value over time.

Breakeven

Breakeven would be the first year in which cumulative net present value turns positive. It is one measure of the alternatives' risks. All other things being equal, the alternative that reaches breakeven sooner would be preferred. This is because the uncertainty of the estimates increases the farther the estimates are into the future.

None of the alternatives reach breakeven within the study period, if we look at total funds. Only the highway alternatives—Alternatives 2B and 3—and Alternative 4D – Day Boat Berners Bay show increases in NPV over time.

But, even these alternatives' gains have flattened out in later years to such an extent that is questionable if any of them would ever reach breakeven. The upticks in NPV in FY 2050 reflect the credits for residual values in that year.

Chart V below shows the diminishing upward trend in cumulative NPV for Alternatives 2B, 3, and 4D—and the downward trend for all other alternatives—over FY 2015–50.

As depicted in Chart V, only Alternative 4D is possibly within striking distance of breakeven, based on the trends through FY 2050.

If we look only at State funds, only Alternative 4D reaches breakeven—in FY 2047. As with total funds, only Alternatives 2B, 3, and 4D show upward trends in NPV over time. All other alternatives lose ground over time in terms of NPV. See Chart VI.

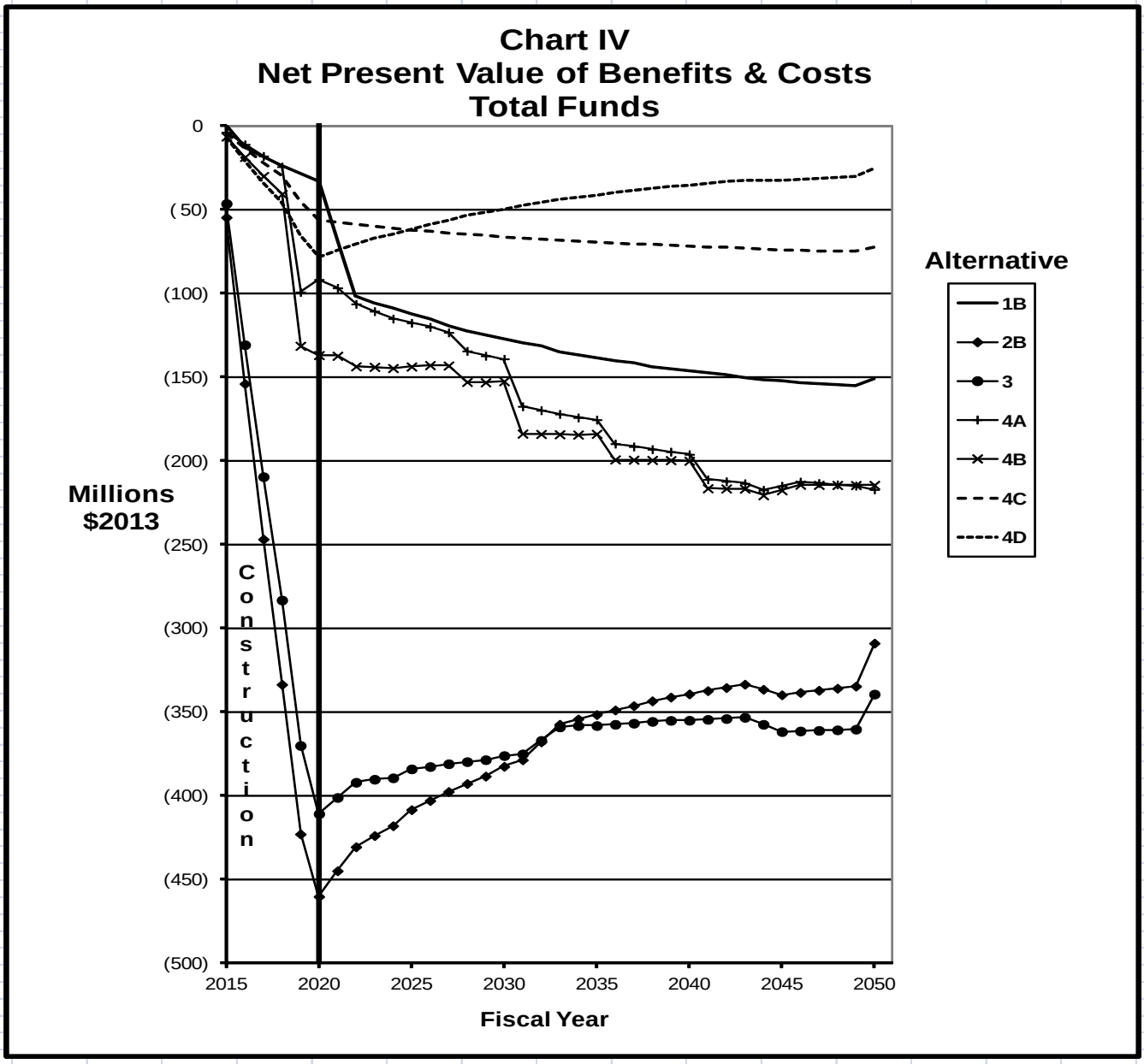
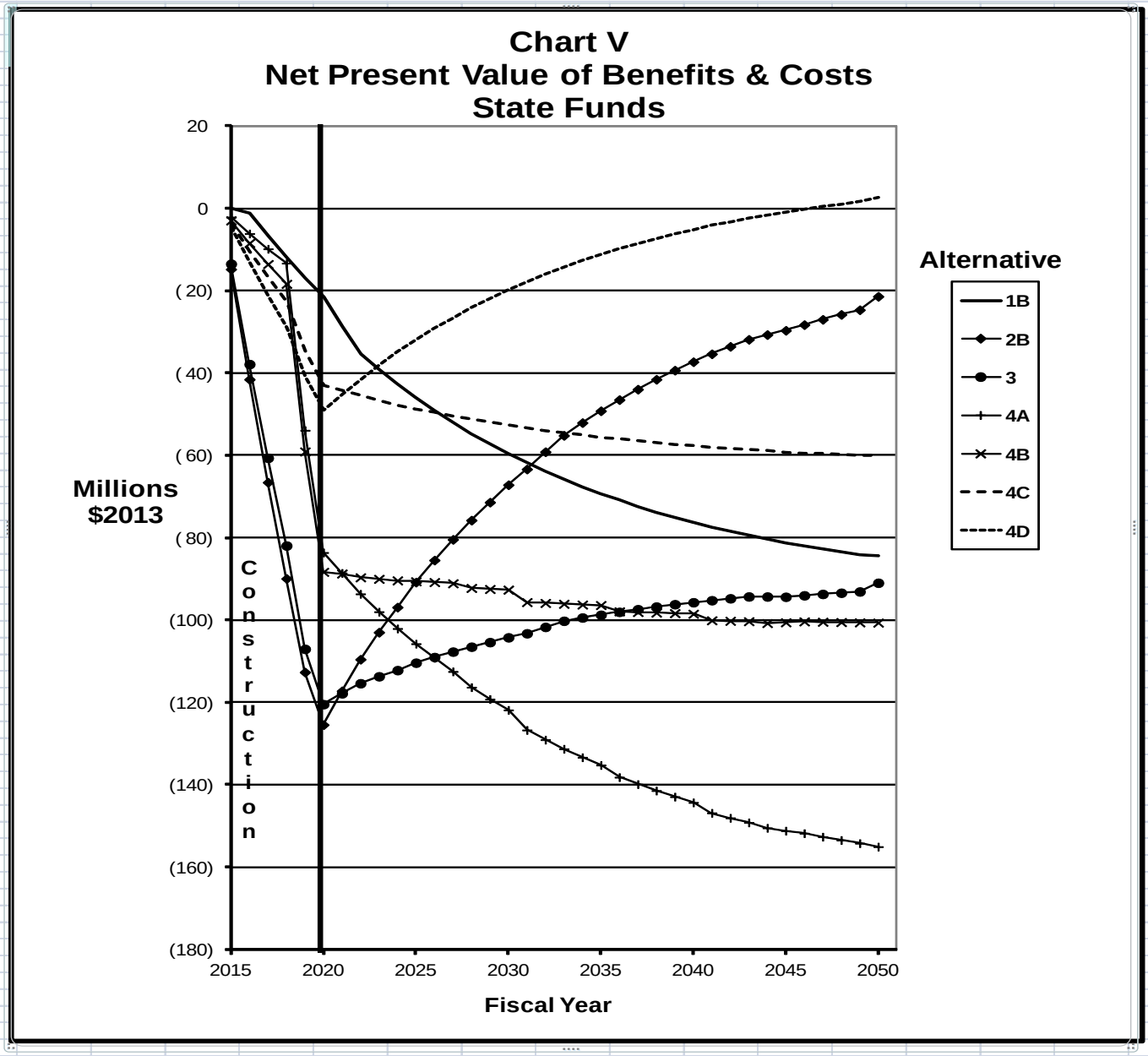


Chart IV
Net Present Value of Benefits & Costs
Total Funds
0
(50)
(100)
(150)
(200)
(250)
(300)
(350)
(400)
(450)
(500)
Millions
$2013
Construction
2015
2020
2025
2030
2035
2040
2045
2050
Fiscal Year
Alternative
1B
2B
3
4A
4B
4C
4D



Variation in Net Present Value

Of course, the breakeven point does not indicate the magnitude of the risks. Risk is measured by the variation in NPV. All other things being equal, the alternative with the least variation in NPV over time would be preferred.

Risk preferences may differentiate between downside risk and upside risk. Decision-makers are often more averse to downside risk than they are enthusiastic about upside potential.

The road alternatives have the greatest downside risk due to their heavy upfront capital costs. Table 32 below shows the variation in cumulative NPV over the study period.

TABLE 32

Variation in Net Present Value
FY 2015-50
(2013 $000)

	Total Funds		State Funds	
Alternative	Min NPV	Max NPV	Min NPV	Max NPV
1 - No Action	NA	NA	NA	NA
1B - Enhanced Service	(155,366)	0	(84,322)	0
2B - East Lynn Highway	(460,385)	(54,794)	(125,447)	(14,764)
3 - West Lynn Highway	(410,949)	(46,564)	(120,456)	(13,462)
4A - Fast Ferry Auke Bay	(217,587)	(3,926)	(155,065)	(2,130)
4B - Fast Ferry Berners Bay	(220,783)	(6,537)	(100,761)	(2,935)
4C - Monohull Auke Bay	(75,165)	(4,756)	(60,055)	(3,636)
4D - Monohull Berners Bay	(78,438)	(7,366)	(49,095)	2,548

The variation in NPV over time can be seen in Charts IV and V. Charts VI and VII, below, display the range of this variation specifically.

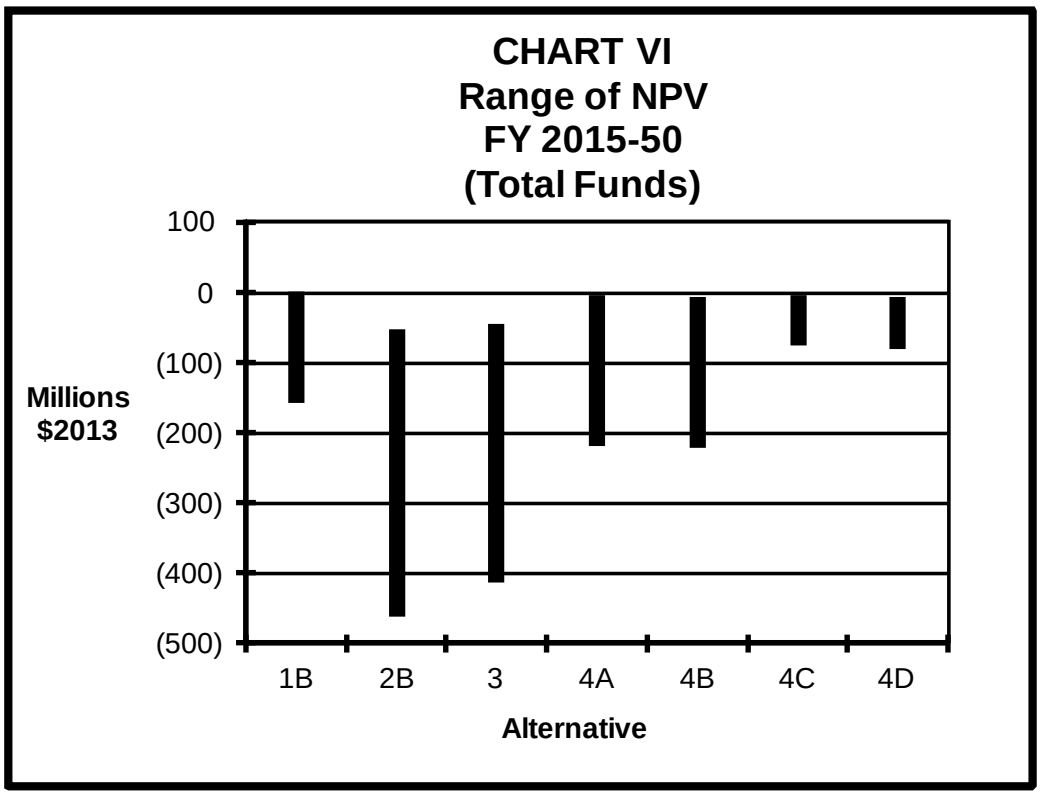


CHART VI
Range of NPV
FY 2015-50
(Total Funds)
100
0
(100)
(200)
(300)
(400)
(500)
Millions
$2013
1B
2B
3
4A
4B
4C
4D
Alternative

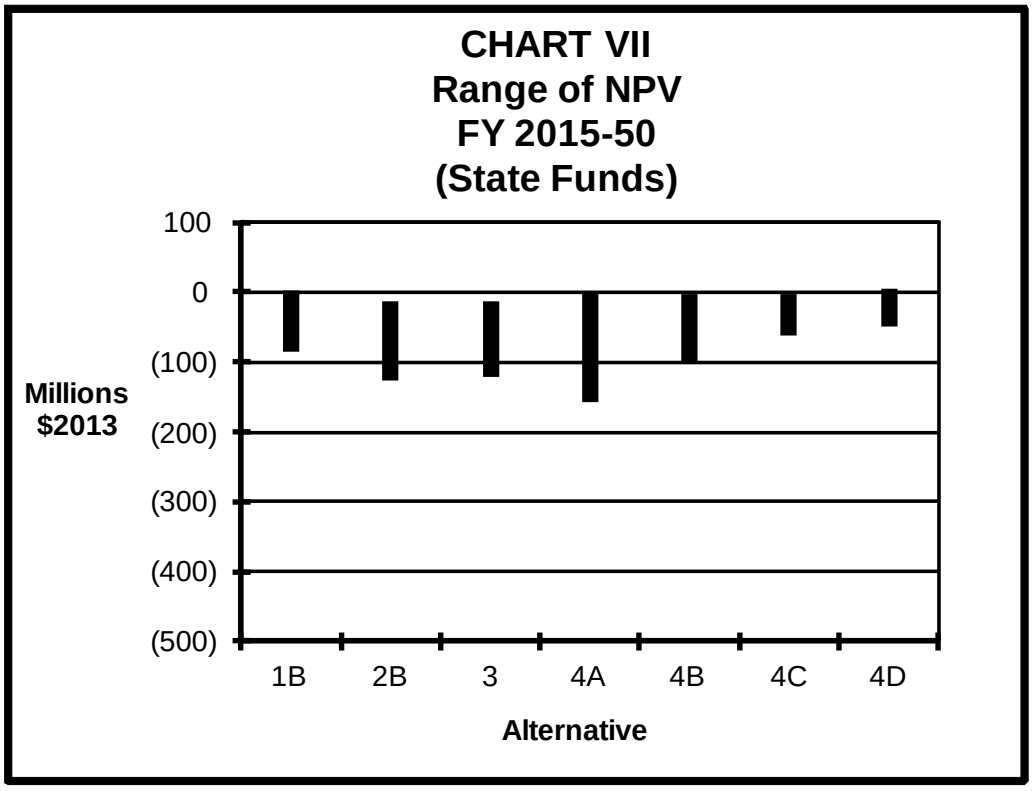


CHART VII
Range of NPV
FY 2015-50
(State Funds)
100
0
(100)
(200)
(300)
(400)
(500)
Millions
$2013
1B
2B
3
4A
4B
4C
4D
Alternative

Sensitivity Analyses

Sensitivity analyses were performed to see the effects of changing certain assumptions. The analyses tested the sensitivity of:

- omitting the modal adjustments to user costs;
- 25 percent construction cost overruns; and,
- non-work time value.

As indicated in the earlier discussion of Table 26, total project life costs less residual values can be considered a sensitivity case for life-cycle costs with a zero discount rate. As such, total project life costs produced no change in the rankings of the four least costly alternatives.

The *2006 FEIS* contained additional sensitivity analyses of excess burden, 50 percent construction cost overruns, no time value for non-work travel, and no frequency delay.

No excess burden analysis has been done because the user benefit analyses indicate project costs exceed user benefits for all alternatives. Adding an excess burden to project costs would only exacerbate the losses.

Because of additional JAI studies and planning undertaken by DOT&PF since 2006, and resulting major revisions of capital costs, the cost overrun analysis has been limited to a 25 percent case.

The *Traffic Forecast Report's* ability to backcast historical AMHS traffic, with a user cost included for travel time, suggests that the idea that there is no user cost for non-work travel time is incorrect. Non-work travel is estimated in this user benefit analysis to represent 80 percent of Alaska resident travel and 95 percent of non-resident travel.

Delay Costs

The *2006 FEIS*' no frequency delay sensitivity case embodied the idea that there was zero cost to users for delay. The *Traffic Forecast Report's* research found that ferry delay time is more costly, not less costly, to users. Their traffic model specified that a minute of ferry delay was 224 percent more costly to users than a minute of travel on a highway, and almost three times—282 percent—more costly than a minute spent traveling on a ferry.

In addition, the *Traffic Forecast Report* redefined frequency delay to be more attuned to the context of JAI alternatives considered for the *2014 SEIS*.

The *2006 FEIS* alternatives included all-road connections between Juneau and Skagway. Frequency delay was zero for the all-road alternatives. For marine alternatives, it was defined as one-half the interval between ferry departures during a 16 hour AMHS work-day.

This definition took account of the delay experiences of travelers arriving by road from outside Lynn Canal. It assumed these persons did not have a lot of control over their arrival times in Haines or Skagway, and had few alternative uses of their delay time, while waiting for a ferry. Assuming random arrival times during the interval between ferry departures, the average delay would be one-half the interval.

One-half the interval was also seen as a reasonable measure of delay for persons that could reschedule, including those already present in Lynn Canal communities. The difference between their preferred and actual times of departure would be at most one-half the interval, assuming they could move up their departure to the earlier ferry or wait for the next one.

With the *2014 SEIS*, no all-road alternatives are under consideration.

In addition, the forecasted traffic from outside Lynn Canal is much diminished. The *2006 FEIS Traffic Forecast Report*[37] estimated 120 AADT out of 500 AADT—24 percent of traffic—on an East Lynn Highway would be road traffic to or from points outside Lynn Canal. *2014 SEIS's Traffic Forecast Report* contains an estimate of 89 AADT out of 1,133 AADT—8 percent—of traffic generated outside Lynn Canal.[38]

With more of JAI traffic being local to Lynn Canal, the 2014 *Traffic Forecast Report* generally defined delay for the two road alternatives, Alternatives 2B and 3, as one-quarter of the interval between ferry departures.

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[37] *Appendix C, Traffic Forecast Report, JAI Final Environmental Impact Statement (FEIS)*, Alaska DOT&PF, January 2006.

[38] Table 5, *Juneau Access Improvements Project, Supplemental Environmental Impact Statement, Traffic Forecast Report Draft Revision 4*, Fehr & Peers, July 2013.

The assumption is that one-half of these alternatives' traffic will arrive randomly—resulting in average delay for them of one-half the interval—and the other half of Alternatives 2B and 3's travelers will schedule travel to arrive at ferry departure time—i.e., zero delay. This would make for average delay of one-quarter the interval.

Assuming half of travelers schedule arrival at ferry departure time recognizes the predominance of trip generation coming from Juneau, Haines, and Skagway. The *Traffic Forecast Report* notes that one-quarter of the headway is similar to the Washington State Ferry System's delay assumptions.

Also recognizing the predominance of local Lynn Canal traffic, as well as the greater relative focus of the *2014 SEIS* on marine alternatives, the *Traffic Forecast Report* adopted a second delay estimation methodology, specific to marine alternatives. Delay for marine alternatives is defined to be the sum of AMHS check-in, load, and unload times.

The foregoing changes in the estimation and definition of delay dramatically reduced user costs for delay time—in one case to as little as one-sixth the delay estimated in the *2006 FEIS*—as noted under the "User Costs and Benefits" heading of this report's "Alternative Evaluation" section. Thus, user benefit analysis results for JAI alternatives should be much less sensitive to differing assumptions about delay costs for users.

Consistency with Traffic Forecast

Traffic projections were not revised for any of the sensitivity analyses. None of the sensitivity analyses would change the utilities upon which the *Traffic Forecast Report's* traffic projections are based.

Modal user costs combine the *Traffic Forecast Report's* user costs and the utility formula weights, which produce the report's traffic projections. Plugging modal user costs into the *Traffic Forecast Report's* model would mean that the ferry user costs' formula weights would need to be set equal to the highway weights for time and dollar costs. Whether using modal user costs or average user costs, the Traffic Forecast Report's traffic projections would be the same.

Construction costs do not enter into forecasting traffic. The dollar value of time did not enter into the *Traffic Forecast Report's* projections because time costs were measured in minutes and hours.

Base Case

Table 33 below reprises the summary of evaluation measures for the base case, described in this report heretofore. The base case is the best estimate of Juneau Access' benefits and costs.

Table 33 can be compared to the summary tables presented for each sensitivity case. One can then see what difference changing certain assumptions makes.

TABLE 33

Evaluation Summary
Base Case
(2013 $)

Alternative	1	1B	2B	3	4A	4B	4C	4D
Net Present Value of Benefits & Costs ($ Millions)								
Total Funds	0	(151.2)	(309.1)	(339.5)	(217.3)	(214.6)	(72.8)	(25.6)
Rank	1	4	7	8	6	5	3	2
State Funds	0	(84.3)	(21.4)	(91.0)	(155.1)	(100.6)	(60.0)	2.5
Rank	2	5	3	6	8	7	4	1
Life-Cycle Costs								
Life-Cycle Costs ($ Millions)								
Total Funds								
Total Costs	389.6	607.3	785.3	781.2	916.8	986.4	505.6	536.4
Rank	1	4	6	5	7	8	2	3
Net Costs	253.6	463.1	611.0	582.1	689.3	730.0	350.0	301.6
Rank	1	4	6	5	7	8	3	2
Total Project Life Costs								
Total Project Life Costs ($ Millions)								
Total Funds								
Total Costs	789.1	1,188.3	1,506.0	1,506.9	1,776.8	1,844.2	1,018.2	1,078.3
Rank	1	4	5	6	7	8	2	3
Net Costs	515.2	897.3	1,142.5	1,084.9	1,288.5	1,288.1	698.6	573.1
Rank	1	4	6	5	8	7	3	2
State Funds								
Total Costs	585.7	878.1	888.7	926.5	1,278.2	1,238.6	779.5	814.2
Rank	1	4	5	6	8	7	2	3
Net Costs	311.8	587.1	531.4	509.1	790.0	683.2	459.9	309.6
Rank	2	6	5	4	8	7	3	1
Total Project Life Costs less Residual Values per Vehicle ($)								
Total Funds								
Total Costs	467	578	114	146	673	474	535	283
Rank	4	7	1	2	8	5	6	3
Net Costs	276	415	76	91	462	310	336	125
Rank	4	7	1	2	8	5	6	3
State Funds								
Total Costs	401	485	89	116	544	359	475	249
Rank	5	7	1	2	8	4	6	3
Net Costs	210	321	52	62	333	195	277	92
Rank	5	7	1	2	8	4	6	3
Traffic, User Costs per Trip (Juneau), and User Benefits								
Vehicles (FY 2015–50) (Millions)	1.4	1.8	9.6	7.7	2.3	3.4	1.6	3.2
Rank	8	6	1	2	5	3	7	4
Modal User Costs ($)	130	122	87	102	107	97	121	106
Rank	8	7	1	3	5	2	6	4
Benefits (FY 2015–50) ($ Millions)	0	12.7	118.2	38.8	29.6	56.3	9.1	32.6
Rank	8	6	1	3	5	2	7	4
Breakeven								
Total Funds	—	—	—	—	—	—	—	—
State Funds	—	—	—	—	—	—	—	FY 2047
Variation in NPV ($ Millions)								
Total Funds	0	155.4	405.6	364.4	213.7	214.2	70.4	71.1
Rank	1	4	8	7	5	6	2	3
State Funds	0	84.3	110.7	107.0	152.9	97.8	56.4	51.6
Rank	1	4	7	6	8	5	3	2

Notes:

1.Total project life cost less residual values rankings on a per user basis are similar to the rankings on a per vehicle basis See Tables 25 and 27 for per user costs and rankings.

Average User Costs

The alternatives were re-evaluated using average user costs, rather than further adjusting them by the modal weights from the *Traffic Forecast Report*.

TABLE 34

Evaluation Summary (Sensitivity Case)
Average User Costs
(2013 $)

Alternative	1	1B	2B	3	4A	4B	4C	4D
Net Present Value of Benefits & Costs ($ Millions)								
Total Funds	0	(142.6)	(278.0)	(293.8)	(219.0)	(202.1)	(77.9)	(21.6)
Rank	1	4	7	8	6	5	3	2
State Funds	0	(75.7)	9.8	(45.2)	(156.8)	(88.2)	(65.1)	6.5
Rank	3	6	1	4	8	7	5	2
Traffic, User Costs per Trip (Juneau), and User Benefits								
Vehicles (FY 2015–50) (Millions)	1.4	1.8	9.6	7.7	2.3	3.4	1.6	3.2
Rank	8	6	1	2	5	3	7	4
Average User Costs ($)	137	122	81	93	114	97	133	110
Rank	8	6	1	2	5	3	7	4
Benefits (FY 2015–50) ($ Millions)	0	21.3	149.3	84.5	27.9	68.8	3.9	36.6
Rank	8	6	1	2	5	3	7	4
Breakeven								
Total Funds	—	—	—	—	—	—	—	—
State Funds	—	—	FY 2046	—	—	—	—	FY 2042
Variation in NPV ($ Millions)								
Total Funds	0	146.8	405.6	364.4	215.2	202.7	75.5	71.1
Rank	1	4	8	7	6	5	3	2
State Funds	0	75.7	135.2	107.0	154.6	86.3	61.5	55.6
Rank	1	4	7	6	8	5	3	2

Notes:
1.Highlighted rankings are different than the base case.

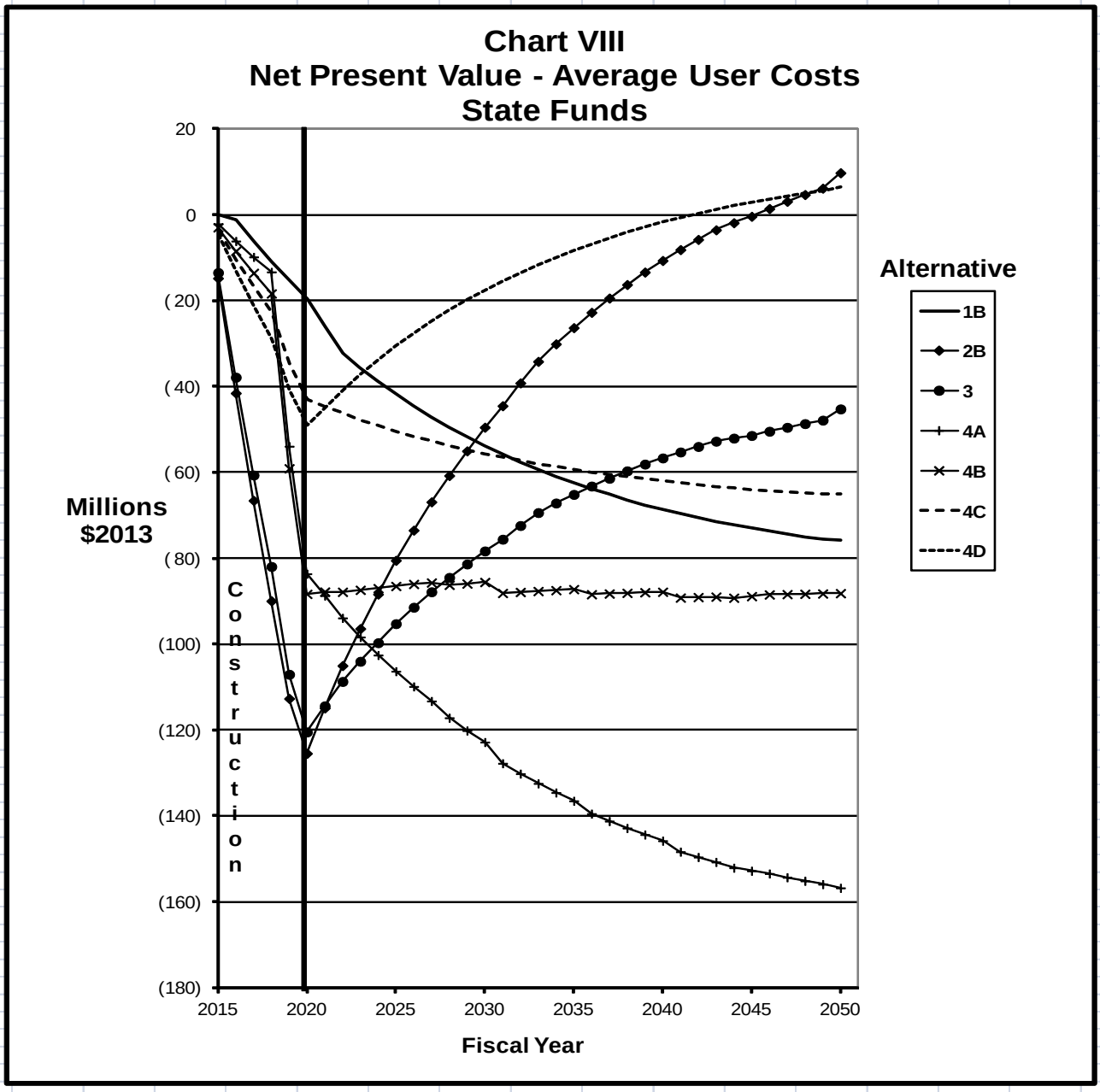
Table 34 displays only the evaluation measures for this sensitivity case that are related to user costs or benefits. Purely cost or traffic-related evaluation measures would not change in values or rank from the base case. The table highlights changes in rankings from the base case.

Average user costs still leave all alternatives in negative territory based on NPV of total funds. The rankings do not change for total funds NPV.

With regard to State funds, average user costs create a positive NPV for Alternative 2B, joining Alternative 4D as the only two alternatives above water by FY 2050. Alternative 2B becomes the best alternative, surpassing Alternative 4D in NPV in FY 2049. Alternatives 2B and 4D reach breakeven in FY 2046 and FY 2042, respectively.

Average costs reduce road user costs and generally increase marine user costs. Given the much greater traffic on the road alternatives, average user costs' most pronounced changes to user benefits are for the road alternatives. This can be seen in the more steeply upwardly sloping lines for Alternatives 2B and 3 in Chart VIII, compared to their lines in Chart V.

Other than State funds NPV, average user costs produce relatively minor changes in alternative rankings.



25 Percent Construction Cost Overruns

As a construction cost overrun sensitivity case, we increased all capital costs by 25 percent. The increases apply to acquisition costs, replacement costs, and vessel refurbishment costs. Residual values also increase 25 percent as a result.

Table 35 below summarizes evaluation measures for the 25 percent cost overrun case. Rankings that have changed from the base case are highlighted in the table. The only significant change in rankings is that, with a 25 percent cost overrun, the no action alternative has the lowest total project life costs, in terms of State funds, net of revenues, rather than Alternative 4D.

Cost overruns do not change the basic picture presented by the base case's NPV results. NPV values, of course, decline for all alternatives.

As in the base case, no alternative has a positive NPV for total funds. Alternative 4D remains the only alternative with a positive NPV in terms of State funds, though just barely.

With 25 percent cost overruns, Alternative 4D's edge over Alternative 2B in NPV widens to $31.4 million in State funds, from $18.9 million in the base case.

Total project life costs (total costs, total funds) for the most expensive alternatives, the FVF alternatives, increase from around $1.8 billion to $2.0 billion, with 25 percent overruns. The road alternatives increase from $1.5 billion to $1.7 billion in these terms. Net of revenues, the FVF alternatives would cost around $1.5 billion and the road alternatives around $1.3 billion.

The LCC and total project life cost effects of overruns are muted in terms of State funds, because of the 90.97 percent federal share of construction costs.

The trends in State-funded NPV over the study period, shown in Chart IX, are similar in slope to the base case's Chart V. They are all just moved downward a notch due to the cost overruns.

TABLE 35

Evaluation Summary (Sensitivity Case)
25 Percent Construction Cost Overruns
(2013 $)

Alternative	1	1B	2B	3	4A	4B	4C	4D
Net Present Value of Benefits & Costs ($ Millions)								
Total Funds	0	(169.5)	(411.7)	(431.1)	(255.1)	(266.9)	(86.8)	(44.9)
Rank	1	4	7	8	5	6	3	2
State Funds	0	(86.0)	(30.6)	(99.2)	(158.5)	(105.4)	(61.3)	.8
Rank	2	5	3	6	8	7	4	1
Life-Cycle Costs								
Life-Cycle Costs ($ Millions)								
Total Funds								
Total Costs	414.6	653.3	893.3	883.9	1014.9	1107.3	545.0	580.6
Rank	1	4	6	5	7	8	2	3
Net Costs	278.6	509.1	719.0	684.7	787.4	850.9	389.4	345.8
Rank	1	4	6	5	7	8	3	2
Total Project Life Costs								
Total Project Life Costs ($ Millions)								
Total Funds								
Total Costs	845.0	1,273.6	1,703.9	1,694.6	1,942.1	2,038.8	1,097.1	1,165.4
Rank	1	4	6	5	7	8	2	3
Net Costs	571.1	982.5	1,340.4	1,272.7	1,453.8	1,482.8	777.4	660.2
Rank	1	4	6	5	7	8	3	2
State Funds								
Total Costs	590.8	885.8	906.6	943.4	1,293.2	1,256.2	786.7	822.0
Rank	1	4	5	6	8	7	2	3
Net Costs	316.9	594.8	549.2	526.1	804.9	700.7	467.0	317.4
Rank	1	6	5	4	8	7	3	2
Total Project Life Costs less Residual Values per Vehicle ($)								
Total Funds								
Total Costs	485	604	124	158	721	514	559	296
Rank	4	7	1	2	8	5	6	3
Net Costs	294	440	86	103	509	349	361	138
Rank	4	7	1	2	8	5	6	3
State Funds								
Total Costs	403	487	90	117	549	363	478	251
Rank	5	7	1	2	8	4	6	3
Net Costs	212	324	53	63	337	199	279	93
Rank	5	7	1	2	8	4	6	3
Traffic, User Costs per Trip (Juneau), and User Benefits								
Vehicles (FY 2015–50) (Millions)	1.4	1.8	9.6	7.7	2.3	3.4	1.6	3.2
Rank	8	6	1	2	5	3	7	4
Modal User Costs ($)	130	122	87	102	107	97	121	106
Rank	8	7	1	3	5	2	6	4
Benefits (FY 2015–50) ($ Millions)	0	12.7	118.2	38.8	29.6	56.3	9.1	32.6
Rank	8	6	1	3	5	2	7	4
Breakeven								
Total Funds	—	—	—	—	—	—	—	—
State Funds	—	—	—	—	—	—	—	FY 2050
Variation in NPV ($ Millions)								
Total Funds	0	174.9	507.0	455.5	251.8	266.5	83.8	88.8
Rank	1	4	8	7	5	6	2	3
State Funds	0	86.0	119.8	115.2	156.3	102.5	57.6	51.7
Rank	1	4	7	6	8	5	3	2

Notes:
1.Highlighted rankings are different than the base case.

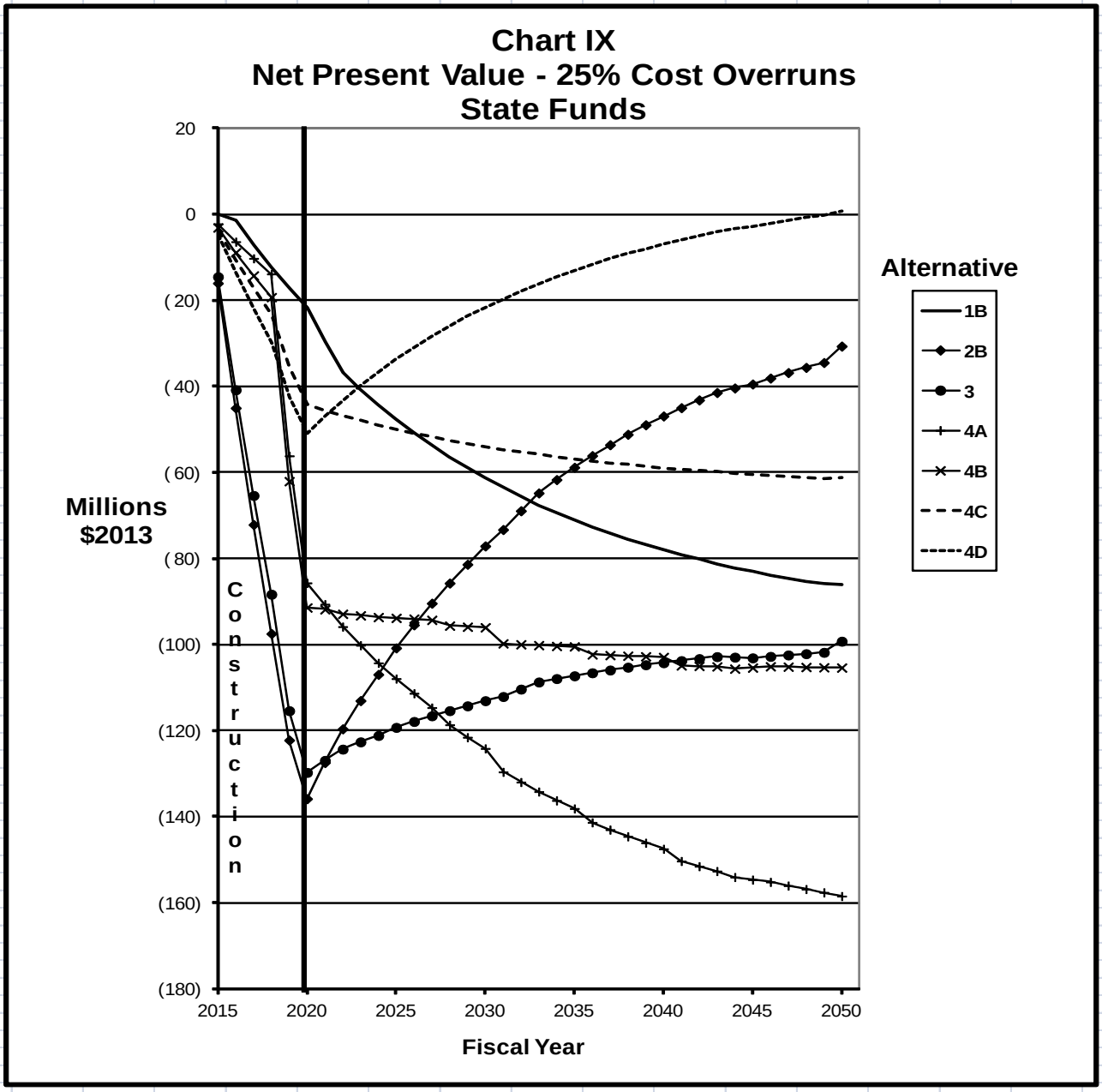


Chart IX
Net Present Value - 25% Cost Overruns
State Funds
Millions
$2013
20
0
(20)
(40)
(60)
(80)
(100)
(120)
(140)
(160)
(180)
Construction
2015
2020
2025
2030
2035
2040
2045
2050
Fiscal Year
Alternative
1B
2B
3
4A
4B
4C
4D

70 Percent of Average Wages as Time Value for Non-Work Travel

For this sensitivity case, we set the value of time spent traveling for non-work purposes equal to 70 percent of average wages. This is the AASHTO manual's guideline[39] for personal intercity travel by auto.

In the base case, non-work travel time is valued at 50 percent of wages. This recognizes the more tenuous connection to work that ferry travel has—because of its much longer travel times and far greater concentration of tourist travel—than the national intercity auto travel data that AASHTO bases its guideline on.

Table 36 below summarizes evaluation measures for the non-work travel at 70 percent of wages case. Table 36 displays only this sensitivity case's evaluation measures that are related to user costs or benefits. Purely cost or traffic-related evaluation measures would not change in values or rank from the base case. Rankings that have changed from the base case are highlighted in the table.

Using 70 percent of wages as the value of non-work travel time increases the net present value of all alternatives, with one minor exception (Alternative 1B). Still, as in the base case, no alternative has a positive NPV for total funds. The rankings based on total funds NPV remain unchanged from the base case.

With regard to State funds, non-work travel time at 70 percent of wages creates a positive NPV for Alternative 2B, joining Alternative 4D as the only two alternatives above water by FY 2050. Alternatives 2B and 4D reach breakeven in FY 2049 and FY 2042, respectively.

Alternative 4D remains the best alternative. But, it is apparent from Chart X that Alternative 2B will overtake Alternative 4D in State-funded NPV in the decade following the end of the study period.

Non-work travel time at 70 percent of wages increases all user costs. But, the reduction in user costs, compared to the no action alternative, also increases, for all alternatives except Alternative 1B. The resulting increase in user benefits, and net present values can be seen in the slightly elevated locus of the lines in Chart X, compared to Chart V. The only readily discernible feature of Chart X is the more steeply upwardly sloping line for Alternative 2B, compared to Chart V.

[39] Table 5–1, *User and Non-User Benefit Analysis for Highways*, AASHTO, September 2010.

Non-work travel time at 70 percent of wages produces minor changes in alternative rankings.

LCC and total project life cost values and rank would be the same as the base case.

TABLE 36

Evaluation Summary (Sensitivity Case)
Non-Work Travel Time @ 70 Percent of Wages
(2013 $)

Alternative	1	1B	2B	3	4A	4B	4C	4D
Net Present Value of Benefits & Costs ($ Millions)								
Total Funds	0	(152.1)	(284.0)	(330.5)	(208.3)	(203.1)	(70.2)	(20.9)
Rank	1	4	7	8	6	5	3	2
State Funds	0	(85.2)	3.7	(81.9)	(146.1)	(89.1)	(57.4)	7.2
Rank	3	6	2	5	8	7	4	1
Traffic, User Costs per Trip (Juneau), and User Benefits								
Vehicles (FY 2015–50) (Millions)	1.4	1.8	9.6	7.7	2.3	3.4	1.6	3.2
Rank	8	6	1	2	5	3	7	4
Modal User Costs ($)	150	142	97	115	121	110	138	121
Rank	8	7	1	3	4	2	6	5
Benefits (FY 2015–50) ($ Millions)	0	11.8	143.3	47.8	38.6	67.8	11.7	37.2
Rank	8	6	1	3	4	2	7	5
Breakeven								
Total Funds	—	—	—	—	—	—	—	—
State Funds	—	—	FY 2049	—	—	—	—	FY 2042
Variation in NPV ($ Millions)								
Total Funds	0	156.3	405.6	364.4	205.3	203.6	67.8	71.1
Rank	1	4	8	7	6	5	2	3
State Funds	0	85.2	129.2	107.0	143.9	87.2	53.8	56.3
Rank	1	4	7	6	8	5	2	3

Notes:
1.Highlighted rankings are different than the base case.

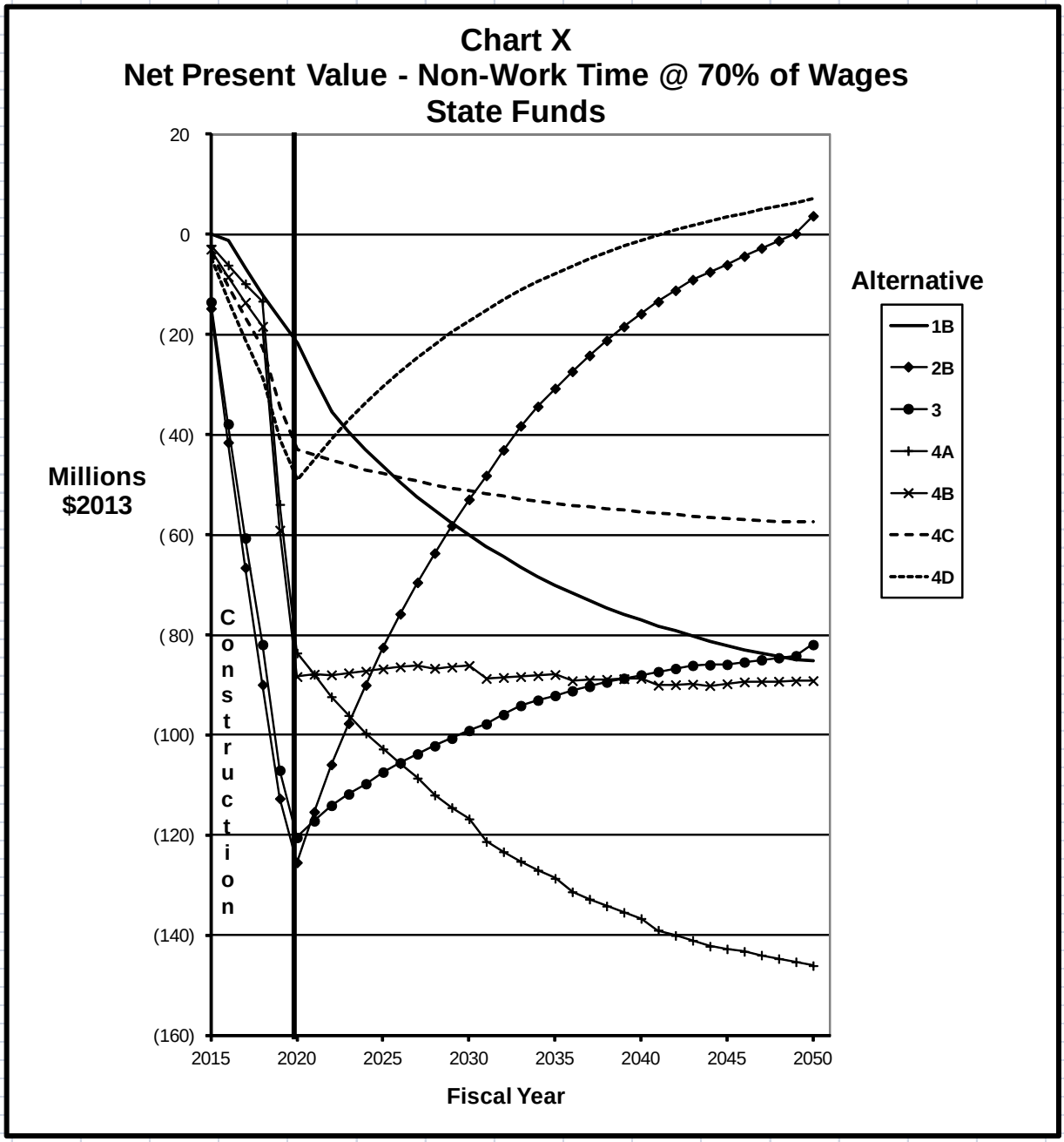


Chart X
Net Present Value - Non-Work Time @ 70% of Wages
State Funds
Millions
$2013
20
0
(20)
(40)
(60)
(80)
(100)
(120)
(140)
(160)
Construction
2015
2020
2025
2030
2035
2040
2045
2050
Fiscal Year
Alternative
1B
2B
3
4A
4B
4C
4D

APPENDIX A

APPENDIX TABLES A–1 through A–75

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TABLE A-1

Incremental Benefit Cost (B/C) Ratios
Total Funds
(2013 $000)[1]

Alternative[3]	2015-50 Present Value as of 7/1/14 @ Private Sector Rate of Return: Net Project Costs (vs. No Action)	User Benefits	NPV	B/C	Increments over Lower Cost Efficient Alternatives[2]: Increment	Incremental Cost	Incremental Benefits	Incremental B/C	Efficient Alternative
1 - No Action	0	0	0	1.00					1
4D - Monohull Berners Bay	58,110	32,553	(25,557)	0.56	4D - 1	58,110	32,553	0.56	1
4C - Monohull Auke Bay	81,884	9,069	(72,815)	0.11	4C - 1	81,884	9,069	0.11	1
1B - Enhanced Service	163,885	12,716	(151,170)	0.08	1B - 1	163,885	12,716	0.08	1
4A - Fast Ferry Auke Bay	246,844	29,562	(217,283)	0.12	4A - 1	246,844	29,562	0.12	1
4B - Fast Ferry Berners Bay	270,968	56,325	(214,643)	0.21	4B - 1	270,968	56,325	0.21	1
3 - West Lynn Highway	378,293	38,779	(339,514)	0.10	3 - 1	378,293	38,779	0.10	1
2B - East Lynn Highway	427,305	118,182	(309,123)	0.28	2B - 1	427,305	118,182	0.28	1

Notes:

1. Dollar amounts are the sum of the present values as of July 1, 2014, at the real private sector rate of return, of 2015-50 amounts in thousands of 2013 dollars.
2. An alternative is efficient if
   (a) the incremental B/C ≥ 1, if numerator and denominator are positive (increase in benefits exceeds increase in costs),
   (b) the incremental B/C ≤ 1, if numerator and denominator are negative (decrease in benefits is less than decrease in costs); or,
   (c) the numerator is positive and the denominator is negative (more benefits for less money).
3. Alternatives are in increasing project cost order.

TABLE A-2

Incremental Benefit Cost (B/C) Ratios
State Funds
(2013 $000)[1]

Alternative[3]	2015-50 Present Value as of 7/1/14 @ Private Sector Rate of Return: Net Project Costs (vs. No Action)	User Benefits	NPV	B/C	Increments over Lower Cost Efficient Alternatives[2]: Increment	Incremental Cost	Incremental Benefits	Incremental B/C	Efficient Alternative
1 - No Action	0	0	0	1.00					1
4D - Monohull Berners Bay	30,005	32,553	2,548	1.08	4D - 1	30,005	32,553	1.08	4D
4C - Monohull Auke Bay	69,077	9,069	(60,008)	0.13	4C - 4D	39,072	(23,484)	(0.60)	4D
1B - Enhanced Service	97,038	12,716	(84,322)	0.13	1B - 4D	67,032	(19,837)	(0.30)	4D
3 - West Lynn Highway	129,738	38,779	(90,959)	0.30	3 - 4D	99,733	6,226	0.06	4D
2B - East Lynn Highway	139,564	118,182	(21,382)	0.85	2B - 4D	109,559	85,629	0.78	4D
4B - Fast Ferry Berners Bay	156,974	56,325	(100,649)	0.36	4B - 4D	126,968	23,772	0.19	4D
4A - Fast Ferry Auke Bay	184,627	29,562	(155,065)	0.16	4A - 4D	154,621	(2,992)	(0.02)	4D

Notes:

1. Dollar amounts are the sum of the present values as of July 1, 2014, at the real private sector rate of return, of 2015-50 amounts in thousands of 2013 dollars.
2. An alternative is efficient if
   (a) the incremental B/C ≥ 1, if numerator and denominator are positive (increase in benefits exceeds increase in costs),
   (b) the incremental B/C ≤ 1, if numerator and denominator are negative (decrease in benefits is less than decrease in costs); or,
   (c) the numerator is positive and the denominator is negative (more benefits for less money).
3. Alternatives are in increasing project cost order.

TABLE A-3

Traffic Forecast Report
Utility Values

Utility Values[1]									
Haines	Auto Time (min)	Auto Cost (cents)	Ferry Time (min)	Ferry Cost (cents)	Ferry Wait (min)	SI Utility	Modal Constant	Total Utility	Exponential
All Road	-0.1379	-0.2601	0.0000	0.0000	0.0000	0.00	0.000	-0.398	0.672
Existing	-0.0076	-0.0137	-0.2714	-0.6139	-0.4442	-0.50	-0.673	-2.524	0.080
1	-0.0076	-0.0137	-0.2773	-0.6139	-0.2357	-0.50	-0.673	-2.319	0.098
1B	-0.0076	-0.0137	-0.2773	-0.4911	-0.2357	-0.50	-0.673	-2.196	0.111
2B	-0.1354	-0.2569	-0.0271	-0.1073	-0.1253	-0.04	-0.013	-0.709	0.492
3	-0.1214	-0.2298	-0.0442	-0.1528	-0.1111	-0.04	-0.085	-0.781	0.458
4A	-0.0076	-0.0137	-0.1611	-0.6139	-0.2224	-0.18	-0.673	-1.872	0.154
4B	-0.0575	-0.1088	-0.0972	-0.3664	-0.2222	-0.18	-0.415	-1.446	0.236
4C	-0.0076	-0.0137	-0.2779	-0.6139	-0.2164	-0.46	-0.673	-2.265	0.104
4D	-0.0576	-0.1090	-0.1735	-0.3660	-0.2082	-0.17	-0.415	-1.503	0.222
Skagway	Auto Time (min)	Auto Cost (cents)	Ferry Time (min)	Ferry Cost (cents)	Ferry Wait (min)	SI Utility	Modal Constant	Total Utility	Exponential
All Road	-0.1607	-0.3038	0.0000	0.0000	0.0000	0.00	0.000	-0.464	0.628
Existing	0.0000	0.0000	-0.3920	-0.8142	-0.4442	-0.50	-0.712	-2.862	0.057
1	0.0000	0.0000	-0.3389	-0.8142	-0.3812	-0.50	-0.712	-2.744	0.064
1B	0.0000	0.0000	-0.2871	-0.6513	-0.3946	-0.33	-0.712	-2.374	0.093
2B	-0.1290	-0.2432	-0.0513	-0.1795	-0.1459	-0.06	-0.140	-0.948	0.388
3	-0.1290	-0.2435	-0.0955	-0.3189	-0.3531	-0.12	-0.140	-1.398	0.247
4A	0.0000	0.0000	-0.1773	-0.8142	-0.2224	-0.18	-0.712	-2.107	0.122
4B	-0.0499	-0.0951	-0.1191	-0.5347	-0.2222	-0.18	-0.491	-1.691	0.184
4C	0.0000	0.0000	-0.3162	-0.8142	-0.2164	-0.46	-0.712	-2.522	0.080
4D	-0.0500	-0.0953	-0.2079	-0.5344	-0.2082	-0.17	-0.490	-1.761	0.172

Notes:

1. Utility values used in the *Juneau Access Improvements Project, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4. Table provided directly by Fehr & Peers.

TABLE A-4

Cost per User
Juneau - Haines & Skagway

Alternative	Haines Traffic[1]	Skagway Traffic[1]	Average Costs for Haines and Skagway: Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	60%	40%	2:36	5:18	$71.29	0:03	$ 0.81
1 - No Action	62%	38%	1:41	4:58	$70.83	0:03	$ 0.85
1B - Enhanced Service	57%	43%	1:49	4:45	$57.58	0:03	$ 0.77
2B - East Lynn Highway	54%	46%	0:50	0:37	$14.41	1:44	$35.63
3 - West Lynn Highway	64%	36%	1:16	1:02	$21.83	1:38	$33.37
4A - Fast Ferry Auke Bay	55%	45%	1:19	2:50	$72.36	0:03	$ 0.74
4B - Fast Ferry Berners Bay	55%	45%	1:17	2:01	$52.50	0:32	$ 7.70
4C - Monohull Auke Bay	56%	44%	1:15	4:53	$72.10	0:03	$ 0.76
4D - Monohull Berners Bay	55%	45%	1:13	3:27	$50.43	0:35	$ 8.40

Notes:
1. Calculated from the summer and winter traffic totals for Haines and Skagway in Tables A-6 and A-10.

TABLE A-5

Cost per User
Juneau - Haines

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	4:30	$63.06	0:06	$ 1.36
1 - No Action	1:21	4:36	$63.06	0:06	$ 1.36
1B - Enhanced Service	1:21	4:36	$50.45	0:06	$ 1.36
2B - East Lynn Highway	0:45	0:27	$11.02	1:47	$36.52
3 - West Lynn Highway	0:47	0:44	$15.70	1:36	$32.67
4A - Fast Ferry Auke Bay	1:19	2:42	$63.06	0:06	$ 1.36
4B - Fast Ferry Berners Bay	1:17	1:52	$44.30	0:35	$ 8.31
4C - Monohull Auke Bay	1:15	4:36	$63.06	0:06	$ 1.36
4D - Monohull Berners Bay	1:13	3:12	$42.50	0:37	$ 8.98

TABLE A-6

Seasonal Traffic
Juneau - Haines
2020

Alternative	SADT[1]	WADT[1]	Days[2]		Annual Traffic		Annual Traffic %	
			Summer	Winter	Summer	Winter	Summer	Winter
Existing Service	66	23	153	212	10,098	4,834	67.6%	32.4%
1 - No Action	87	30	153	212	13,311	6,360	67.7%	32.3%
1B - Enhanced Service	101	30	153	212	15,453	6,360	70.8%	29.2%
2B - East Lynn Highway	730	252	153	212	111,690	53,424	67.6%	32.4%
3 - West Lynn Highway	679	235	153	212	103,887	49,820	67.6%	32.4%
4A - Fast Ferry Auke Bay	148	51	153	212	22,644	10,812	67.7%	32.3%
4B - Fast Ferry Berners Bay	235	51	138	227	32,430	11,577	73.7%	26.3%
4C - Monohull Auke Bay	93	32	153	212	14,229	6,784	67.7%	32.3%
4D - Monohull Berners Bay	221	32	138	227	30,498	7,264	80.8%	19.2%

Note:

1. Table 7 for Existing Service and Table 9 for Alternatives, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4.

2. Due to environmental concerns in Berners Bay during the spring (herring and eulachon spawning as well as humpback whale and Steller sea lion concentrations), the summer schedule for Alternatives 4B and 4D would start on May 15, rather than May 1, and run to September 30.

TABLE A-7

Cost per User
Summer
Juneau - Haines

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	4:30	$63.06	0:06	$ 1.36
1 - No Action	1:22	4:35	$63.06	0:06	$ 1.36
1B - Enhanced Service	1:22	4:35	$50.45	0:06	$ 1.36
2B - East Lynn Highway	0:44	0:27	$11.02	1:47	$36.52
3 - West Lynn Highway	0:39	0:44	$15.70	1:36	$32.67
4A - Fast Ferry Auke Bay	1:19	2:42	$63.06	0:06	$ 1.36
4B - Fast Ferry Berners Bay	1:17	1:36	$37.60	0:45	$10.79
4C - Monohull Auke Bay	1:15	4:36	$63.06	0:06	$ 1.36
4D - Monohull Berners Bay	1:13	2:52	$37.60	0:45	$10.79

TABLE A-8

Cost per User
Winter
Juneau - Haines

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	4:30	$63.06	0:06	$ 1.36
1 - No Action	1:19	4:36	$63.06	0:06	$ 1.36
1B - Enhanced Service	1:19	4:36	$50.45	0:06	$ 1.36
2B - East Lynn Highway	0:50	0:27	$11.02	1:47	$36.52
3 - West Lynn Highway	1:05	0:44	$15.70	1:36	$32.67
4A - Fast Ferry Auke Bay	1:18	2:41	$63.06	0:06	$ 1.36
4B - Fast Ferry Berners Bay	1:17	2:39	$63.06	0:06	$ 1.36
4C - Monohull Auke Bay	1:14	4:36	$63.06	0:06	$ 1.36
4D - Monohull Berners Bay	1:14	4:36	$63.06	0:06	$ 1.36

TABLE A-9

Cost per User
Juneau - Skagway

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	6:30	$83.64	0:00	$ 0.00
1 - No Action	2:13	5:36	$83.64	0:00	$ 0.00
1B - Enhanced Service	2:26	4:56	$66.91	0:00	$ 0.00
2B - East Lynn Highway	0:55	0:51	$18.43	1:42	$34.57
3 - West Lynn Highway	2:09	1:35	$32.76	1:42	$34.61
4A - Fast Ferry Auke Bay	1:19	3:00	$83.64	0:00	$ 0.00
4B - Fast Ferry Berners Bay	1:17	2:12	$62.47	0:29	$ 6.95
4C - Monohull Auke Bay	1:15	5:14	$83.64	0:00	$ 0.00
4D - Monohull Berners Bay	1:13	3:46	$60.24	0:32	$ 7.68

TABLE A-10

Seasonal Traffic
Juneau - Skagway
2020

Alternative	SADT[1]	WADT[1]	Days[2]		Annual Traffic		Annual Traffic %	
			Summer	Winter	Summer	Winter	Summer	Winter
Existing Service	44	15	153	212	6,732	3,222	67.6%	32.4%
1 - No Action	53	18	153	212	8,109	3,816	68.0%	32.0%
1B - Enhanced Service	84	18	153	212	12,852	3,816	77.1%	22.9%
2B - East Lynn Highway	613	212	153	212	93,789	44,944	67.6%	32.4%
3 - West Lynn Highway	381	132	153	212	58,293	27,984	67.6%	32.4%
4A - Fast Ferry Auke Bay	122	42	153	212	18,666	8,904	67.7%	32.3%
4B - Fast Ferry Berners Bay	193	42	138	227	26,634	9,534	73.6%	26.4%
4C - Monohull Auke Bay	73	25	153	212	11,169	5,300	67.8%	32.2%
4D - Monohull Berners Bay	180	25	138	227	24,840	5,675	81.4%	18.6%

Note:

1. Table 7 for Existing Service and Table 9 for Alternatives, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4.

2. Due to environmental concerns in Berners Bay during the spring (herring and eulachon spawning as well as humpback whale and Steller sea lion concentrations), the summer schedule for Alternatives 4B and 4D would start on May 15, rather than May 1, and run to September 30.

TABLE A-11

Cost per User
Summer
Juneau - Skagway

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	6:30	$83.64	0:00	$ 0.00
1 - No Action	2:13	5:37	$83.64	0:00	$ 0.00
1B - Enhanced Service	2:30	4:45	$66.91	0:00	$ 0.00
2B - East Lynn Highway	0:51	0:51	$18.43	1:42	$34.57
3 - West Lynn Highway	2:04	1:35	$32.76	1:42	$34.61
4A - Fast Ferry Auke Bay	1:19	3:01	$83.64	0:00	$ 0.00
4B - Fast Ferry Berners Bay	1:17	1:58	$54.89	0:39	$ 9.44
4C - Monohull Auke Bay	1:15	5:14	$83.64	0:00	$ 0.00
4D - Monohull Berners Bay	1:13	3:26	$54.89	0:39	$ 9.44

TABLE A-12

Cost per User
Winter
Juneau - Skagway

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	6:30	$83.64	0:00	$ 0.00
1 - No Action	2:12	5:34	$83.64	0:00	$ 0.00
1B - Enhanced Service	2:12	5:34	$66.91	0:00	$ 0.00
2B - East Lynn Highway	1:05	0:51	$18.43	1:42	$34.57
3 - West Lynn Highway	2:19	1:35	$32.76	1:42	$34.61
4A - Fast Ferry Auke Bay	1:18	2:57	$83.64	0:00	$ 0.00
4B - Fast Ferry Berners Bay	1:17	2:53	$83.64	0:00	$ 0.00
4C - Monohull Auke Bay	1:14	5:13	$83.64	0:00	$ 0.00
4D - Monohull Berners Bay	1:14	5:13	$83.64	0:00	$ 0.00

TABLE A-13

User Cost Detail
Juneau - Haines & Skagway
Summer

March 27, 2014

Alternative	Ferry	Ferry Terminal	Destination	RT Capacity (veh)	Destination RT Capacity (veh)	Destination Ferry RT/ Week	Destination RT Capacity/ Day (veh)	Ferry Operating Hours/Day	Ferry Travel Time							Ferry Fare				Highway Travel		
									Delay (min)	Check-In (min)	Load (min)	Unload (min)	Delay Total (min)	Ferry Travel Time (min)	Total Ferry Time (min)	Vehicle Fare	Person Fare	Persons/ Vehicle	Ferry Fare	Distance (mi)	Time (min)	Vehicle Cost
All Road Scenario	Haines Road								All Road							All Road				81.6	1:49	$85.03
	Skagway Road																			95.3	2:07	$99.30
Existing	Malaspina	Auke Bay	Haines	176	88	6	75			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		88	6	75			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	56	28	2	8			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		28	2	8			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 1: No Action	New Day Boats	Auke Bay	Haines	106	53	6	45			0:50	0:10	0:10	1:10	4:37	5:47	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		53	6	45			1:50	0:10	0:10	2:10	5:28	7:38	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	56	28	2	8			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		28	2	8			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 1B: Enhanced Service	New Day Boats	Auke Bay	Haines	106	53	6	45			0:50	0:10	0:10	1:10	4:37	5:47	68.80	29.60	3.3	50.45	4.3	0:06	$4.48
			Skagway		53	6	45			1:50	0:10	0:10	2:10	5:28	7:38	88.80	40.00	3.3	66.91	0.0	0:00	$0.00
					0		0						0:00		0:00			3.3	0.00		0:00	$0.00
	Malaspina	Auke Bay	Skagway	176	176	7	176			1:24	0:36	0:36	2:36	4:30	7:06	88.80	40.00	3.3	66.91	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	56	28	2	8			1:24	0:36	0:36	2:36	4:30	7:06	68.80	29.60	3.3	50.45	4.3	0:06	$4.48
			Skagway		28	2	8			1:24	0:36	0:36	2:36	6:30	9:06	88.80	40.00	3.3	66.91	0.0	0:00	$0.00
Alt 2B: East Lynn KTZ	New Day Boat	Katzehin	Haines	106	106	56	848	12.8	0:24		0:10	0:10	0:44	0:27	1:11	15.00	4.50	2.3	11.02	80.6	1:47	$83.99
	New Day Boat		Skagway	106	106	42	636	12.5	0:31		0:10	0:10	0:51	0:51	1:42	24.00	8.00	2.3	18.43	76.3	1:42	$79.51
Alt 3: West Lynn	New Day Boat	Sawmill Cove	Wm. Henry Bay	74	74	84	888	15.2	0:19		0:10	0:10	0:39	0:44	1:23	20.00	7.00	2.3	15.70	72.1	1:36	$75.13
	New Day Boat	Haines	Skagway	32	32	38.5	176		1:24		0:20	0:20	2:04	0:51	3:39	22.00	7.50	2.3	32.76	76.4	1:42	$79.61
Alt 4A: FVF Auke Bay	Fast Ferry	Auke Bay	Haines	62	62	14	124			0:45	0:15	0:15	1:15	2:36	3:51	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
	Fast Ferry		Skagway	62	62	14	124			0:45	0:15	0:15	1:15	2:48	4:03	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	56	28	2	8			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		28	2	8			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 4B: FVF Sawmill Cove	Fast Ferry	Sawmill Cove	Haines	106	106	14	212			0:45	0:15	0:15	1:15	1:30	2:45	50.00	21.50	3.3	36.65	35.3	0:47	$36.78
	Fast Ferry		Skagway	106	106	14	212			0:45	0:15	0:15	1:15	1:48	3:03	72.00	32.00	3.3	53.82	31.0	0:41	$32.30
	Mainline	Auke Bay	Haines	56	28	2	8			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		28	2	8			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 4C: Dayboat Auke Bay	New Day Boat	Auke Bay	Haines	106	106	7	106			0:50	0:10	0:10	1:10	4:37	5:47	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
	New Day Boat		Skagway	106	106	7	106			0:50	0:10	0:10	1:10	5:09	6:19	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	56	28	2	8			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		28	2	8			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 4D: Dayboat Sawmill Cove	New Day Boat	Sawmill Cove	Haines	106	106	14	212			0:50	0:10	0:10	1:10	2:49	3:59	50.00	21.50	3.3	36.65	35.3	0:47	$36.78
	New Day Boat		Skagway	106	106	14	212			0:50	0:10	0:10	1:10	3:20	4:30	72.00	32.00	3.3	53.82	31.0	0:41	$32.30
	Mainline	Auke Bay	Haines	56	28	2	8			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		28	2	8			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00

Notes:

Fares are based on a 16-19ft vehicle.
Assumed delay time is 1/4 of headway or check-in, reservation wait time
Distances measured from Auke Bay Terminal and Downtown Haines is 3rd & Main
FP assumed road distance from Haines to Katzehin of 5.3 miles
Assumed 25% of 222 mainline RT capacity based on existing utilization (RT average of current vessels Matanuska=176 and Columbia=268)
Different formulas based on unique attributes of each alternative
Skagway Alt 3 ferry delay is based on analysis of predicted delay for each possible ferry connection
Skagway Alt 3 ferry RT is only 5.5 per day because no Juneau travelers can catch 6AM boat to Skagway
Revised from Fehr & Peers.

Haines share:	0.5
Available mainline capacity:	0.25
Driving speed (mph):	45
Driving cost ($/mi):	1.042
Existing fare reduction:	0%
1B fare reduction:	20%

Auke Bay to Echo Cove:	25.8
Echo Cove to Sawmill Cove:	5.2
Echo Cove to Katzehin Delta:	50.5
William Henry to Mud Bay:	38.9
Mud Bay to Downtown Haines:	2.2
Downtown Haines to Lutak:	4.3
Auke Bay to Skagway:	95.3
Katzehin to Downtown Haines:	5.3

TABLE A-14

User Cost Detail
Juneau - Haines & Skagway
Winter

March 27, 2014

Alternative	Ferry	Ferry Terminal	Destination	RT Capacity (veh)	Destination RT Capacity (veh)	Destination Ferry RT/ Week	Destination RT Capacity/ Day (veh)	Ferry Operating Hours/Day	Ferry Travel Time							Ferry Fare				Highway Travel		
									Delay (min)	Check-In (min)	Load (min)	Unload (min)	Delay Total (min)	Ferry Travel Time (min)	Total Ferry Time (min)	Vehicle Fare	Person Fare	Persons/ Vehicle	Ferry Fare	Distance (mi)	Time (min)	Vehicle Cost
All Road Scenario	Haines Road								All Road							All Road				81.6	1:49	$85.03
	Skagway Road																			95.3	2:07	$99.30
Existing	Mainline	Auke Bay	Haines	40	20	2	6			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		20	1	3			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Leconte	Auke Bay	Haines	68	34	3	15			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		34	3	15			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 1: No Action	New Day Boats	Auke Bay	Haines	106	53	3	23			0:50	0:10	0:10	1:10	4:37	5:47	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		53	3	23			1:50	0:10	0:10	2:10	5:28	7:38	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	40	20	1	3			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		20	1	3			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 1B: Enhanced Service	New Day Boats	Auke Bay	Haines	106	53	3	23			0:50	0:10	0:10	1:10	4:37	5:47	68.80	29.60	3.3	50.45	4.3	0:06	$4.48
			Skagway		53	3	23			1:50	0:10	0:10	2:10	5:28	7:38	88.80	40.00	3.3	66.91	0.0	0:00	$0.00
					0		0						0:00		0:00			3.3	0.00		0:00	$0.00
	Malaspina	Auke Bay	Skagway	176	176	0	0			1:24	0:36	0:36	2:36	4:30	7:06	88.80	40.00	3.3	66.91	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	40	20	1	3			1:24	0:36	0:36	2:36	4:30	7:06	68.80	29.60	3.3	50.45	4.3	0:06	$4.48
			Skagway		20	1	3			1:24	0:36	0:36	2:36	6:30	9:06	88.80	40.00	3.3	66.91	0.0	0:00	$0.00
Alt 2B: East Lynn KTZ	New Day Boat	Katzehin	Haines	106	106	42	636	12.0	0:30		0:10	0:10	0:50	0:27	1:17	15.00	4.50	2.3	11.02	80.6	1:47	$83.99
	New Day Boat		Skagway	106	106	28	424	12.0	0:45		0:10	0:10	1:05	0:51	1:56	24.00	8.00	2.3	18.43	76.3	1:42	$79.51
Alt 3: West Lynn	New Day Boat	Sawmill Cove	Wm. Henry Bay	74	74	28	296	12.0	0:45		0:10	0:10	1:05	0:44	1:49	20.00	7.00	2.3	15.70	72.1	1:36	$75.13
	New Day Boat	Haines	Skagway	32	32	21	96		1:39		0:20	0:20	2:19	0:51	3:54	22.00	7.50	2.3	32.76	76.4	1:42	$79.61
Alt 4A: FVF Auke Bay	Fast Ferry	Auke Bay	Haines	62	62	7	62			0:45	0:15	0:15	1:15	2:36	3:51	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
	Fast Ferry		Skagway		62	7	62			0:45	0:15	0:15	1:15	2:48	4:03	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	40	20	1	3			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		20	1	3			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 4B: FVF Sawmill Cove	Fast Ferry	Auke Bay	Haines	106	106	7	106			0:45	0:15	0:15	1:15	2:36	3:51	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
	Fast Ferry		Skagway		106	7	106			0:45	0:15	0:15	1:15	2:48	4:03	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	40	20	1	3			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		20	1	3			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 4C: Dayboat Auke Bay	New Day Boat	Auke Bay	Haines	106	106	4	53			0:50	0:10	0:10	1:10	4:37	5:47	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
	New Day Boat		Skagway		106	4	53			0:50	0:10	0:10	1:10	5:09	6:19	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	40	20	1	3			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		20	1	3			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
Alt 4D: Dayboat Sawmill Cove	New Day Boat	Auke Bay	Haines	106	106	4	53			0:50	0:10	0:10	1:10	4:37	5:47	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
	New Day Boat		Skagway		106	4	53			0:50	0:10	0:10	1:10	5:09	6:19	111.00	50.00	3.3	83.64	0.0	0:00	$0.00
	Mainline	Auke Bay	Haines	40	20	1	3			1:24	0:36	0:36	2:36	4:30	7:06	86.00	37.00	3.3	63.06	4.3	0:06	$4.48
			Skagway		20	1	3			1:24	0:36	0:36	2:36	6:30	9:06	111.00	50.00	3.3	83.64	0.0	0:00	$0.00

Notes:
Fares are based on a 16-19ft vehicle.
Assumed delay time is 1/4 of headway or check-in, reservation wait time
Distances measured from Auke Bay Terminal and Downtown Haines is 3rd & Main
FP assumed road distance from Haines to Katzehin of 5.3 miles
Assumed 25% of 157 mainline RT capacity based on existing utilization (RT average of current vessels Malaspina =176 and Taku =138)
Different formulas based on unique attributes of each alternative
Skagway Alt 3 ferry delay is based on analysis of predicted delay for each possible ferry connection
Skagway Alt 3 ferry RT is only 3.0 per day because no travelers can catch the last connecting ferry in either direction.

Haines share:	0.5
Available mainline capacity:	0.25
Driving speed (mph):	45
Driving cost ($/mi):	1.042
Existing fare reduction:	0%
1B fare reduction:	20%

Auke Bay to Echo Cove:	25.8
Echo Cove to Sawmill Cove:	5.2
Echo Cove to Katzehin Delta:	50.5
William Henry to Mud Bay:	38.9
Mud Bay to Downtown Haines:	2.2
Downtown Haines to Lutak:	4.3
Auke Bay to Skagway:	95.3
Katzehin to Downtown Haines:	5.3

TABLE A-15

Juneau - Skagway Winter Delay
Alternative 3

Sawmill - William Henry Bay 12 hour Winter Schedule

check-in	load	depart Sawmill	travel	unload	check-in	load	depart WHB	travel	unload	check-in	load
0:26	0:10	6:00	0:44	0:10	0:26	0:10	7:30	0:44	0:10	0:26	0:10
		9:00	0:44	0:10	0:26	0:10	10:30	0:44	0:10	0:26	0:10
		12:00	0:44	0:10	0:26	0:10	13:30	0:44	0:10	0:26	0:10
		15:00	0:44	0:10	0:26	0:10	16:30	0:44	0:10		
									17:24		

Haines - Skagway 12 hour Winter Schedule

checkin	load	depart HNS	travel	unload	check-in	load	depart SGY	travel	unload	check-in	load
0:19	0:10	6:00	0:51	0:10	0:19	0:10	7:30	0:51	0:10	0:19	0:10
		9:00	0:51	0:10	0:19	0:10	10:30	0:51	0:10	0:19	0:10
		12:00	0:51	0:10	0:19	0:10	13:30	0:51	0:10	0:19	0:10
		15:00	0:51	0:10	0:19	0:10	16:30	0:51	0:10		
									17:31		

Juneau to Skagway Travel

Delay at Sawmill		depart Sawmill	travel	unload	arrive WHB	drive	arrive HNS	delay	load	depart HNS	travel	unload	arrive SGY	Total Delay
0:45	load	6:00	0:44	0:10	6:54	1:00	7:54	0:55	0:10	9:00	0:51	0:10	10:01	1:40
0:45	load	9:00	0:44	0:10	9:54	1:00	10:54	0:55	0:10	12:00	0:51	0:10	13:01	1:40
0:45	load	12:00	0:44	0:10	12:54	1:00	13:54	0:55	0:10	15:00	0:51	0:10	16:01	1:40
0:45	load	15:00	0:44	0:10	15:54	1:00	16:54							

Skagway to Juneau Travel

Check-In SGY		depart SGY	travel	unload	arrive HNS	drive	arrive WHB	delay	load	depart WHB	travel	unload	arrive Sawmill	Total Delay
0:50	load	7:30	0:51	0:10	8:31	1:00	9:31	0:48	0:10	10:30	0:44	0:10	11:24	1:38
0:50	load	10:30	0:51	0:10	11:31	1:00	12:31	0:48	0:10	13:30	0:44	0:10	14:24	1:38
0:50	load	13:30	0:51	0:10	14:31	1:00	15:31	0:48	0:10	16:30	0:44	0:10	17:24	1:38
0:50	load	16:30	0:51	0:10	17:31	1:00	18:31							

Average Total Delay 1:39

TABLE A-16

Average Cost per User
Haines - Skagway

Alternative	Ferry Delay	Ferry Travel	Ferry Fare	Highway Travel	Highway Vehicle Cost	Total
Existing Service	$25.08	$ 8.20	$17.50	$ 0.96	$ 2.04	$53.78
1 - No Action	$13.15	$ 8.20	$17.50	$ 0.96	$ 2.04	$41.85
1B - Enhanced Service	$13.15	$ 8.20	$14.00	$ 0.96	$ 2.04	$38.35
2B - East Lynn Highway	$12.67	$ 8.61	$18.72	$ 0.96	$ 2.04	$43.00
3 - West Lynn Highway	$11.25	$ 8.20	$17.50	$ 0.96	$ 2.04	$39.96
4A - Fast Ferry Auke Bay	$12.52	$ 8.20	$17.50	$ 0.96	$ 2.04	$41.22
4B - Fast Ferry Berners Bay	$12.52	$ 8.20	$17.50	$ 0.96	$ 2.04	$41.22
4C - Monohull Auke Bay	$12.52	$ 8.20	$17.50	$ 0.96	$ 2.04	$41.22
4D - Monohull Berners Bay	$12.52	$ 8.20	$17.50	$ 0.96	$ 2.04	$41.22

TABLE A-17

Cost per User
Haines - Skagway

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	0:51	$17.50	0:06	$ 2.04
1 - No Action	1:21	0:51	$17.50	0:06	$ 2.04
1B - Enhanced Service	1:21	0:51	$14.00	0:06	$ 2.04
2B - East Lynn Highway	1:18	0:53	$18.72	0:06	$ 2.04
3 - West Lynn Highway	1:10	0:51	$17.50	0:06	$ 2.04
4A - Fast Ferry Auke Bay	1:17	0:51	$17.50	0:06	$ 2.04
4B - Fast Ferry Berners Bay	1:17	0:51	$17.50	0:06	$ 2.04
4C - Monohull Auke Bay	1:17	0:51	$17.50	0:06	$ 2.04
4D - Monohull Berners Bay	1:17	0:51	$17.50	0:06	$ 2.04

TABLE A-18

Seasonal Traffic
Haines - Skagway
2011

Alternative	Ferry RT/Day[1]		AADT Increase over Existing Service[2]		AADT[2]		Days		Annual Traffic		Annual Traffic %	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Existing Service	1	1			35	4	153	212	5,355	848	86.3%	13.7%
1 - No Action	2	1	50%		53	4	153	212	8,033	848	90.5%	9.5%
1B - Enhanced Service	2	1	50%		53	4	153	212	8,033	848	90.5%	9.5%
2B - East Lynn Highway	2	0	50%		53	4	153	212	8,033	848	90.5%	9.5%
3 - West Lynn Highway	6	4	75%	75%	61	7	153	212	9,371	1,484	86.3%	13.7%
4A - Fast Ferry Auke Bay	2	1	50%		53	4	153	212	8,033	848	90.5%	9.5%
4B - Fast Ferry Berners Bay	2	1	50%		53	4	153	212	8,033	848	90.5%	9.5%
4C - Monohull Auke Bay	2	1	50%		53	4	153	212	8,033	848	90.5%	9.5%
4D - Monohull Berners Bay	2	1	50%		53	4	153	212	8,033	848	90.5%	9.5%

Notes:
1. Table A-22.
2. *Juneau Access Haines/Skagway Traffic Forecast* , McDowell Group, November 2012, p. 11.

TABLE A-19

Cost per User
Summer
Haines - Skagway

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	0:51	$17.50	0:06	$ 2.04
1 - No Action	1:21	0:51	$17.50	0:06	$ 2.04
1B - Enhanced Service	1:21	0:51	$14.00	0:06	$ 2.04
2B - East Lynn Highway	1:10	0:51	$17.50	0:06	$ 2.04
3 - West Lynn Highway	1:10	0:51	$17.50	0:06	$ 2.04
4A - Fast Ferry Auke Bay	1:17	0:51	$17.50	0:06	$ 2.04
4B - Fast Ferry Berners Bay	1:17	0:51	$17.50	0:06	$ 2.04
4C - Monohull Auke Bay	1:17	0:51	$17.50	0:06	$ 2.04
4D - Monohull Berners Bay	1:17	0:51	$17.50	0:06	$ 2.04

TABLE A-20

Cost per User
Winter
Haines - Skagway

Alternative	Ferry Delay (hours)	Ferry Travel (hours)	Ferry Fare	Highway Travel (hours)	Highway Vehicle Cost
Existing Service	2:36	0:51	$17.50	0:06	$ 2.04
1 - No Action	1:20	0:51	$17.50	0:06	$ 2.04
1B - Enhanced Service	1:20	0:51	$14.00	0:06	$ 2.04
2B - East Lynn Highway	2:42	1:18	$30.23	0:06	$ 2.04
3 - West Lynn Highway	1:10	0:51	$17.50	0:06	$ 2.04
4A - Fast Ferry Auke Bay	1:22	0:51	$17.50	0:06	$ 2.04
4B - Fast Ferry Berners Bay	1:22	0:51	$17.50	0:06	$ 2.04
4C - Monohull Auke Bay	1:22	0:51	$17.50	0:06	$ 2.04
4D - Monohull Berners Bay	1:22	0:51	$17.50	0:06	$ 2.04

TABLE A-21

Haines - Skagway Port-to-Port Vehicle Traffic 2012

	Vehicles On-Off	Vessel Trips[2]	2012 Vessel Capacity Per Trip	2012 Vessel Capacity Annual	HNS & SGY Utilization
Haines - Skagway					
Malaspina	2,309	105			
LeConte	446	92			
Lynn Canal Total	2,755	197			
Columbia	650	36			
Matanuska	163	37			
Taku	44	2			
Mainline Total	857	75			
Skagway - Haines					
Malaspina	1,900	105			
LeConte	353	93			
Lynn Canal Total	2,253	198			
Columbia	383	36			
Matanuska	271	38			
Taku	5	1			
Mainline Total	659	75			
Total					
Malaspina	4,209	210	88	18,480	22.8%
LeConte	799	185	34	6,290	12.7%
Lynn Canal Total	5,008	395		24,770	20.2%
Columbia	1,033	72	134	9,648	10.7%
Matanuska	434	75	88	6,600	6.6%
Taku	49	3	69	207	23.7%
Mainline Total	1,516	150		16,455	9.2%

Notes:

1. Port to Port Traffic (On/Off), *Annual Traffic Volume Report 2012, AMHS.*
2. Link Volume Summary, *Annual Traffic Volume Report 2012* , AMHS.

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TABLE A-22

User Cost Detail
Haines - Skagway
Summer & Winter

March 27, 2014

Alternative	Ferry	Link	Season	RT Capacity (veh)	Destination RT Capacity (veh)	Destination Ferry RT/ Week	Destination RT Capacity/ Day (veh)	Ferry Operating Hours/Day	Ferry Travel Time							Ferry Fare				Highway Travel		
									Delay (min)	Check-In (min)	Load (min)	Unload (min)	Delay Total (min)	Ferry Travel Time (min)	Total Ferry Time (min)	Vehicle Fare	Person Fare	Persons/ Vehicle	Ferry Fare	Distance (mi)	Time (min)	Vehicle Cost
Existing	Malaspina	Haines -	Summer	176	35	6	30			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter			0	0			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
	Mainline	Haines -	Summer	222	22	2	6			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter	176	18	1	3			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
	Leconte	Haines -	Summer			0	0			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter	68	14	3	6			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
Alt 1: No Action	New Day Boats	Haines -	Summer	106	21	13	39			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter		21	6	18			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
	Mainline	Haines -	Summer	222	22	2	6			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter	176	18	1	3			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
Alt 1B: Enhanced Service	New Day Boats	Haines -	Summer	106	21	13	39			0:50	0:10	0:10	1:10	0:51	2:01	17.60	6.00	2.2	14.00	4.3	0:06	$4.48
		Skagway	Winter		21	6	18			0:50	0:10	0:10	1:10	0:51	2:01	17.60	6.00	2.2	14.00	4.3	0:06	$4.48
	Malaspina	Haines -	Summer	176		0	0															
		Skagway	Winter			0	0															
	Mainline	Haines -	Summer	222	22	2	6			1:24	0:36	0:36	2:36	0:51	3:27	17.60	6.00	2.2	14.00	4.3	0:06	$4.48
		Skagway	Winter	176	18	1	3			1:24	0:36	0:36	2:36	0:51	3:27	17.60	6.00	2.2	14.00	4.3	0:06	$4.48
Alt 2B: East Lynn KTZ	New Shuttle	Haines -	Summer	36	36	14	72			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
	New Day Boats	Skagway	Winter	106	21	28	85	12.0	2:02		0:20	0:20	2:42	1:18	4:00	39.00	12.50	2.2	30.23	4.3	0:06	$4.48
Alt 3: West Lynn	New Shuttle	Haines -	Summer	82	16	42	98			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter		16	28	66			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
Alt 4A: FVF Auke Bay	New Shuttle	Haines -	Summer	36	36	13	67			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter		36	3	15			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
	Mainline	Haines -	Summer	222	22	2	6			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter	176	18	1	3			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
Alt 4B: FVF Sawmill Cove	New Shuttle	Haines -	Summer	36	36	13	67			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter		36	3	15			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
	Mainline	Haines -	Summer	222	22	2	6			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter	176	18	1	3			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
Alt 4C: Dayboat Auke Bay	New Shuttle	Haines -	Summer	36	36	13	67			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter		36	3	15			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
	Mainline	Haines -	Summer	222	22	2	6			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter	176	18	1	3			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
Alt 4D: Dayboat Sawmill Cove	New Shuttle	Haines -	Summer	36	36	13	67			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter		36	3	15			0:50	0:10	0:10	1:10	0:51	2:01	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
	Mainline	Haines -	Summer	222	22	2	6			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48
		Skagway	Winter	176	18	1	3			1:24	0:36	0:36	2:36	0:51	3:27	22.00	7.50	2.2	17.50	4.3	0:06	$4.48

Notes:
Fares are based on a 16-19ft vehicle.
Assumed delay time is 1/4 of headway or check-in, reservation wait time
Distances measured from Auke Bay Terminal and Downtown Haines is 3rd & Main
Different formulas based on unique attributes of each alternative
Alt 2B winter ferry delay is based on analysis of predicted delay for each possible ferry connection

HNS/SGY share of vessels operating solely in Lynn Canal, but carrying JUN traffic	20%
HNS/SGY share of vessels carrying traffic outside Lynn Canal	10%
Driving speed (mph):	45
Driving cost ($/mi):	1.042
Existing fare reduction:	0%
1B fare reduction:	20%

Auke Bay to Echo Cove:	25.8
Echo Cove to Sawmill Cove:	5.2
Echo Cove to Katzehin Delta:	50.5
William Henry to Mud Bay:	38.9
Mud Bay to Downtown Haines:	2.2
Downtown Haines to Lutak:	4.3
Auke Bay to Skagway:	95.3
Katzehin to Downtown Haines:	5.3

TABLE A-23

March 27, 2014

Haines - Skagway Winter Delay
Alternative 2B

Katzehin - Haines 12 hour Winter Schedule

check-in	load	depart HNS	travel	unload	check-in	load	depart Katzehin	travel	unload	check-in	load
0:13	0:10	6:00	0:27	0:10	0:13	0:10	7:00	0:27	0:10	0:13	0:10
		8:00	0:27	0:10	0:13	0:10	9:00	0:27	0:10	0:13	0:10
		10:00	0:27	0:10	0:13	0:10	11:00	0:27	0:10	0:13	0:10
		12:00	0:27	0:10	0:13	0:10	13:00	0:27	0:10	0:13	0:10
		14:00	0:27	0:10	0:13	0:10	15:00	0:27	0:10	0:13	0:10
		16:00	0:27	0:10	0:13	0:10	17:00	0:27	0:10		
									17:37		

Katzehin - Skagway 12 hour Winter Schedule

checkin	load	depart SGY	travel	unload	check-in	load	depart Katzehin	travel	unload	check-in	load
0:19	0:10	6:00	0:51	0:10	0:19	0:10	7:30	0:51	0:10	0:19	0:10
		9:00	0:51	0:10	0:19	0:10	10:30	0:51	0:10	0:19	0:10
		12:00	0:51	0:10	0:19	0:10	13:30	0:51	0:10	0:19	0:10
		15:00	0:51	0:10	0:19	0:10	16:30	0:51	0:10		
									17:31		

Haines to Skagway Travel

Delay at HNS	load	depart HNS	travel	unload	arrive KTZ	delay	load	depart KTZ	travel	unload	arrive SGY	Total Delay
0:30	0:10	6:00	0:27	0:10	6:37	0:43	0:10	7:30	0:51	0:10	8:31	1:13
0:30	0:10	8:00	0:27	0:10	8:37	1:43	0:10	10:30	0:51	0:10	11:31	2:13
0:30	0:10	10:00	0:27	0:10	10:37	2:43	0:10	13:30	0:51	0:10	14:31	3:13
0:30	0:10	12:00	0:27	0:10	12:37	0:43	0:10	13:30	0:51	0:10	14:31	1:13
0:30	0:10	14:00	0:27	0:10	14:37	1:43	0:10	16:30	0:51	0:10	17:31	2:13
0:30	0:10	16:00	0:27	0:10	16:37							

Skagway to Haines Travel

Delay at SGY	load	depart SGY	travel	unload	arrive KTZ	delay	load	depart KTZ	travel	unload	arrive HNS	Total Delay
0:45	0:10	6:00	0:51	0:10	7:01	1:49	0:10	9:00	0:27	0:10	9:37	2:34
0:45	0:10	9:00	0:51	0:10	10:01	0:49	0:10	11:00	0:27	0:10	11:37	1:34
0:45	0:10	12:00	0:51	0:10	13:01	1:49	0:10	15:00	0:27	0:10	15:37	2:34
0:45	0:10	15:00	0:51	0:10	16:01	0:49	0:10	17:00	0:27	0:10	17:37	1:34

Average Total Delay 2:02

TABLE A-24

User Benefits
Juneau - Haines & Skagway
Alternative 4C - Monohull Auke Bay

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		3.3	0.065%				
2011-50			(0.004%)				
2021-50			(0.025%)				
Existing Service	2015-16	3.3		68	68		
Alternative 1 - No Action	2017-50	3.3		86	86	86	86
Alternative 4C - Monohull Auke Bay	2021-50	3.3		102	102	103	102

	Modal Cost per User			AADT			Total Annual User Benefits (2013 $000)	
Fiscal Year	Alternative 1 No Action	Alternative 4C Monohull Auke Bay	Cost Reduction	Alternative 1 No Action	Alternative 4C Monohull Auke Bay	Annual Average Daily Users	Year of Travel	Present Value[3] @ 7.0% 7/1/14
2015	153	153	0	68	68	225	0	0
2016	153	153	0	68	68	225	0	0
2017	130	130	0	86	86	285	0	0
2018	130	130	0	86	86	285	0	0
2019	130	130	0	86	86	285	0	0
2020	130	130	0	86	86	285	0	0
2021	130	121	9	86	103	312	1,051	677
2022	130	121	9	86	103	312	1,050	632
2023	130	121	9	86	103	312	1,050	591
2024	130	121	9	86	103	312	1,050	552
2025	130	121	9	86	102	312	1,050	516
2026	130	121	9	86	102	312	1,049	482
2027	130	121	9	86	102	312	1,049	450
2028	130	121	9	86	102	311	1,049	421
2029	130	121	9	86	102	311	1,049	393

Fiscal Year	Modal Cost per User: Alternative 1 No Action	Modal Cost per User: Alternative 4C Monohull Auke Bay	Modal Cost per User: Cost Reduction	AADT: Alternative 1 No Action	AADT: Alternative 4C Monohull Auke Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Year of Travel	Total Annual User Benefits (2013 $000): Present Value[3] @ 7.0% 7/1/14
2030	130	121	9	86	102	311	1,048	367
2031	130	121	9	86	102	311	1,048	343
2032	130	121	9	86	102	311	1,048	321
2033	130	121	9	86	102	311	1,048	300
2034	130	121	9	86	102	311	1,047	280
2035	130	121	9	86	102	311	1,047	262
2036	130	121	9	86	102	311	1,047	244
2037	130	121	9	86	102	311	1,046	228
2038	130	121	9	86	102	311	1,046	213
2039	130	121	9	86	102	311	1,046	199
2040	130	121	9	86	102	311	1,046	186
2041	130	121	9	86	102	310	1,045	174
2042	130	121	9	86	102	310	1,045	163
2043	130	121	9	86	102	310	1,045	152
2044	130	121	9	86	102	310	1,045	142
2045	130	121	9	86	102	310	1,044	133
2046	130	121	9	86	102	310	1,044	124
2047	130	121	9	86	102	310	1,044	116
2048	130	121	9	86	102	310	1,044	108
2049	130	121	9	86	102	310	1,043	101
2050	130	121	9	86	102	310	1,043	94
Total				3,067	3,548		31,406	8,964

Note:

1. 2011-2020 and 2011-2050 from Table 5.1, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4. 2020-2050 calculated.
2. Table 7, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-25

User Benefits
Juneau - Haines & Skagway
Alternative 1B - Enhanced Service

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		3.3	0.065%				
2011-50			(0.004%)				
2021-50			(0.025%)				
Existing Service	2015-16	3.3		68	68		
Alternative 1 - No Action	2017-20	3.3		86	86		
Alternative 4C - Monohull Auke Bay	2021-50	3.3		102	102	103	102
Alternative 1B - Enhanced Service	2017-50	3.3		114	114	115	114

	Modal Cost per User			AADT			Total Annual User Benefits (2013 $000)					
							Alternative 1B vs. 4C		Alternative 4C vs. No Action		Alternative 1B vs. No Action	
Fiscal Year	Alternative 4C Monohull Auke Bay	Alternative 1B Enhanced Service	Cost Reduction	Alternative 4C Monohull Auke Bay	Alternative 1B Enhanced Service	Annual Average Daily Users	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14
2015	153	153	0	68	68	225	0	0	0	0	0	0
2016	153	153	0	68	68	225	0	0	0	0	0	0
2017	130	122	9	86	114	331	1,078	910	0	0	1,078	910
2018	130	122	9	86	114	331	1,079	851	0	0	1,079	851
2019	130	122	9	86	115	332	1,079	796	0	0	1,079	796
2020	130	122	9	86	115	332	1,080	744	0	0	1,080	744
2021	121	122	0	103	115	358	(40)	(26)	1,051	677	1,010	651
2022	121	122	0	103	115	358	(40)	(24)	1,050	632	1,010	608
2023	121	122	0	103	115	358	(40)	(23)	1,050	591	1,010	568
2024	121	122	0	103	115	358	(40)	(21)	1,050	552	1,009	531
2025	121	122	0	102	115	358	(40)	(20)	1,050	516	1,009	496
2026	121	122	0	102	115	358	(40)	(19)	1,049	482	1,009	463
2027	121	122	0	102	114	358	(40)	(17)	1,049	450	1,009	433

Fiscal Year	Modal Cost per User: Alternative 4C Monohull Auke Bay	Modal Cost per User: Alternative 1B Enhanced Service	Modal Cost per User: Cost Reduction	AADT: Alternative 4C Monohull Auke Bay	AADT: Alternative 1B Enhanced Service	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 1B vs. 4C: Year of Travel	Alternative 1B vs. 4C: Present Value[3] @ 7.0% 7/1/14	Alternative 4C vs. No Action: Year of Travel	Alternative 4C vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 1B vs. No Action: Year of Travel	Alternative 1B vs. No Action: Present Value[3] @ 7.0% 7/1/14
2028	121	122	0	102	114	358	(40)	(16)	1,049	421	1,008	405
2029	121	122	0	102	114	358	(40)	(15)	1,049	393	1,008	378
2030	121	122	0	102	114	358	(40)	(14)	1,048	367	1,008	353
2031	121	122	0	102	114	358	(40)	(13)	1,048	343	1,008	330
2032	121	122	0	102	114	357	(40)	(12)	1,048	321	1,007	308
2033	121	122	0	102	114	357	(40)	(12)	1,048	300	1,007	288
2034	121	122	0	102	114	357	(40)	(11)	1,047	280	1,007	269
2035	121	122	0	102	114	357	(40)	(10)	1,047	262	1,007	252
2036	121	122	0	102	114	357	(40)	(9)	1,047	244	1,006	235
2037	121	122	0	102	114	357	(40)	(9)	1,046	228	1,006	220
2038	121	122	0	102	114	357	(40)	(8)	1,046	213	1,006	205
2039	121	122	0	102	114	357	(40)	(8)	1,046	199	1,006	192
2040	121	122	0	102	114	357	(40)	(7)	1,046	186	1,005	179
2041	121	122	0	102	114	357	(40)	(7)	1,045	174	1,005	167
2042	121	122	0	102	114	357	(40)	(6)	1,045	163	1,005	156
2043	121	122	0	102	114	357	(40)	(6)	1,045	152	1,005	146
2044	121	122	0	102	114	356	(40)	(5)	1,045	142	1,004	136
2045	121	122	0	102	114	356	(40)	(5)	1,044	133	1,004	128
2046	121	122	0	102	114	356	(40)	(5)	1,044	124	1,004	119
2047	121	122	0	102	114	356	(40)	(4)	1,044	116	1,004	111
2048	121	122	0	102	114	356	(40)	(4)	1,044	108	1,004	104
2049	121	122	0	102	114	356	(40)	(4)	1,043	101	1,003	97
2050	121	122	0	102	114	356	(40)	(4)	1,043	94	1,003	91
Total				3,548	4,022		3,109	2,957	31,406	8,964	34,514	11,922

Note:

1. 2011-2020 and 2011-2050 from Table 5.1, *JAIP, SEIS, Traffic Forecast Report DRAFT*, Fehr & Peers, July 2013 Revision 4. 2020-2050 calculated.
2. Table 7, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT*, Fehr & Peers, July 2013 Revision 4.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-26

User Benefits
Juneau - Haines & Skagway
Alternative 4A - Fast Ferry Auke Bay

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		3.3	0.065%				
2011-50			(0.004%)				
2021-50			(0.025%)				
Existing Service	2015-16	3.3		68	68		
Alternative 1 - No Action	2017-20	3.3		86	86		
Alternative 1B - Enhanced Service	2017-50	3.3		114	114	115	114
Alternative 4A - Fast Ferry Auke Bay	2021-50	3.3		166	166	167	166

	Modal Cost per User			AADT			Total Annual User Benefits (2013 $000)					
							Alternative 4A vs. 1B		Alternative 1B vs. No Action		Alternative 4A vs. No Action	
Fiscal Year	Alternative 1B Enhanced Service	Alternative 4A Fast Ferry Auke Bay	Cost Reduction	Alternative 1B Enhanced Service	Alternative 4A Fast Ferry Auke Bay	Annual Average Daily Users	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14
2015	153	153	0	68	68	225	0	0	0	0	0	0
2016	153	153	0	68	68	225	0	0	0	0	0	0
2017	122	130	(9)	114	86	331	(1,078)	(910)	1,078	910	0	0
2018	122	130	(9)	114	86	331	(1,079)	(851)	1,079	851	0	0
2019	122	130	(9)	115	86	332	(1,079)	(796)	1,079	796	0	0
2020	122	130	(9)	115	86	332	(1,080)	(744)	1,080	744	0	0
2021	122	107	14	115	167	465	2,442	1,573	1,010	651	3,452	2,224
2022	122	107	14	115	167	465	2,441	1,470	1,010	608	3,451	2,078
2023	122	107	14	115	167	464	2,441	1,373	1,010	568	3,451	1,941
2024	122	107	14	115	167	464	2,440	1,283	1,009	531	3,450	1,814
2025	122	107	14	115	167	464	2,440	1,199	1,009	496	3,449	1,695
2026	122	107	14	115	167	464	2,439	1,120	1,009	463	3,448	1,584
2027	122	107	14	114	167	464	2,438	1,047	1,009	433	3,447	1,480

Fiscal Year	Modal Cost per User: Alternative 1B Enhanced Service	Modal Cost per User: Alternative 4A Fast Ferry Auke Bay	Modal Cost per User: Cost Reduction	AADT: Alternative 1B Enhanced Service	AADT: Alternative 4A Fast Ferry Auke Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4A vs. 1B Year of Travel	Alternative 4A vs. 1B Present Value[3] @ 7.0% 7/1/14	Alternative 1B vs. No Action Year of Travel	Alternative 1B vs. No Action Present Value[3] @ 7.0% 7/1/14	Alternative 4A vs. No Action Year of Travel	Alternative 4A vs. No Action Present Value[3] @ 7.0% 7/1/14
2028	122	107	14	114	167	464	2,438	978	1,008	405	3,446	1,383
2029	122	107	14	114	167	464	2,437	914	1,008	378	3,445	1,292
2030	122	107	14	114	167	464	2,437	854	1,008	353	3,445	1,207
2031	122	107	14	114	167	464	2,436	798	1,008	330	3,444	1,128
2032	122	107	14	114	167	463	2,435	745	1,007	308	3,443	1,054
2033	122	107	14	114	166	463	2,435	696	1,007	288	3,442	985
2034	122	107	14	114	166	463	2,434	651	1,007	269	3,441	920
2035	122	107	14	114	166	463	2,434	608	1,007	252	3,440	859
2036	122	107	14	114	166	463	2,433	568	1,006	235	3,440	803
2037	122	107	14	114	166	463	2,432	531	1,006	220	3,439	750
2038	122	107	14	114	166	463	2,432	496	1,006	205	3,438	701
2039	122	107	14	114	166	463	2,431	463	1,006	192	3,437	655
2040	122	107	14	114	166	462	2,431	433	1,005	179	3,436	612
2041	122	107	14	114	166	462	2,430	405	1,005	167	3,435	572
2042	122	107	14	114	166	462	2,429	378	1,005	156	3,434	534
2043	122	107	14	114	166	462	2,429	353	1,005	146	3,434	499
2044	122	107	14	114	166	462	2,428	330	1,004	136	3,433	466
2045	122	107	14	114	166	462	2,428	308	1,004	128	3,432	436
2046	122	107	14	114	166	462	2,427	288	1,004	119	3,431	407
2047	122	107	14	114	166	462	2,426	269	1,004	111	3,430	380
2048	122	107	14	114	166	462	2,426	251	1,004	104	3,429	356
2049	122	107	14	114	166	461	2,425	235	1,003	97	3,428	332
2050	122	107	14	114	166	461	2,425	220	1,003	91	3,428	310
Total				4,022	5,473		68,684	17,535	34,514	11,922	103,198	29,457

Note:

1. 2011-2020 and 2011-2050 from Table 5.1, *JAIP, SEIS, Traffic Forecast Report DRAFT*, Fehr & Peers, July 2013 Revision 4. 2020-2050 calculated.
2. Table 7, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT*, Fehr & Peers, July 2013 Revision 4.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-27

User Benefits
Juneau - Haines & Skagway
Alternative 4D - Monohull Berners Bay

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		3.3	0.065%				
2011-50			(0.004%)				
2021-50			(0.025%)				
Existing Service	2015-16	3.3		68	68		
Alternative 1 - No Action	2017-20	3.3		86	86		
Alternative 4A - Fast Ferry Auke Bay	2021-50	3.3		166	166	167	166
Alternative 4D - Monohull Berners Bay	2021-50	3.3		247	248	248	247

	Modal Cost per User			AADT			Total Annual User Benefits (2013 $000)					
							Alternative 4D vs. 4A		Alternative 4A vs. No Action		Alternative 4D vs. No Action	
Fiscal Year	Alternative 4A Fast Ferry Auke Bay	Alternative 4D Monohull Berners Bay	Cost Reduction	Alternative 4A Fast Ferry Auke Bay	Alternative 4D Monohull Berners Bay	Annual Average Daily Users	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14
2015	153	153	0	68	68	225	0	0	0	0	0	0
2016	153	153	0	68	68	225	0	0	0	0	0	0
2017	130	130	0	86	86	285	0	0	0	0	0	0
2018	130	130	0	86	86	285	0	0	0	0	0	0
2019	130	130	0	86	86	285	0	0	0	0	0	0
2020	130	130	0	86	86	285	0	0	0	0	0	0
2021	107	106	1	167	248	685	351	226	3,452	2,224	3,803	2,450
2022	107	106	1	167	248	685	351	211	3,451	2,078	3,802	2,289
2023	107	106	1	167	248	685	350	197	3,451	1,941	3,801	2,139
2024	107	106	1	167	248	685	350	184	3,450	1,814	3,800	1,998
2025	107	106	1	167	248	685	350	172	3,449	1,695	3,799	1,867
2026	107	106	1	167	248	685	350	161	3,448	1,584	3,798	1,744

Fiscal Year	Modal Cost per User: Alternative 4A Fast Ferry Auke Bay	Modal Cost per User: Alternative 4D Monohull Berners Bay	Modal Cost per User: Cost Reduction	AADT: Alternative 4A Fast Ferry Auke Bay	AADT: Alternative 4D Monohull Berners Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4D vs. 4A: Year of Travel	Alternative 4D vs. 4A: Present Value[3] @ 7.0% 7/1/14	Alternative 4A vs. No Action: Year of Travel	Alternative 4A vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 4D vs. No Action: Year of Travel	Alternative 4D vs. No Action: Present Value[3] @ 7.0% 7/1/14
2027	107	106	1	167	248	684	350	150	3,447	1,480	3,797	1,630
2028	107	106	1	167	248	684	350	140	3,446	1,383	3,796	1,523
2029	107	106	1	167	248	684	350	131	3,445	1,292	3,795	1,423
2030	107	106	1	167	248	684	350	123	3,445	1,207	3,794	1,330
2031	107	106	1	167	248	684	350	115	3,444	1,128	3,793	1,242
2032	107	106	1	167	248	684	350	107	3,443	1,054	3,793	1,161
2033	107	106	1	166	248	683	350	100	3,442	985	3,792	1,084
2034	107	106	1	166	248	683	349	93	3,441	920	3,791	1,013
2035	107	106	1	166	248	683	349	87	3,440	859	3,790	947
2036	107	106	1	166	247	683	349	82	3,440	803	3,789	885
2037	107	106	1	166	247	683	349	76	3,439	750	3,788	827
2038	107	106	1	166	247	682	349	71	3,438	701	3,787	772
2039	107	106	1	166	247	682	349	67	3,437	655	3,786	722
2040	107	106	1	166	247	682	349	62	3,436	612	3,785	674
2041	107	106	1	166	247	682	349	58	3,435	572	3,784	630
2042	107	106	1	166	247	682	349	54	3,434	534	3,783	589
2043	107	106	1	166	247	682	349	51	3,434	499	3,782	550
2044	107	106	1	166	247	681	349	47	3,433	466	3,781	514
2045	107	106	1	166	247	681	349	44	3,432	436	3,780	480
2046	107	106	1	166	247	681	348	41	3,431	407	3,779	449
2047	107	106	1	166	247	681	348	39	3,430	380	3,779	419
2048	107	106	1	166	247	681	348	36	3,429	356	3,778	392
2049	107	106	1	166	247	681	348	34	3,428	332	3,777	366
2050	107	106	1	166	247	680	348	32	3,428	310	3,776	342
Total				5,473	7,908		10,480	2,992	103,198	29,457	113,678	32,448

Note:

1. 2011-2020 and 2011-2050 from Table 5.1, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4. 2020-2050 calculated.
2. Table 7, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-28

User Benefits
Juneau - Haines & Skagway
Alternative 4B - Fast Ferry Berners Bay

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		3.3	0.065%				
2011-50			(0.004%)				
2021-50			(0.025%)				
Existing Service	2015-16	3.3		68	68		
Alternative 1 - No Action	2017-20	3.3		86	86		
Alternative 4D - Monohull Berners Bay	2021-50	3.3		247	248	248	247
Alternative 4B - Fast Ferry Berners Bay	2021-50	3.3		264	265	266	264

	Modal Cost per User			AADT			Total Annual User Benefits (2013 $000)					
							Alternative 4B vs. 4D		Alternative 4D vs. No Action		Alternative 4B vs. No Action	
Fiscal Year	Alternative 4D Fast Ferry Auke Bay	Alternative 4B Fast Ferry Berners Bay	Cost Reduction	Alternative 4D Fast Ferry Auke Bay	Alternative 4B Fast Ferry Berners Bay	Annual Average Daily Users	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14
2015	153	153	0	68	68	225	0	0	0	0	0	0
2016	153	153	0	68	68	225	0	0	0	0	0	0
2017	130	130	0	86	86	285	0	0	0	0	0	0
2018	130	130	0	86	86	285	0	0	0	0	0	0
2019	130	130	0	86	86	285	0	0	0	0	0	0
2020	130	130	0	86	86	285	0	0	0	0	0	0
2021	106	97	9	248	266	848	2,786	1,795	3,803	2,450	6,589	4,244
2022	106	97	9	248	265	848	2,785	1,677	3,802	2,289	6,587	3,966
2023	106	97	9	248	265	848	2,785	1,567	3,801	2,139	6,586	3,705
2024	106	97	9	248	265	847	2,784	1,464	3,800	1,998	6,584	3,462
2025	106	97	9	248	265	847	2,783	1,368	3,799	1,867	6,582	3,235
2026	106	97	9	248	265	847	2,783	1,278	3,798	1,744	6,581	3,022
2027	106	97	9	248	265	847	2,782	1,194	3,797	1,630	6,579	2,824

Fiscal Year	Modal Cost per User: Alternative 4D Fast Ferry Auke Bay	Modal Cost per User: Alternative 4B Fast Ferry Berners Bay	Modal Cost per User: Cost Reduction	AADT: Alternative 4D Fast Ferry Auke Bay	AADT: Alternative 4B Fast Ferry Berners Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4B vs. 4D: Year of Travel	Alternative 4B vs. 4D: Present Value[3] @ 7.0% 7/1/14	Alternative 4D vs. No Action: Year of Travel	Alternative 4D vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 4B vs. No Action: Year of Travel	Alternative 4B vs. No Action: Present Value[3] @ 7.0% 7/1/14
2028	106	97	9	248	265	847	2,781	1,116	3,796	1,523	6,577	2,639
2029	106	97	9	248	265	846	2,780	1,042	3,795	1,423	6,576	2,465
2030	106	97	9	248	265	846	2,780	974	3,794	1,330	6,574	2,304
2031	106	97	9	248	265	846	2,779	910	3,793	1,242	6,573	2,152
2032	106	97	9	248	265	846	2,778	850	3,793	1,161	6,571	2,011
2033	106	97	9	248	265	845	2,778	794	3,792	1,084	6,569	1,879
2034	106	97	9	248	265	845	2,777	742	3,791	1,013	6,568	1,756
2035	106	97	9	248	265	845	2,776	694	3,790	947	6,566	1,640
2036	106	97	9	247	265	845	2,776	648	3,789	885	6,564	1,533
2037	106	97	9	247	264	845	2,775	606	3,788	827	6,563	1,432
2038	106	97	9	247	264	844	2,774	566	3,787	772	6,561	1,338
2039	106	97	9	247	264	844	2,774	529	3,786	722	6,560	1,250
2040	106	97	9	247	264	844	2,773	494	3,785	674	6,558	1,168
2041	106	97	9	247	264	844	2,772	461	3,784	630	6,556	1,091
2042	106	97	9	247	264	844	2,772	431	3,783	589	6,555	1,020
2043	106	97	9	247	264	843	2,771	403	3,782	550	6,553	953
2044	106	97	9	247	264	843	2,770	376	3,781	514	6,552	890
2045	106	97	9	247	264	843	2,770	352	3,780	480	6,550	832
2046	106	97	9	247	264	843	2,769	329	3,779	449	6,548	777
2047	106	97	9	247	264	843	2,768	307	3,779	419	6,547	726
2048	106	97	9	247	264	842	2,767	287	3,778	392	6,545	679
2049	106	97	9	247	264	842	2,767	268	3,777	366	6,543	634
2050	106	97	9	247	264	842	2,766	250	3,776	342	6,542	592
Total				7,908	8,419		83,281	23,772	113,678	32,448	196,959	56,220

Note:

1. 2011-2020 and 2011-2050 from Table 5.1, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4. 2020-2050 calculated.
2. Table 7, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-29

User Benefits
Juneau - Haines & Skagway
Alternative 3 - West Lynn Highway

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		3.3	0.065%				
2011-50			(0.004%)				
2021-50			(0.025%)				
Existing Service	2015-16	3.3		68	68		
Alternative 1 - No Action	2017-20	3.3		86	86		
Alternative 4B - Fast Ferry Berners Bay	2021-50	3.3		264	265	266	264
Alternative 3 - West Lynn Highway	2021-50	2.3		653	654	657	652

Fiscal Year	Modal Cost per User: Alternative 4B Fast Ferry Berners Bay	Modal Cost per User: Alternative 3 West Lynn Highway	Modal Cost per User: Cost Reduction	AADT: Alternative 4B Fast Ferry Berners Bay	AADT: Alternative 3 West Lynn Highway	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 3 vs. 4B Year of Travel	Alternative 3 vs. 4B Present Value[3] @ 7.0% 7/1/14	Alternative 4B vs. No Action Year of Travel	Alternative 4B vs. No Action Present Value[3] @ 7.0% 7/1/14	Alternative 3 vs. No Action Year of Travel	Alternative 3 vs. No Action Present Value[3] @ 7.0% 7/1/14
2015	153	153	0	68	68	225	0	0	0	0	0	0
2016	153	153	0	68	68	225	0	0	0	0	0	0
2017	130	130	0	86	86	285	0	0	0	0	0	0
2018	130	130	0	86	86	285	0	0	0	0	0	0
2019	130	130	0	86	86	285	0	0	0	0	0	0
2020	130	130	0	86	86	285	0	0	0	0	0	0
2021	97	102	(5)	266	657	1,193	(2,084)	(1,342)	6,589	4,244	4,505	2,902
2022	97	102	(5)	265	657	1,193	(2,083)	(1,254)	6,587	3,966	4,504	2,711
2023	97	102	(5)	265	656	1,193	(2,083)	(1,172)	6,586	3,705	4,503	2,533
2024	97	102	(5)	265	656	1,192	(2,082)	(1,095)	6,584	3,462	4,502	2,367
2025	97	102	(5)	265	656	1,192	(2,082)	(1,023)	6,582	3,235	4,500	2,212
2026	97	102	(5)	265	656	1,192	(2,081)	(956)	6,581	3,022	4,499	2,067

Fiscal Year	Modal Cost per User: Alternative 4B Fast Ferry Berners Bay	Modal Cost per User: Alternative 3 West Lynn Highway	Modal Cost per User: Cost Reduction	AADT: Alternative 4B Fast Ferry Berners Bay	AADT: Alternative 3 West Lynn Highway	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 3 vs. 4B: Year of Travel	Alternative 3 vs. 4B: Present Value[3] @ 7.0% 7/1/14	Alternative 4B vs. No Action: Year of Travel	Alternative 4B vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 3 vs. No Action: Year of Travel	Alternative 3 vs. No Action: Present Value[3] @ 7.0% 7/1/14
2027	97	102	(5)	265	656	1,192	(2,081)	(893)	6,579	2,824	4,498	1,931
2028	97	102	(5)	265	656	1,191	(2,080)	(835)	6,577	2,639	4,497	1,804
2029	97	102	(5)	265	655	1,191	(2,080)	(780)	6,576	2,465	4,496	1,686
2030	97	102	(5)	265	655	1,191	(2,079)	(729)	6,574	2,304	4,495	1,575
2031	97	102	(5)	265	655	1,190	(2,079)	(681)	6,573	2,152	4,494	1,472
2032	97	102	(5)	265	655	1,190	(2,078)	(636)	6,571	2,011	4,493	1,375
2033	97	102	(5)	265	655	1,190	(2,078)	(594)	6,569	1,879	4,492	1,285
2034	97	102	(5)	265	655	1,190	(2,077)	(555)	6,568	1,756	4,490	1,200
2035	97	102	(5)	265	654	1,189	(2,077)	(519)	6,566	1,640	4,489	1,122
2036	97	102	(5)	265	654	1,189	(2,076)	(485)	6,564	1,533	4,488	1,048
2037	97	102	(5)	264	654	1,189	(2,076)	(453)	6,563	1,432	4,487	979
2038	97	102	(5)	264	654	1,188	(2,075)	(423)	6,561	1,338	4,486	915
2039	97	102	(5)	264	654	1,188	(2,075)	(395)	6,560	1,250	4,485	855
2040	97	102	(5)	264	654	1,188	(2,074)	(369)	6,558	1,168	4,484	799
2041	97	102	(5)	264	654	1,187	(2,074)	(345)	6,556	1,091	4,483	746
2042	97	102	(5)	264	653	1,187	(2,073)	(323)	6,555	1,020	4,482	697
2043	97	102	(5)	264	653	1,187	(2,073)	(301)	6,553	953	4,481	651
2044	97	102	(5)	264	653	1,187	(2,072)	(282)	6,552	890	4,479	609
2045	97	102	(5)	264	653	1,186	(2,072)	(263)	6,550	832	4,478	569
2046	97	102	(5)	264	653	1,186	(2,071)	(246)	6,548	777	4,477	531
2047	97	102	(5)	264	653	1,186	(2,071)	(230)	6,547	726	4,476	497
2048	97	102	(5)	264	652	1,185	(2,070)	(215)	6,545	679	4,475	464
2049	97	102	(5)	264	652	1,185	(2,070)	(201)	6,543	634	4,474	433
2050	97	102	(5)	264	652	1,185	(2,069)	(187)	6,542	592	4,473	405
Total				8,419	20,114		(62,294)	(17,781)	196,959	56,220	134,665	38,439

Note:

1. 2011-2020 and 2011-2050 from Table 5.1, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4. 2020-2050 calculated.
2. Table 7, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT* , Fehr & Peers, July 2013 Revision 4.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-30

User Benefits
Juneau - Haines & Skagway
Alternative 2B - East Lynn Highway

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		3.3	0.065%				
2011-50			(0.004%)				
2021-50			(0.025%)				
Existing Service	2015-16	3.3		68	68		
Alternative 1 - No Action	2017-20	3.3		86	86		
Alternative 3 - West Lynn Highway	2021-50	2.3		653	654	657	652
Alternative 2B - East Lynn Highway	2021-50	2.3		827	829	832	826

	Modal Cost per User			AADT			Total Annual User Benefits (2013 $000)					
							Alternative 2B vs. 3		Alternative 3 vs. No Action		Alternative 2B vs. No Action	
Fiscal Year	Alternative 3 West Lynn Highway	Alternative 2B East Lynn Highway	Cost Reduction	Alternative 3 West Lynn Highway	Alternative 2B East Lynn Highway	Annual Average Daily Users	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14	Year of Travel	Present Value[3] @ 7.0% 7/1/14
2015	153	153	0	68	68	225	0	0	0	0	0	0
2016	153	153	0	68	68	225	0	0	0	0	0	0
2017	130	130	0	86	86	285	0	0	0	0	0	0
2018	130	130	0	86	86	285	0	0	0	0	0	0
2019	130	130	0	86	86	285	0	0	0	0	0	0
2020	130	130	0	86	86	285	0	0	0	0	0	0
2021	102	87	15	657	832	1,712	9,372	6,037	4,505	2,902	13,877	8,939
2022	102	87	15	657	832	1,711	9,370	5,641	4,504	2,711	13,874	8,352
2023	102	87	15	656	831	1,711	9,367	5,271	4,503	2,533	13,870	7,804
2024	102	87	15	656	831	1,711	9,365	4,925	4,502	2,367	13,867	7,292
2025	102	87	15	656	831	1,710	9,363	4,601	4,500	2,212	13,863	6,813
2026	102	87	15	656	831	1,710	9,361	4,299	4,499	2,067	13,860	6,366
2027	102	87	15	656	831	1,709	9,358	4,017	4,498	1,931	13,856	5,948

Fiscal Year	Modal Cost per User: Alternative 3 West Lynn Highway	Modal Cost per User: Alternative 2B East Lynn Highway	Modal Cost per User: Cost Reduction	AADT: Alternative 3 West Lynn Highway	AADT: Alternative 2B East Lynn Highway	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 2B vs. 3: Year of Travel	Alternative 2B vs. 3: Present Value[3] @ 7.0% 7/1/14	Alternative 3 vs. No Action: Year of Travel	Alternative 3 vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 2B vs. No Action: Year of Travel	Alternative 2B vs. No Action: Present Value[3] @ 7.0% 7/1/14
2028	102	87	15	656	830	1,709	9,356	3,753	4,497	1,804	13,853	5,557
2029	102	87	15	655	830	1,708	9,354	3,507	4,496	1,686	13,850	5,192
2030	102	87	15	655	830	1,708	9,351	3,277	4,495	1,575	13,846	4,852
2031	102	87	15	655	830	1,708	9,349	3,061	4,494	1,472	13,843	4,533
2032	102	87	15	655	829	1,707	9,347	2,860	4,493	1,375	13,839	4,235
2033	102	87	15	655	829	1,707	9,344	2,673	4,492	1,285	13,836	3,957
2034	102	87	15	655	829	1,706	9,342	2,497	4,490	1,200	13,833	3,698
2035	102	87	15	654	829	1,706	9,340	2,333	4,489	1,122	13,829	3,455
2036	102	87	15	654	829	1,705	9,337	2,180	4,488	1,048	13,826	3,228
2037	102	87	15	654	828	1,705	9,335	2,037	4,487	979	13,822	3,016
2038	102	87	15	654	828	1,705	9,333	1,903	4,486	915	13,819	2,818
2039	102	87	15	654	828	1,704	9,330	1,778	4,485	855	13,815	2,633
2040	102	87	15	654	828	1,704	9,328	1,662	4,484	799	13,812	2,460
2041	102	87	15	654	828	1,703	9,326	1,552	4,483	746	13,809	2,299
2042	102	87	15	653	827	1,703	9,324	1,451	4,482	697	13,805	2,148
2043	102	87	15	653	827	1,702	9,321	1,355	4,481	651	13,802	2,007
2044	102	87	15	653	827	1,702	9,319	1,266	4,479	609	13,798	1,875
2045	102	87	15	653	827	1,702	9,317	1,183	4,478	569	13,795	1,752
2046	102	87	15	653	827	1,701	9,314	1,106	4,477	531	13,792	1,637
2047	102	87	15	653	826	1,701	9,312	1,033	4,476	497	13,788	1,529
2048	102	87	15	652	826	1,700	9,310	965	4,475	464	13,785	1,429
2049	102	87	15	652	826	1,700	9,307	902	4,474	433	13,781	1,335
2050	102	87	15	652	826	1,700	9,305	843	4,473	405	13,778	1,248
Total				20,114	25,345		280,158	79,968	134,665	38,439	414,823	118,407

Note:

1. 2011-2020 and 2011-2050 from Table 5.1, *JAIP, SEIS, Traffic Forecast Report DRAFT*, Fehr & Peers, July 2013 Revision 4. 2020-2050 calculated.
2. Table 7, Appendix D, *JAIP, SEIS, Traffic Forecast Report DRAFT*, Fehr & Peers, July 2013 Revision 4.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-31

User Benefits
Haines - Skagway
Alternative 4C - Monohull Auke Bay

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		2.2	0.0%				
2011-50			0.0%				
2021-50			0.0%				
Existing Service	2015-16	2.2		17	17		
Alternative 1 - No Action	2017-50	2.2		24	24	24	24
Alternative 4C - Monohull Auke Bay	2021-50	2.2		24	24	24	24

	Cost per User			AADT			Total Annual User Benefits (2013 $000)	
Fiscal Year	Alternative 1 No Action	Alternative 4C Monohull Auke Bay	Cost Reduction	Alternative 1 No Action	Alternative 4C Monohull Auke Bay	Annual Average Daily Users	During Year of Travel	Present Value[3] @ 7.0% 7/1/14
2015	54	54	0	17	17	37	0	0
2016	54	54	0	17	17	37	0	0
2017	42	42	0	24	24	54	0	0
2018	42	42	0	24	24	54	0	0
2019	42	42	0	24	24	54	0	0
2020	42	42	0	24	24	54	0	0
2021	42	41	1	24	24	54	12	8
2022	42	41	1	24	24	54	12	7
2023	42	41	1	24	24	54	12	7
2024	42	41	1	24	24	54	12	6
2025	42	41	1	24	24	54	12	6
2026	42	41	1	24	24	54	12	6
2027	42	41	1	24	24	54	12	5
2028	42	41	1	24	24	54	12	5
2029	42	41	1	24	24	54	12	5

Fiscal Year	Cost per User: Alternative 1 No Action	Cost per User: Alternative 4C Monohull Auke Bay	Cost per User: Cost Reduction	AADT: Alternative 1 No Action	AADT: Alternative 4C Monohull Auke Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): During Year of Travel	Total Annual User Benefits (2013 $000): Present Value[3] @ 7.0% 7/1/14
2030	42	41	1	24	24	54	12	4
2031	42	41	1	24	24	54	12	4
2032	42	41	1	24	24	54	12	4
2033	42	41	1	24	24	54	12	4
2034	42	41	1	24	24	54	12	3
2035	42	41	1	24	24	54	12	3
2036	42	41	1	24	24	54	12	3
2037	42	41	1	24	24	54	12	3
2038	42	41	1	24	24	54	12	2
2039	42	41	1	24	24	54	12	2
2040	42	41	1	24	24	54	12	2
2041	42	41	1	24	24	54	12	2
2042	42	41	1	24	24	54	12	2
2043	42	41	1	24	24	54	12	2
2044	42	41	1	24	24	54	12	2
2045	42	41	1	24	24	54	12	2
2046	42	41	1	24	24	54	12	1
2047	42	41	1	24	24	54	12	1
2048	42	41	1	24	24	54	12	1
2049	42	41	1	24	24	54	12	1
2050	42	41	1	24	24	54	12	1
Total				861	861		368	105

Notes:

1. Zero growth based on *Juneau Access Haines/Skagway Traffic Forecast* , McDowell Group, November 2012, p. 13. and Table 5.1, JAIP, SEIS, *Traffic Forecast Report* DRAFT, Fehr & Peers, July 2013 Revision 4.
2. Table A-18.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-32

User Benefits
Haines - Skagway
Alternative 1B - Enhanced Service

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		2.2	0.0%				
2011-50			0.0%				
2021-50			0.0%				
Existing Service	2015-16	2.2		17	17		
Alternative 1 - No Action	2017-20	2.2		24	24		
Alternative 4C - Monohull Auke Bay	2021-50	2.2		24	24	24	24
Alternative 1B - Enhanced Service	2017-50	2.2		24	24	24	24

Fiscal Year	Cost per User: Alternative 4C Monohull Auke Bay	Cost per User: Alternative 1B Enhanced Service	Cost per User: Cost Reduction	AADT: Alternative 4C Monohull Auke Bay	AADT: Alternative 1B Enhanced Service	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 1B vs. 4C Year of Travel	Alternative 1B vs. 4C Present Value[3] @ 7.0% 7/1/14	Alternative 4C vs. No Action Year of Travel	Alternative 4C vs. No Action Present Value[3] @ 7.0% 7/1/14	Alternative 1B vs. No Action Year of Travel	Alternative 1B vs. No Action Present Value[3] @ 7.0% 7/1/14
2015	54	54	0	17	17	37	0	0	0	0	0	0
2016	54	54	0	17	17	37	0	0	0	0	0	0
2017	42	38	4	24	24	54	68	58	0	0	68	58
2018	42	38	4	24	24	54	68	54	0	0	68	54
2019	42	38	4	24	24	54	68	50	0	0	68	50
2020	42	38	4	24	24	54	68	47	0	0	68	47
2021	41	38	3	24	24	54	56	36	12	8	68	44
2022	41	38	3	24	24	54	56	34	12	7	68	41
2023	41	38	3	24	24	54	56	32	12	7	68	38
2024	41	38	3	24	24	54	56	30	12	6	68	36
2025	41	38	3	24	24	54	56	28	12	6	68	34
2026	41	38	3	24	24	54	56	26	12	6	68	31

Fiscal Year	Cost per User: Alternative 4C Monohull Auke Bay	Cost per User: Alternative 1B Enhanced Service	Cost per User: Cost Reduction	AADT: Alternative 4C Monohull Auke Bay	AADT: Alternative 1B Enhanced Service	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 1B vs. 4C: Year of Travel	Alternative 1B vs. 4C: Present Value[3] @ 7.0% 7/1/14	Alternative 4C vs. No Action: Year of Travel	Alternative 4C vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 1B vs. No Action: Year of Travel	Alternative 1B vs. No Action: Present Value[3] @ 7.0% 7/1/14
2027	41	38	3	24	24	54	56	24	12	5	68	29
2028	41	38	3	24	24	54	56	23	12	5	68	27
2029	41	38	3	24	24	54	56	21	12	5	68	26
2030	41	38	3	24	24	54	56	20	12	4	68	24
2031	41	38	3	24	24	54	56	18	12	4	68	22
2032	41	38	3	24	24	54	56	17	12	4	68	21
2033	41	38	3	24	24	54	56	16	12	4	68	20
2034	41	38	3	24	24	54	56	15	12	3	68	18
2035	41	38	3	24	24	54	56	14	12	3	68	17
2036	41	38	3	24	24	54	56	13	12	3	68	16
2037	41	38	3	24	24	54	56	12	12	3	68	15
2038	41	38	3	24	24	54	56	11	12	2	68	14
2039	41	38	3	24	24	54	56	11	12	2	68	13
2040	41	38	3	24	24	54	56	10	12	2	68	12
2041	41	38	3	24	24	54	56	9	12	2	68	11
2042	41	38	3	24	24	54	56	9	12	2	68	11
2043	41	38	3	24	24	54	56	8	12	2	68	10
2044	41	38	3	24	24	54	56	8	12	2	68	9
2045	41	38	3	24	24	54	56	7	12	2	68	9
2046	41	38	3	24	24	54	56	7	12	1	68	8
2047	41	38	3	24	24	54	56	6	12	1	68	8
2048	41	38	3	24	24	54	56	6	12	1	68	7
2049	41	38	3	24	24	54	56	5	12	1	68	7
2050	41	38	3	24	24	54	56	5	12	1	68	6
Total				861	861		1,957	689	368	105	2,325	794

Notes:

1. Zero growth based on *Juneau Access Haines/Skagway Traffic Forecast* , McDowell Group, November 2012, p. 13. and Table 5.1, JAIP, SEIS, *Traffic Forecast Report* DRAFT, Fehr & Peers, July 2013 Revision 4.
2. Table A-18.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-33

User Benefits
Haines - Skagway
Alternative 4A - Fast Ferry Auke Bay

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		2.2	0.0%				
2011-50			0.0%				
2021-50			0.0%				
Existing Service	2015-16	2.2		17	17		
Alternative 1 - No Action	2017-20	2.2		24	24		
Alternative 1B - Enhanced Service	2017-50	2.2		24	24	24	24
Alternative 4A - Fast Ferry Auke Bay	2021-50	2.2		24	24	24	24

Fiscal Year	Cost per User: Alternative 1B Enhanced Service	Cost per User: Alternative 4A Fast Ferry Auke Bay	Cost per User: Cost Reduction	AADT: Alternative 1B Enhanced Service	AADT: Alternative 4A Fast Ferry Auke Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4A vs. 1B: Year of Travel	Alternative 4A vs. 1B: Present Value[3] @ 7.0% 7/1/14	Alternative 1B vs. No Action: Year of Travel	Alternative 1B vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 4A vs. No Action: Year of Travel	Alternative 4A vs. No Action: Present Value[3] @ 7.0% 7/1/14
2015	54	54	0	17	17	37	0	0	0	0	0	0
2016	54	54	0	17	17	37	0	0	0	0	0	0
2017	38	42	(4)	24	24	54	(68)	(58)	68	58	0	0
2018	38	42	(4)	24	24	54	(68)	(54)	68	54	0	0
2019	38	42	(4)	24	24	54	(68)	(50)	68	50	0	0
2020	38	42	(4)	24	24	54	(68)	(47)	68	47	0	0
2021	38	41	(3)	24	24	54	(56)	(36)	68	44	12	8
2022	38	41	(3)	24	24	54	(56)	(34)	68	41	12	7
2023	38	41	(3)	24	24	54	(56)	(32)	68	38	12	7
2024	38	41	(3)	24	24	54	(56)	(30)	68	36	12	6
2025	38	41	(3)	24	24	54	(56)	(28)	68	34	12	6
2026	38	41	(3)	24	24	54	(56)	(26)	68	31	12	6
2027	38	41	(3)	24	24	54	(56)	(24)	68	29	12	5

Fiscal Year	Cost per User: Alternative 1B Enhanced Service	Cost per User: Alternative 4A Fast Ferry Auke Bay	Cost per User: Cost Reduction	AADT: Alternative 1B Enhanced Service	AADT: Alternative 4A Fast Ferry Auke Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4A vs. 1B: Year of Travel	Alternative 4A vs. 1B: Present Value[3] @ 7.0% 7/1/14	Alternative 1B vs. No Action: Year of Travel	Alternative 1B vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 4A vs. No Action: Year of Travel	Alternative 4A vs. No Action: Present Value[3] @ 7.0% 7/1/14
2028	38	41	(3)	24	24	54	(56)	(23)	68	27	12	5
2029	38	41	(3)	24	24	54	(56)	(21)	68	26	12	5
2030	38	41	(3)	24	24	54	(56)	(20)	68	24	12	4
2031	38	41	(3)	24	24	54	(56)	(18)	68	22	12	4
2032	38	41	(3)	24	24	54	(56)	(17)	68	21	12	4
2033	38	41	(3)	24	24	54	(56)	(16)	68	20	12	4
2034	38	41	(3)	24	24	54	(56)	(15)	68	18	12	3
2035	38	41	(3)	24	24	54	(56)	(14)	68	17	12	3
2036	38	41	(3)	24	24	54	(56)	(13)	68	16	12	3
2037	38	41	(3)	24	24	54	(56)	(12)	68	15	12	3
2038	38	41	(3)	24	24	54	(56)	(11)	68	14	12	2
2039	38	41	(3)	24	24	54	(56)	(11)	68	13	12	2
2040	38	41	(3)	24	24	54	(56)	(10)	68	12	12	2
2041	38	41	(3)	24	24	54	(56)	(9)	68	11	12	2
2042	38	41	(3)	24	24	54	(56)	(9)	68	11	12	2
2043	38	41	(3)	24	24	54	(56)	(8)	68	10	12	2
2044	38	41	(3)	24	24	54	(56)	(8)	68	9	12	2
2045	38	41	(3)	24	24	54	(56)	(7)	68	9	12	2
2046	38	41	(3)	24	24	54	(56)	(7)	68	8	12	1
2047	38	41	(3)	24	24	54	(56)	(6)	68	8	12	1
2048	38	41	(3)	24	24	54	(56)	(6)	68	7	12	1
2049	38	41	(3)	24	24	54	(56)	(5)	68	7	12	1
2050	38	41	(3)	24	24	54	(56)	(5)	68	6	12	1
Total				861	861		(1,957)	(689)	2,325	794	368	105

Notes:

1. Zero growth based on *Juneau Access Haines/Skagway Traffic Forecast* , McDowell Group, November 2012, p. 13. and Table 5.1, JAIP, SEIS, *Traffic Forecast Report* DRAFT, Fehr & Peers, July 2013 Revision 4.
2. Table A-18.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-34

User Benefits
Haines - Skagway
Alternative 4D - Monohull Berners Bay

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		2.2	0.0%				
2011-50			0.0%				
2021-50			0.0%				
Existing Service	2015-16	2.2		17	17		
Alternative 1 - No Action	2017-20	2.2		24	24		
Alternative 4A - Fast Ferry Auke Bay	2021-50	2.2		24	24	24	24
Alternative 4D - Monohull Berners Bay	2021-50	2.2		24	24	24	24

Fiscal Year	Cost per User: Alternative 4A Fast Ferry Auke Bay	Cost per User: Alternative 4D Monohull Berners Bay	Cost per User: Cost Reduction	AADT: Alternative 4A Fast Ferry Auke Bay	AADT: Alternative 4D Monohull Berners Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4D vs. 4A: Year of Travel	Alternative 4D vs. 4A: Present Value[3] @ 7.0% 7/1/14	Alternative 4A vs. No Action: Year of Travel	Alternative 4A vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 4D vs. No Action: Year of Travel	Alternative 4D vs. No Action: Present Value[3] @ 7.0% 7/1/14
2015	54	54	0	17	17	37	0	0	0	0	0	0
2016	54	54	0	17	17	37	0	0	0	0	0	0
2017	42	42	0	24	24	54	0	0	0	0	0	0
2018	42	42	0	24	24	54	0	0	0	0	0	0
2019	42	42	0	24	24	54	0	0	0	0	0	0
2020	42	42	0	24	24	54	0	0	0	0	0	0
2021	41	41	0	24	24	54	0	0	12	8	12	8
2022	41	41	0	24	24	54	0	0	12	7	12	7
2023	41	41	0	24	24	54	0	0	12	7	12	7
2024	41	41	0	24	24	54	0	0	12	6	12	6
2025	41	41	0	24	24	54	0	0	12	6	12	6
2026	41	41	0	24	24	54	0	0	12	6	12	6

Fiscal Year	Cost per User: Alternative 4A Fast Ferry Auke Bay	Cost per User: Alternative 4D Monohull Berners Bay	Cost per User: Cost Reduction	AADT: Alternative 4A Fast Ferry Auke Bay	AADT: Alternative 4D Monohull Berners Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4D vs. 4A: Year of Travel	Alternative 4D vs. 4A: Present Value[3] @ 7.0% 7/1/14	Alternative 4A vs. No Action: Year of Travel	Alternative 4A vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 4D vs. No Action: Year of Travel	Alternative 4D vs. No Action: Present Value[3] @ 7.0% 7/1/14
2027	41	41	0	24	24	54	0	0	12	5	12	5
2028	41	41	0	24	24	54	0	0	12	5	12	5
2029	41	41	0	24	24	54	0	0	12	5	12	5
2030	41	41	0	24	24	54	0	0	12	4	12	4
2031	41	41	0	24	24	54	0	0	12	4	12	4
2032	41	41	0	24	24	54	0	0	12	4	12	4
2033	41	41	0	24	24	54	0	0	12	4	12	4
2034	41	41	0	24	24	54	0	0	12	3	12	3
2035	41	41	0	24	24	54	0	0	12	3	12	3
2036	41	41	0	24	24	54	0	0	12	3	12	3
2037	41	41	0	24	24	54	0	0	12	3	12	3
2038	41	41	0	24	24	54	0	0	12	2	12	2
2039	41	41	0	24	24	54	0	0	12	2	12	2
2040	41	41	0	24	24	54	0	0	12	2	12	2
2041	41	41	0	24	24	54	0	0	12	2	12	2
2042	41	41	0	24	24	54	0	0	12	2	12	2
2043	41	41	0	24	24	54	0	0	12	2	12	2
2044	41	41	0	24	24	54	0	0	12	2	12	2
2045	41	41	0	24	24	54	0	0	12	2	12	2
2046	41	41	0	24	24	54	0	0	12	1	12	1
2047	41	41	0	24	24	54	0	0	12	1	12	1
2048	41	41	0	24	24	54	0	0	12	1	12	1
2049	41	41	0	24	24	54	0	0	12	1	12	1
2050	41	41	0	24	24	54	0	0	12	1	12	1
Total				861	861		0	0	368	105	368	105

Notes:

1. Zero growth based on *Juneau Access Haines/Skagway Traffic Forecast* , McDowell Group, November 2012, p. 13. and Table 5.1, JAIP, SEIS, *Traffic Forecast Report* DRAFT, Fehr & Peers, July 2013 Revision 4.
2. Table A-18.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-35

User Benefits
Haines - Skagway
Alternative 4B - Fast Ferry Berners Bay

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		2.2	0.0%				
2011-50			0.0%				
2021-50			0.0%				
Existing Service	2015-16	2.2		17	17		
Alternative 1 - No Action	2017-20	2.2		24	24		
Alternative 4D - Monohull Berners Bay	2021-50	2.2		24	24	24	24
Alternative 4B - Fast Ferry Berners Bay	2021-50	2.2		24	24	24	24

Fiscal Year	Cost per User: Alternative 4D Fast Ferry Auke Bay	Cost per User: Alternative 4B Fast Ferry Berners Bay	Cost per User: Cost Reduction	AADT: Alternative 4D Fast Ferry Auke Bay	AADT: Alternative 4B Fast Ferry Berners Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4B vs. 4D Year of Travel	Alternative 4B vs. 4D Present Value[3] @ 7.0% 7/1/14	Alternative 4D vs. No Action Year of Travel	Alternative 4D vs. No Action Present Value[3] @ 7.0% 7/1/14	Alternative 4B vs. No Action Year of Travel	Alternative 4B vs. No Action Present Value[3] @ 7.0% 7/1/14
2015	54	54	0	17	17	37	0	0	0	0	0	0
2016	54	54	0	17	17	37	0	0	0	0	0	0
2017	42	42	0	24	24	54	0	0	0	0	0	0
2018	42	42	0	24	24	54	0	0	0	0	0	0
2019	42	42	0	24	24	54	0	0	0	0	0	0
2020	42	42	0	24	24	54	0	0	0	0	0	0
2021	41	41	0	24	24	54	0	0	12	8	12	8
2022	41	41	0	24	24	54	0	0	12	7	12	7
2023	41	41	0	24	24	54	0	0	12	7	12	7
2024	41	41	0	24	24	54	0	0	12	6	12	6
2025	41	41	0	24	24	54	0	0	12	6	12	6
2026	41	41	0	24	24	54	0	0	12	6	12	6
2027	41	41	0	24	24	54	0	0	12	5	12	5

Fiscal Year	Cost per User: Alternative 4D Fast Ferry Auke Bay	Cost per User: Alternative 4B Fast Ferry Berners Bay	Cost per User: Cost Reduction	AADT: Alternative 4D Fast Ferry Auke Bay	AADT: Alternative 4B Fast Ferry Berners Bay	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 4B vs. 4D: Year of Travel	Alternative 4B vs. 4D: Present Value[3] @ 7.0% 7/1/14	Alternative 4D vs. No Action: Year of Travel	Alternative 4D vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 4B vs. No Action: Year of Travel	Alternative 4B vs. No Action: Present Value[3] @ 7.0% 7/1/14
2028	41	41	0	24	24	54	0	0	12	5	12	5
2029	41	41	0	24	24	54	0	0	12	5	12	5
2030	41	41	0	24	24	54	0	0	12	4	12	4
2031	41	41	0	24	24	54	0	0	12	4	12	4
2032	41	41	0	24	24	54	0	0	12	4	12	4
2033	41	41	0	24	24	54	0	0	12	4	12	4
2034	41	41	0	24	24	54	0	0	12	3	12	3
2035	41	41	0	24	24	54	0	0	12	3	12	3
2036	41	41	0	24	24	54	0	0	12	3	12	3
2037	41	41	0	24	24	54	0	0	12	3	12	3
2038	41	41	0	24	24	54	0	0	12	2	12	2
2039	41	41	0	24	24	54	0	0	12	2	12	2
2040	41	41	0	24	24	54	0	0	12	2	12	2
2041	41	41	0	24	24	54	0	0	12	2	12	2
2042	41	41	0	24	24	54	0	0	12	2	12	2
2043	41	41	0	24	24	54	0	0	12	2	12	2
2044	41	41	0	24	24	54	0	0	12	2	12	2
2045	41	41	0	24	24	54	0	0	12	2	12	2
2046	41	41	0	24	24	54	0	0	12	1	12	1
2047	41	41	0	24	24	54	0	0	12	1	12	1
2048	41	41	0	24	24	54	0	0	12	1	12	1
2049	41	41	0	24	24	54	0	0	12	1	12	1
2050	41	41	0	24	24	54	0	0	12	1	12	1
Total				861	861		0	0	368	105	368	105

Notes:

1. Zero growth based on *Juneau Access Haines/Skagway Traffic Forecast* , McDowell Group, November 2012, p. 13. and Table 5.1, JAIP, SEIS, *Traffic Forecast Report* DRAFT, Fehr & Peers, July 2013 Revision 4.
2. Table A-18.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-36

User Benefits
Haines - Skagway
Alternative 3 - West Lynn Highway

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		2.2	0.0%				
2011-50			0.0%				
2021-50			0.0%				
Existing Service	2015-16	2.2		17	17		
Alternative 1 - No Action	2017-20	2.2		24	24		
Alternative 4B - Fast Ferry Berners Bay	2021-50	2.2		24	24	24	24
Alternative 3 - West Lynn Highway	2021-50	2.2		30	30	30	30

Fiscal Year	Cost per User: Alternative 4B Fast Ferry Berners Bay	Cost per User: Alternative 3 West Lynn Highway	Cost per User: Cost Reduction	AADT: Alternative 4B Fast Ferry Berners Bay	AADT: Alternative 3 West Lynn Highway	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 3 vs. 4B Year of Travel	Alternative 3 vs. 4B Present Value[3] @ 7.0% 7/1/14	Alternative 4B vs. No Action Year of Travel	Alternative 4B vs. No Action Present Value[3] @ 7.0% 7/1/14	Alternative 3 vs. No Action Year of Travel	Alternative 3 vs. No Action Present Value[3] @ 7.0% 7/1/14
2015	54	54	0	17	17	37	0	0	0	0	0	0
2016	54	54	0	17	17	37	0	0	0	0	0	0
2017	42	42	0	24	24	54	0	0	0	0	0	0
2018	42	42	0	24	24	54	0	0	0	0	0	0
2019	42	42	0	24	24	54	0	0	0	0	0	0
2020	42	42	0	24	24	54	0	0	0	0	0	0
2021	41	40	1	24	30	59	28	18	12	8	40	26
2022	41	40	1	24	30	59	28	17	12	7	40	24
2023	41	40	1	24	30	59	28	15	12	7	40	22
2024	41	40	1	24	30	59	28	14	12	6	40	21
2025	41	40	1	24	30	59	28	14	12	6	40	20
2026	41	40	1	24	30	59	28	13	12	6	40	18

Fiscal Year	Cost per User: Alternative 4B Fast Ferry Berners Bay	Cost per User: Alternative 3 West Lynn Highway	Cost per User: Cost Reduction	AADT: Alternative 4B Fast Ferry Berners Bay	AADT: Alternative 3 West Lynn Highway	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 3 vs. 4B: Year of Travel	Alternative 3 vs. 4B: Present Value[3] @ 7.0% 7/1/14	Alternative 4B vs. No Action: Year of Travel	Alternative 4B vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 3 vs. No Action: Year of Travel	Alternative 3 vs. No Action: Present Value[3] @ 7.0% 7/1/14
2027	41	40	1	24	30	59	28	12	12	5	40	17
2028	41	40	1	24	30	59	28	11	12	5	40	16
2029	41	40	1	24	30	59	28	10	12	5	40	15
2030	41	40	1	24	30	59	28	10	12	4	40	14
2031	41	40	1	24	30	59	28	9	12	4	40	13
2032	41	40	1	24	30	59	28	8	12	4	40	12
2033	41	40	1	24	30	59	28	8	12	4	40	11
2034	41	40	1	24	30	59	28	7	12	3	40	11
2035	41	40	1	24	30	59	28	7	12	3	40	10
2036	41	40	1	24	30	59	28	6	12	3	40	9
2037	41	40	1	24	30	59	28	6	12	3	40	9
2038	41	40	1	24	30	59	28	6	12	2	40	8
2039	41	40	1	24	30	59	28	5	12	2	40	8
2040	41	40	1	24	30	59	28	5	12	2	40	7
2041	41	40	1	24	30	59	28	5	12	2	40	7
2042	41	40	1	24	30	59	28	4	12	2	40	6
2043	41	40	1	24	30	59	28	4	12	2	40	6
2044	41	40	1	24	30	59	28	4	12	2	40	5
2045	41	40	1	24	30	59	28	3	12	2	40	5
2046	41	40	1	24	30	59	28	3	12	1	40	5
2047	41	40	1	24	30	59	28	3	12	1	40	4
2048	41	40	1	24	30	59	28	3	12	1	40	4
2049	41	40	1	24	30	59	28	3	12	1	40	4
2050	41	40	1	24	30	59	28	2	12	1	40	4
Total				861	1,024		826	236	368	105	1,194	340

Notes:

1. Zero growth based on *Juneau Access Haines/Skagway Traffic Forecast* , McDowell Group, November 2012, p. 13. and Table 5.1, JAIP, SEIS, *Traffic Forecast Report* DRAFT, Fehr & Peers, July 2013 Revision 4.
2. Table A-18.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-37

User Benefits
Haines - Skagway
Alternative 2B - East Lynn Highway

	Period of Service (Fiscal Years)	Users per Vehicle	Annual Growth in AADT[1]	AADT 2011[2]	AADT FY 2015	AADT FY 2021	AADT FY 2050
2011-20		2.2	0.0%				
2011-50			0.0%				
2021-50			0.0%				
Existing Service	2015-16	2.2		17	17		
Alternative 1 - No Action	2017-20	2.2		24	24		
Alternative 3 - West Lynn Highway	2021-50	2.2		30	30	30	30
Alternative 2B - East Lynn Highway	2021-50	2.2		24	24	24	24

Fiscal Year	Cost per User: Alternative 3 West Lynn Highway	Cost per User: Alternative 2B East Lynn Highway	Cost per User: Cost Reduction	AADT: Alternative 3 West Lynn Highway	AADT: Alternative 2B East Lynn Highway	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 2B vs. 3 Year of Travel	Alternative 2B vs. 3 Present Value[3] @ 7.0% 7/1/14	Alternative 3 vs. No Action Year of Travel	Alternative 3 vs. No Action Present Value[3] @ 7.0% 7/1/14	Alternative 2B vs. No Action Year of Travel	Alternative 2B vs. No Action Present Value[3] @ 7.0% 7/1/14
2015	54	54	0	17	17	37	0	0	0	0	0	0
2016	54	54	0	17	17	37	0	0	0	0	0	0
2017	42	42	0	24	24	54	0	0	0	0	0	0
2018	42	42	0	24	24	54	0	0	0	0	0	0
2019	42	42	0	24	24	54	0	0	0	0	0	0
2020	42	42	0	24	24	54	0	0	0	0	0	0
2021	40	43	(3)	30	24	59	(66)	(43)	40	26	(26)	(17)
2022	40	43	(3)	30	24	59	(66)	(40)	40	24	(26)	(16)
2023	40	43	(3)	30	24	59	(66)	(37)	40	22	(26)	(15)
2024	40	43	(3)	30	24	59	(66)	(35)	40	21	(26)	(14)
2025	40	43	(3)	30	24	59	(66)	(33)	40	20	(26)	(13)
2026	40	43	(3)	30	24	59	(66)	(30)	40	18	(26)	(12)
2027	40	43	(3)	30	24	59	(66)	(28)	40	17	(26)	(11)

Fiscal Year	Cost per User: Alternative 3 West Lynn Highway	Cost per User: Alternative 2B East Lynn Highway	Cost per User: Cost Reduction	AADT: Alternative 3 West Lynn Highway	AADT: Alternative 2B East Lynn Highway	Annual Average Daily Users	Total Annual User Benefits (2013 $000): Alternative 2B vs. 3: Year of Travel	Alternative 2B vs. 3: Present Value[3] @ 7.0% 7/1/14	Alternative 3 vs. No Action: Year of Travel	Alternative 3 vs. No Action: Present Value[3] @ 7.0% 7/1/14	Alternative 2B vs. No Action: Year of Travel	Alternative 2B vs. No Action: Present Value[3] @ 7.0% 7/1/14
2028	40	43	(3)	30	24	59	(66)	(27)	40	16	(26)	(11)
2029	40	43	(3)	30	24	59	(66)	(25)	40	15	(26)	(10)
2030	40	43	(3)	30	24	59	(66)	(23)	40	14	(26)	(9)
2031	40	43	(3)	30	24	59	(66)	(22)	40	13	(26)	(9)
2032	40	43	(3)	30	24	59	(66)	(20)	40	12	(26)	(8)
2033	40	43	(3)	30	24	59	(66)	(19)	40	11	(26)	(8)
2034	40	43	(3)	30	24	59	(66)	(18)	40	11	(26)	(7)
2035	40	43	(3)	30	24	59	(66)	(17)	40	10	(26)	(7)
2036	40	43	(3)	30	24	59	(66)	(15)	40	9	(26)	(6)
2037	40	43	(3)	30	24	59	(66)	(14)	40	9	(26)	(6)
2038	40	43	(3)	30	24	59	(66)	(13)	40	8	(26)	(5)
2039	40	43	(3)	30	24	59	(66)	(13)	40	8	(26)	(5)
2040	40	43	(3)	30	24	59	(66)	(12)	40	7	(26)	(5)
2041	40	43	(3)	30	24	59	(66)	(11)	40	7	(26)	(4)
2042	40	43	(3)	30	24	59	(66)	(10)	40	6	(26)	(4)
2043	40	43	(3)	30	24	59	(66)	(10)	40	6	(26)	(4)
2044	40	43	(3)	30	24	59	(66)	(9)	40	5	(26)	(4)
2045	40	43	(3)	30	24	59	(66)	(8)	40	5	(26)	(3)
2046	40	43	(3)	30	24	59	(66)	(8)	40	5	(26)	(3)
2047	40	43	(3)	30	24	59	(66)	(7)	40	4	(26)	(3)
2048	40	43	(3)	30	24	59	(66)	(7)	40	4	(26)	(3)
2049	40	43	(3)	30	24	59	(66)	(6)	40	4	(26)	(3)
2050	40	43	(3)	30	24	59	(66)	(6)	40	4	(26)	(2)
Total				1,024	861		(1,985)	(566)	1,194	340	(791)	(225)

Notes:

1. Zero growth based on *Juneau Access Haines/Skagway Traffic Forecast* , McDowell Group, November 2012, p. 13. and Table 5.1, JAIP, SEIS, *Traffic Forecast Report* DRAFT, Fehr & Peers, July 2013 Revision 4.
2. Table A-18.
3. Present value at private sector real rate of return of 7.0 percent.

TABLE A-38

Construction Costs (Residual Values)
Alternative 1 - No Action
(2013 $000)

	Acquisition Costs			Construction Period	Useful Life
	Roads	Ferry Terminals	Total	(Years)	(Years)
Road & Ferry Terminals					
Earthwork			0	6	80
Structures			0	6	60
Other			0	6	25
Right of Way			0	1	100
Subtotal	0	0	0		
New Vessels					
Steel displacement vessels			0	2	60
Aluminum fast vessels			0	2	32
Total			0		

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2015	0	0	0	0	0		0			24,900	0	24,900	24,900	24,777	24,072
2016	0	0	0		0		0			5,575	(22,867)	(17,292)	(17,292)	(17,036)	(15,623)
2017	0	0	0		0		0			0	0	0	0	0	0
2018	0	0	0		0		0			0	0	0	0	0	0
2019	0	0	0		0		1,900			0	0	1,900	1,900	1,817	1,401
2020	0	0	0		0		1,900			17,475	0	19,375	19,375	18,343	13,355
2021					0		0	0	11,929	0	0	11,929	11,929	11,182	7,685
2022					0		0	0	11,929	0	0	11,929	11,929	11,072	7,182
2023					0		0	0		0	0	0	0	0	0
2024					0		0	0		0	0	0	0	0	0
2025					0		2,500	0		7,638	0	10,138	10,138	9,132	4,982
2026					0		2,500	0		0	0	2,500	2,500	2,230	1,148
2027					0		0	0		716	0	716	716	633	307
2028					0		0	0		0	0	0	0	0	0
2029					0		0	0		0	0	0	0	0	0
2030					0		3,300	0		5,638	0	8,938	8,938	7,660	3,132
2031					0		3,300	0		0	0	3,300	3,300	2,800	1,081
2032					0		0	0	23,204	0	0	23,204	23,204	19,495	7,101
2033					0		0	0	23,204	1,747	0	24,951	24,951	20,756	7,136
2034					0		0	0		0	0	0	0	0	0
2035					0		3,800	0		0	0	3,800	3,800	3,099	949
2036					0		3,800	0		0	0	3,800	3,800	3,068	887

Fiscal Year	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2037					0		0	0		0	0	0	0	0	0
2038					0		0	0		2,231	0	2,231	2,231	1,766	455
2039					0		0	0		0	0	0	0	0	0
2040					0		0	0		0	0	0	0	0	0
2041					0		0	0		0	0	0	0	0	0
2042					0		0	0		0	0	0	0	0	0
2043					0		0	0		1,999	0	1,999	1,999	1,505	291
2044			0		0		0	0		3,538	0	3,538	3,538	2,638	481
2045			0		0		28,700	0		0	0	28,700	28,700	21,188	3,645
2046					0		28,700	0		0	0	28,700	28,700	20,978	3,406
2047					0		0	0		0	0	0	0	0	0
2048					0		0	0		0	0	0	0	0	0
2049					0		0	0		1,438	0	1,438	1,438	1,020	139
2050	0	0	0	0	0	0	0	(49,683)	0	0	(47,155)	(96,838)	(96,838)	(68,020)	(8,768)
Total	0	0	0	0	0	0	80,400	(49,683)	70,266	72,894	(70,021)	103,855	103,855	100,101	64,444

TABLE A-39

Construction Costs (Residual Values)
Alternative 1B - Enhanced Service
(2013 $000)

	Acquisition Costs			Construction Period	Useful Life
	Roads	Ferry Terminals	Total	(Years)	(Years)
Road & Ferry Terminals					
Earthwork			0	6	80
Structures			0	6	60
Other			0	6	25
Right of Way			0	1	100
Subtotal	0	0	0		
New Vessels					
Steel displacement vessels			0	2	60
Aluminum fast vessels			0	2	32
Total			0		

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2015	0	0	0	0	0		0			24,900	0	24,900	24,900	24,777	24,072
2016	0	0	0		0		0			5,575	(8,331)	(2,756)	(2,756)	(2,715)	(2,490)
2017	0	0	0		0		0			0	0	0	0	0	0
2018	0	0	0		0		0			0	0	0	0	0	0
2019	0	0	0		0		1,900			0	0	1,900	1,900	1,817	1,401
2020	0	0	0		0		1,900			17,475	0	19,375	19,375	18,343	13,355
2021					0		0	0	60,170	0	0	60,170	60,170	56,401	38,760
2022					0		0	0	60,170	0	0	60,170	60,170	55,843	36,224
2023					0		0	0		0	0	0	0	0	0
2024					0		0	0		0	0	0	0	0	0
2025					0		2,500	0		7,638	0	10,138	10,138	9,132	4,982
2026					0		2,500	0		0	0	2,500	2,500	2,230	1,148
2027					0		0	0		3,631	0	3,631	3,631	3,207	1,559
2028					0		0	0		0	0	0	0	0	0
2029					0		0	0		0	0	0	0	0	0
2030					0		3,300	0		5,638	0	8,938	8,938	7,660	3,132
2031					0		3,300	0		0	0	3,300	3,300	2,800	1,081
2032					0		0	0	23,204	0	0	23,204	23,204	19,495	7,101
2033					0		0	0	23,204	8,567	0	31,771	31,771	26,429	9,087
2034					0		0	0		0	0	0	0	0	0
2035					0		3,800	0		0	0	3,800	3,800	3,099	949
2036					0		3,800	0		0	0	3,800	3,800	3,068	887

Fiscal Year	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2037					0		0	0		0	0	0	0	0	0
2038					0		0	0		5,751	0	5,751	5,751	4,552	1,173
2039					0		0	0		0	0	0	0	0	0
2040					0		0	0		0	0	0	0	0	0
2041					0		0	0		0	0	0	0	0	0
2042					0		0	0		0	0	0	0	0	0
2043					0		0	0		9,699	0	9,699	9,699	7,304	1,410
2044			0		0		0	0		3,538	0	3,538	3,538	2,638	481
2045			0		0		28,700	0		0	0	28,700	28,700	21,188	3,645
2046					0		28,700	0		0	0	28,700	28,700	20,978	3,406
2047					0		0	0		0	0	0	0	0	0
2048					0		0	0		0	0	0	0	0	0
2049					0		0	0		1,438	0	1,438	1,438	1,020	139
2050	0	0	0	0	0	0	0	(49,683)	0	0	(100,219)	(149,902)	(149,902)	(105,293)	(13,573)
Total	0	0	0	0	0	0	80,400	(49,683)	166,747	93,849	(108,550)	182,762	182,762	183,972	137,930

TABLE A-40

Construction Costs (Residual Values)
Alternative 2B - East Lynn Highway
(2013 $000)

	Acquisition Costs			Construction Period	Useful Life
	Roads	Ferry Terminals	Total	(Years)	(Years)
Road & Ferry Terminals					
Earthwork	142,631	6,071	148,702	6	80
Structures	311,207	14,487	325,694	6	60
Other	67,193	8,202	75,395	6	25
Right of Way	1,700		1,700	1	100
Subtotal	522,731	28,760	551,491		
New Vessels					
Steel displacement vessels			22,315	2	60
Aluminum fast vessels				2	32
Total			573,806		

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2015	14,870	32,569	7,539	1,700	56,679		0	0		24,900	0	24,900	81,579	81,175	78,866
2016	29,740	65,139	15,079		109,958		0	0		5,575	(22,867)	(17,292)	92,666	91,294	83,723
2017	29,740	65,139	15,079		109,958		0	0		0	0	0	109,958	107,257	92,847
2018	29,740	65,139	15,079		109,958		0	0		0	0	0	109,958	106,195	86,773
2019	29,740	65,139	15,079		109,958	11,158	1,900	0		0	0	13,058	123,016	117,629	90,726
2020	14,870	32,569	7,539		54,979	11,158	1,900	0		17,475	(12,021)	18,511	73,490	69,577	50,655
2021					0		0	0				0	0	0	0
2022					0		0	0				0	0	0	0
2023					0		0	0				0	0	0	0
2024					0		700	0				700	700	637	368
2025					0		2,500	0				2,500	2,500	2,252	1,229
2026					0		2,500	0				2,500	2,500	2,230	1,148
2027					0		0	0				0	0	0	0
2028					0		0	0				0	0	0	0
2029					0		0	0				0	0	0	0
2030					0		4,100	0				4,100	4,100	3,514	1,437
2031					0		3,300	0				3,300	3,300	2,800	1,081
2032					0		0	0				0	0	0	0
2033					0		0	0				0	0	0	0
2034					0		0	0				0	0	0	0
2035					0		5,200	0				5,200	5,200	4,240	1,299
2036					0		3,800	0				3,800	3,800	3,068	887

Fiscal Year	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS	Present Value as of 7/1/14 @	
						New Vessel			Existing Vessel					1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total		
2037					0		0	0				0	0	0	0
2038					0		0	0				0	0	0	0
2039					0		0	0				0	0	0	0
2040					0		1,200	0				1,200	1,200	931	214
2041					0		0	0				0	0	0	0
2042					0		0	0				0	0	0	0
2043					0		0	0				0	0	0	0
2044			37,697		37,697		0	0				0	37,697	28,108	5,123
2045			37,697		37,697		28,700	0				28,700	66,397	49,017	8,432
2046					0		28,700	0				28,700	28,700	20,978	3,406
2047					0		0	0				0	0	0	0
2048					0		0	0				0	0	0	0
2049					0		0	0				0	0	0	0
2050	(92,939)	(162,847)	(60,316)	(1,190)	(317,292)	0	9,900	(60,841)	0	0	0	(50,941)	(368,233)	(258,651)	(33,342)
Total	55,763	162,847	90,474	510	309,594	22,315	94,400	(60,841)	0	47,951	(34,888)	68,937	378,531	432,250	474,871

TABLE A-41

Construction Costs (Residual Values)
Alternative 3 - West Lynn Highway
(2013 $000)

	Acquisition Costs			Construction Period	Useful Life
	Roads	Ferry Terminals	Total	(Years)	(Years)
Road & Ferry Terminals					
Earthwork	123,430	3,990	127,420	6	80
Structures	233,661	30,898	264,559	6	60
Other	62,971	11,707	74,678	6	25
Right of Way	1,500		1,500	1	100
Subtotal	421,562	46,595	468,157		
New Vessels					
Steel displacement vessels			48,906	2	60
Aluminum fast vessels				2	32
Total			517,062		

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2015	12,742	26,456	7,468	1,500	48,166		0	0		24,900	0	24,900	73,066	72,703	70,636
2016	25,484	52,912	14,936		93,331		0	0		5,575	(22,867)	(17,292)	76,040	74,913	68,701
2017	25,484	52,912	14,936		93,331		0	0		0	0	0	93,331	91,038	78,808
2018	25,484	52,912	14,936		93,331		0	0		0	0	0	93,331	90,137	73,652
2019	25,484	52,912	14,936		93,331	24,453	1,900	0		0	0	26,353	119,684	114,443	88,269
2020	12,742	26,456	7,468		46,666	24,453	1,900	0		17,475	(12,021)	31,806	78,472	74,293	54,088
2021					0		0	0				0	0	0	0
2022					0		0	0				0	0	0	0
2023					0		0	0				0	0	0	0
2024					0		1,500	0				1,500	1,500	1,365	789
2025					0		2,500	0				2,500	2,500	2,252	1,229
2026					0		2,500	0				2,500	2,500	2,230	1,148
2027					0		0	0				0	0	0	0
2028					0		0	0				0	0	0	0
2029					0		0	0				0	0	0	0
2030					0		5,100	0				5,100	5,100	4,371	1,787
2031					0		3,300	0				3,300	3,300	2,800	1,081
2032					0		0	0				0	0	0	0
2033					0		0	0				0	0	0	0
2034					0		0	0				0	0	0	0
2035					0		6,900	0				6,900	6,900	5,627	1,724
2036					0		3,800	0				3,800	3,800	3,068	887

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2037					0		0	0				0	0	0	0
2038					0		0	0				0	0	0	0
2039					0		0	0				0	0	0	0
2040					0		2,700	0				2,700	2,700	2,095	481
2041					0		0	0				0	0	0	0
2042					0		0	0				0	0	0	0
2043					0		0	0				0	0	0	0
2044			37,339		37,339		0	0				0	37,339	27,841	5,074
2045			37,339		37,339		28,700	0				28,700	66,039	48,753	8,387
2046					0		28,700	0				28,700	28,700	20,978	3,406
2047					0		0	0				0	0	0	0
2048					0		0	0				0	0	0	0
2049					0		0	0				0	0	0	0
2050	(79,637)	(132,279)	(59,743)	(1,050)	(272,709)	0	21,800	(74,136)	0	0	0	(52,336)	(325,046)	(228,316)	(29,432)
Total	47,782	132,279	89,614	450	270,126	48,906	111,300	(74,136)	0	47,951	(34,888)	99,132	369,258	410,592	430,714

TABLE A-42

Construction Costs (Residual Values)
Alternative 4A - Fast Ferry Auke Bay
(2013 $000)

	Acquisition Costs			Construction Period	Useful Life
	Roads	Ferry Terminals	Total	(Years)	(Years)
Road & Ferry Terminals					
Earthwork		1,643	1,643	6	80
Structures		35,783	35,783	6	60
Other		3,186	3,186	6	25
Right of Way			0	1	100
Subtotal	0	40,612	40,612		
New Vessels					
Steel displacement vessels			22,315	2	60
Aluminum fast vessels			164,406	2	32
Total			227,333		

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS	Present Value as of 7/1/14 @	
						New Vessel			Existing Vessel						
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2015	164	3,578	319	0	4,061		0	0		24,900	0	24,900	28,962	28,818	27,998
2016	329	7,157	637		8,122		0	0		5,575	(22,867)	(17,292)	(9,169)	(9,034)	(8,284)
2017	329	7,157	637		8,122		0	0		0	0	0	8,122	7,923	6,858
2018	329	7,157	637		8,122		0	0		0	0	0	8,122	7,844	6,410
2019	329	7,157	637		8,122	93,361	1,900	0		0	0	95,261	103,383	98,856	76,247
2020	164	3,578	319		4,061	93,361	1,900	(108,183)		17,475	0	4,552	8,614	8,155	5,937
2021					0		0	0	11,929	0	0	11,929	11,929	11,182	7,685
2022					0		8,200	0	11,929	0	0	20,129	20,129	18,682	12,119
2023					0		0	0		0	0	0	0	0	0
2024					0		700	0		0	0	700	700	637	368
2025					0		0	0		7,638	0	7,638	7,638	6,880	3,753
2026					0		0	0		0	0	0	0	0	0
2027					0		0	0		716	0	716	716	633	307
2028					0		19,800	0		0	0	19,800	19,800	17,311	7,943
2029					0		0	0		0	0	0	0	0	0
2030					0		800	0		5,638	0	6,438	6,438	5,517	2,256
2031					0		82,200	0		0	0	82,200	82,200	69,754	26,918
2032					0		0	0	23,204	0	0	23,204	23,204	19,495	7,101
2033					0		0	0	23,204	1,747	0	24,951	24,951	20,756	7,136
2034					0		0	0		0	0	0	0	0	0
2035					0		1,400	0		0	0	1,400	1,400	1,142	350
2036					0		57,400	0		0	0	57,400	57,400	46,345	13,402

Fiscal Year	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2037					0		0	0		0	0	0	0	0	0
2038					0		0	0		2,231	0	2,231	2,231	1,766	455
2039					0		0	0		0	0	0	0	0	0
2040					0		1,200	0		0	0	1,200	1,200	931	214
2041					0		82,200	0		0	0	82,200	82,200	63,147	13,684
2042					0		0	0		0	0	0	0	0	0
2043					0		0	0		1,999	0	1,999	1,999	1,505	291
2044			1,593		1,593		19,800	0		3,538	0	23,338	24,931	18,589	3,388
2045			1,593		1,593		0	0		0	0	0	1,593	1,176	202
2046					0		0	0		0	0	0	0	0	0
2047					0		0	0		0	0	0	0	0	0
2048					0		0	0		0	0	0	0	0	0
2049					0		0	0		1,438	0	1,438	1,438	1,020	139
2050	(1,027)	(17,891)	(2,549)	0	(21,467)	0	9,900	(21,433)	0	0	(47,155)	(58,688)	(80,155)	(56,302)	(7,258)
Total	616	17,891	3,824	0	22,331	186,721	287,400	(129,616)	70,266	72,894	(70,021)	417,643	439,975	392,729	215,618

TABLE A-43

Construction Costs (Residual Values)
Alternative 4B - Fast Ferry Berners Bay
(2013 $000)

	Acquisition Costs			Construction Period	Useful Life
	Roads	Ferry Terminals	Total	(Years)	(Years)
Road & Ferry Terminals					
Earthwork	5,448	3,813	9,261	6	80
Structures	772	48,415	49,187	6	60
Other	1,801	7,365	9,166	6	25
Right of Way	0		0	1	100
Subtotal	8,021	59,593	67,615		
New Vessels					
Steel displacement vessels			22,315	2	60
Aluminum fast vessels			196,617	2	32
Total			286,547		

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2015	926	4,919	917	0	6,761		0	0		24,900	0	24,900	31,662	31,505	30,609
2016	1,852	9,837	1,833		13,523		0	0		5,575	(22,867)	(17,292)	(3,769)	(3,713)	(3,405)
2017	1,852	9,837	1,833		13,523		0	0		0	0	0	13,523	13,191	11,419
2018	1,852	9,837	1,833		13,523		0	0		0	0	0	13,523	13,060	10,672
2019	1,852	9,837	1,833		13,523	109,466	1,900	0		0	0	111,366	124,889	119,420	92,108
2020	926	4,919	917		6,761	109,466	1,900	(108,183)		17,475	0	20,658	27,419	25,959	18,899
2021					0		0	0	11,929	0	0	11,929	11,929	11,182	7,685
2022					0		9,800	0	11,929	0	0	21,729	21,729	20,167	13,082
2023					0		0	0		0	0	0	0	0	0
2024					0		700	0		0	0	700	700	637	368
2025					0		0	0		7,638	0	7,638	7,638	6,880	3,753
2026					0		0	0		0	0	0	0	0	0
2027					0		0	0		716	0	716	716	633	307
2028					0		23,600	0		0	0	23,600	23,600	20,634	9,467
2029					0		0	0		0	0	0	0	0	0
2030					0		800	0		5,638	0	6,438	6,438	5,517	2,256
2031					0		98,200	0		0	0	98,200	98,200	83,331	32,157
2032					0		0	0	23,204	0	0	23,204	23,204	19,495	7,101
2033					0		0	0	23,204	1,747	0	24,951	24,951	20,756	7,136
2034					0		0	0		0	0	0	0	0	0
2035					0		1,400	0		0	0	1,400	1,400	1,142	350
2036					0		68,600	0		0	0	68,600	68,600	55,388	16,017

Fiscal Year	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2037					0		0	0		0	0	0	0	0	0
2038					0		0	0		2,231	0	2,231	2,231	1,766	455
2039					0		0	0		0	0	0	0	0	0
2040					0		1,200	0		0	0	1,200	1,200	931	214
2041					0		98,200	0		0	0	98,200	98,200	75,439	16,347
2042					0		0	0		0	0	0	0	0	0
2043					0		0	0		1,999	0	1,999	1,999	1,505	291
2044			4,583		4,583		23,600	0		3,538	0	27,138	31,721	23,652	4,310
2045			4,583		4,583		0	0		0	0	0	4,583	3,383	582
2046					0		0	0		0	0	0	0	0	0
2047					0		0	0		0	0	0	0	0	0
2048					0		0	0		0	0	0	0	0	0
2049					0		0	0		1,438	0	1,438	1,438	1,020	139
2050	(5,788)	(24,594)	(7,333)	0	(37,715)	0	9,900	(23,446)	0	0	(47,155)	(60,701)	(98,416)	(69,128)	(8,911)
Total	3,473	24,594	10,999	0	39,066	218,932	339,800	(131,630)	70,266	72,894	(70,021)	500,241	539,307	483,751	273,408

TABLE A-44

Construction Costs (Residual Values)
Alternative 4C - Monohull Auke Bay
(2013 $000)

	Acquisition Costs			Construction Period	Useful Life
	Roads	Ferry Terminals	Total	(Years)	(Years)
Road & Ferry Terminals					
Earthwork		1,643	1,643	6	80
Structures		41,229	41,229	6	60
Other		6,320	6,320	6	25
Right of Way			0	1	100
Subtotal	0	49,192	49,192		
New Vessels					
Steel displacement vessels			22,315	2	60
Aluminum fast vessels				2	32
Total			71,508		

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2015	164	4,123	632	0	4,919		0	0		24,900	0	24,900	29,820	29,672	28,828
2016	329	8,246	1,264		9,838		0	0		5,575	(22,867)	(17,292)	(7,453)	(7,343)	(6,734)
2017	329	8,246	1,264		9,838		0	0		0	0	0	9,838	9,597	8,307
2018	329	8,246	1,264		9,838		0	0		0	0	0	9,838	9,502	7,764
2019	329	8,246	1,264		9,838	11,158	1,900	0		0	0	13,058	22,896	21,894	16,886
2020	164	4,123	632		4,919	11,158	1,900	0		17,475	0	30,533	35,452	33,564	24,436
2021					0		0	0	11,929	0	0	11,929	11,929	11,182	7,685
2022					0		0	0	11,929	0	0	11,929	11,929	11,072	7,182
2023					0		0	0		0	0	0	0	0	0
2024					0		700	0		0	0	700	700	637	368
2025					0		2,500	0		7,638	0	10,138	10,138	9,132	4,982
2026					0		2,500	0		0	0	2,500	2,500	2,230	1,148
2027					0		0	0		716	0	716	716	633	307
2028					0		0	0		0	0	0	0	0	0
2029					0		0	0		0	0	0	0	0	0
2030					0		4,100	0		5,638	0	9,738	9,738	8,346	3,412
2031					0		3,300	0		0	0	3,300	3,300	2,800	1,081
2032					0		0	0	23,204	0	0	23,204	23,204	19,495	7,101
2033					0		0	0	23,204	1,747	0	24,951	24,951	20,756	7,136
2034					0		0	0		0	0	0	0	0	0
2035					0		5,200	0		0	0	5,200	5,200	4,240	1,299
2036					0		3,800	0		0	0	3,800	3,800	3,068	887

Fiscal Year	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2037					0		0	0		0	0	0	0	0	0
2038					0		0	0		2,231	0	2,231	2,231	1,766	455
2039					0		0	0		0	0	0	0	0	0
2040					0		1,200	0		0	0	1,200	1,200	931	214
2041					0		0	0		0	0	0	0	0	0
2042					0		0	0		0	0	0	0	0	0
2043					0		0	0		1,999	0	1,999	1,999	1,505	291
2044			3,160		3,160		0	0		3,538	0	3,538	6,698	4,994	910
2045			3,160		3,160		28,700	0		0	0	28,700	31,860	23,520	4,046
2046					0		28,700	0		0	0	28,700	28,700	20,978	3,406
2047					0		0	0		0	0	0	0	0	0
2048					0		0	0		0	0	0	0	0	0
2049					0		0	0		1,438	0	1,438	1,438	1,020	139
2050	(1,027)	(20,615)	(5,056)	0	(26,698)	0	9,900	(60,841)	0	0	(47,155)	(98,096)	(124,793)	(87,656)	(11,300)
Total	616	20,615	7,584	0	28,815	22,315	94,400	(60,841)	70,266	72,894	(70,021)	129,013	157,828	157,533	120,238

TABLE A-45

Construction Costs (Residual Values)
Alternative 4D - Monohull Berners Bay
(2013 $000)

	Acquisition Costs			Construction Period	Useful Life
	Roads	Ferry Terminals	Total	(Years)	(Years)
Road & Ferry Terminals					
Earthwork	5,448	3,813	9,261	6	80
Structures	772	53,861	54,634	6	60
Other	1,801	10,499	12,300	6	25
Right of Way	0		0	1	100
Subtotal	8,021	68,174	76,195		
New Vessels					
Steel displacement vessels			22,315	2	60
Aluminum fast vessels				2	32
Total			98,510		

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS	Present Value as of 7/1/14 @	
						New Vessel			Existing Vessel						
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2015	926	5,463	1,230	0	7,619		0	0		24,900	0	24,900	32,520	32,359	31,438
2016	1,852	10,927	2,460		15,239		0	0		5,575	(22,867)	(17,292)	(2,053)	(2,022)	(1,855)
2017	1,852	10,927	2,460		15,239		0	0		0	0	0	15,239	14,865	12,868
2018	1,852	10,927	2,460		15,239		0	0		0	0	0	15,239	14,717	12,026
2019	1,852	10,927	2,460		15,239	11,158	1,900	0		0	0	13,058	28,297	27,058	20,869
2020	926	5,463	1,230		7,619	11,158	1,900	0		17,475	0	30,533	38,152	36,120	26,297
2021					0		0	0	11,929	0	0	11,929	11,929	11,182	7,685
2022					0		0	0	11,929	0	0	11,929	11,929	11,072	7,182
2023					0		0	0		0	0	0	0	0	0
2024					0		700	0		0	0	700	700	637	368
2025					0		2,500	0		7,638	0	10,138	10,138	9,132	4,982
2026					0		2,500	0		0	0	2,500	2,500	2,230	1,148
2027					0		0	0		716	0	716	716	633	307
2028					0		0	0		0	0	0	0	0	0
2029					0		0	0		0	0	0	0	0	0
2030					0		4,100	0		5,638	0	9,738	9,738	8,346	3,412
2031					0		3,300	0		0	0	3,300	3,300	2,800	1,081
2032					0		0	0	23,204	0	0	23,204	23,204	19,495	7,101
2033					0		0	0	23,204	1,747	0	24,951	24,951	20,756	7,136
2034					0		0	0		0	0	0	0	0	0
2035					0		5,200	0		0	0	5,200	5,200	4,240	1,299
2036					0		3,800	0		0	0	3,800	3,800	3,068	887

	Road & AMHS Ferry Terminals					AMHS Vessels							Road & AMHS		
						New Vessel			Existing Vessel					Present Value as of 7/1/14 @	
Fiscal Year	Earthwork	Structures	Other	Right of Way	Total	Acquisition	Refurbishment	Residuals	Replacement	Refurbishment	Residuals	Total	Total	1.0 % State & Federal Cost of Capital	7.0% Private Sector Rate of Return
2037					0		0	0		0	0	0	0	0	0
2038					0		0	0		2,231	0	2,231	2,231	1,766	455
2039					0		0	0		0	0	0	0	0	0
2040					0		1,200	0		0	0	1,200	1,200	931	214
2041					0		0	0		0	0	0	0	0	0
2042					0		0	0		0	0	0	0	0	0
2043					0		0	0		1,999	0	1,999	1,999	1,505	291
2044			6,150		6,150		0	0		3,538	0	3,538	9,687	7,223	1,316
2045			6,150		6,150		28,700	0		0	0	28,700	34,850	25,728	4,426
2046					0		28,700	0		0	0	28,700	28,700	20,978	3,406
2047					0		0	0		0	0	0	0	0	0
2048					0		0	0		0	0	0	0	0	0
2049					0		0	0		1,438	0	1,438	1,438	1,020	139
2050	(5,788)	(27,317)	(9,840)	0	(42,945)	0	9,900	(60,841)	0	0	(47,155)	(98,096)	(141,041)	(99,068)	(12,771)
Total	3,473	27,317	14,760	0	45,550	22,315	94,400	(60,841)	70,266	72,894	(70,021)	129,013	174,563	176,769	141,709

TABLE A-46

AMHS Vessel Refurbishment Costs
New Vessels
(2013 $000)

Alternatives:	2015-20: all Alternatives 2021-50: 1, 1B, 2B, 3, 4C-D				4A		4B		2B, 4A-D		3	
Number of Vessels:	one		one		two		two		one		one	
	Day Boat ACF-1		Day Boat ACF-2		HSF-1 (31 ASV)		HSF-2 (53 ASV)		HNS-SGY Shuttle (18 ASV)		HNS-SGY Shuttle (41 ASV)	
Fiscal Year	Year of Life	Cost[1]	Year of Life	Cost[1]	Year of Life	Cost per vessel[1]	Year of Life	Cost per vessel[1]	Year of Life	Cost[1]	Year of Life	Cost[1]
2015												
2016	1											
2017	2		1									
2018	3		2									
2019	4	1,900	3									
2020	5		4	1,900								
2021	6		5		1		1		1		1	
2022	7		6		2	4,100	2	4,900	2		2	
2023	8		7		3		3		3		3	
2024	9		8		4		4		4	700	4	1,500
2025	10	2,500	9		5		5		5		5	
2026	11		10	2,500	6		6		6		6	
2027	12		11		7		7		7		7	
2028	13		12		8	9,900	8	11,800	8		8	
2029	14		13		9		9		9		9	
2030	15	3,300	14		10		10		10	800	10	1,800
2031	16		15	3,300	11	41,100	11	49,100	11		11	
2032	17		16		12		12		12		12	
2033	18		17		13		13		13		13	
2034	19		18		14		14		14		14	
2035	20	3,800	19		15		15		15	1,400	15	3,100
2036	21		20	3,800	16	28,700	16	34,300	16		16	
2037	22		21		17		17		17		17	
2038	23		22		18		18		18		18	
2039	24		23		19		19		19		19	
2040	25		24		20		20		20	1,200	20	2,700
2041	26		25		21	41,100	21	49,100	21		21	
2042	27		26		22		22		22		22	
2043	28		27		23		23		23		23	

TABLE A-46

AMHS Vessel Refurbishment Costs
New Vessels
(2013 $000)

Alternatives:	2015-20: all Alternatives 2021-50: 1, 1B, 2B, 3, 4C-D				4A		4B		2B, 4A-D		3	
Number of Vessels:	one		one		two		two		one		one	
	Day Boat ACF-1		Day Boat ACF-2		HSF-1 (31 ASV)		HSF-2 (53 ASV)		HNS-SGY Shuttle (18 ASV)		HNS-SGY Shuttle (41 ASV)	
Fiscal Year	Year of Life	Cost[1]	Year of Life	Cost[1]	Year of Life	Cost per vessel[1]	Year of Life	Cost per vessel[1]	Year of Life	Cost[1]	Year of Life	Cost[1]
2044	29		28		24	9,900	24	11,800	24		24	
2045	30	28,700	29		25		25		25		25	
2046	31		30	28,700	26		26		26		26	
2047	32		31		27		27		27		27	
2048	33		32		28		28		28		28	
2049	34		33		29		29		29		29	
2050	35		34		30		30		30	9,900	30	21,800

Notes:

1. Attachment D, *JAI - Marine Segments* , Capital Improvements Plan (CIP), Coastwise Corporation, November 2013.

TABLE A-47

AMHS Vessel Refurbishment Costs
Existing Vessels & Replacements
(2013 $000)

Alternatives:	Existing Service 2015-16: all Alternatives						Day Boat Service 2017-50: 1B			Mainliner Service 2015-20: all Alternatives 2021-50: 1, 1B, 4A-D								
	LeConte			Malaspina			Malaspina[3]			Columbia			Matanuska			Taku		
Fiscal Year	Year of Life	Cost[1]	Lynn Canal Costs[2] @ 40.4%	Year of Life	Cost[1]	Lynn Canal Costs[4] @ 55.0%	Year of Life	Cost[1]	Lynn Canal Costs[4] @ 55.0%	Year of Life	Cost[1]	Lynn Canal Costs[2] @ 12.5%	Year of Life	Cost[1]	Lynn Canal Costs[2] @ 10.3%	Year of Life	Cost[1]	Lynn Canal Costs[2] @ 0.3%
2015	41			52	38,000	20,900				41			52	38,000	3,914	52	28,800	86
2016	42	13,800	5,575	53						42			53			53		
2017							54			43			54			54		
2018							55			44			55			55		
2019							56			45			56			56		
2020							57			46	139,800	17,475	57			57		
2021							58			47			58			58		
2022							59			48			59			59		
2023							60			49			60			60		
2024							1			50			1			1		
2025							2			51	61,100	7,638	2			2		
2026							3			52			3			3		
2027							4	5,300	2,915	53			4	6,800	700	4	5,300	16
2028							5			54			5			5		
2029							6			55			6			6		
2030							7			56	45,100	5,638	7			7		
2031							8			57			8			8		
2032							9			58			9			9		
2033							10	12,400	6,820	59			10	16,600	1,710	10	12,400	37
2034							11			60			11			11		
2035							12			1			12			12		
2036							13			2			13			13		
2037							14			3			14			14		
2038							15	6,400	3,520	4	11,100	1,388	15	8,000	824	15	6,400	19
2039							16			5			16			16		
2040							17			6			17			17		
2041							18			7			18			18		
2042							19			8			19			19		
2043							20	14,000	7,700	9			20	19,000	1,957	20	14,000	42
2044							21			10	28,300	3,538	21			21		
2045							22			11			22			22		

TABLE A-47

AMHS Vessel Refurbishment Costs
Existing Vessels & Replacements
(2013 $000)

Alternatives:	Existing Service 2015-16: all Alternatives						Day Boat Service 2017-50: 1B			Mainliner Service 2015-20: all Alternatives 2021-50: 1, 1B, 4A-D								
	LeConte			Malaspina			Malaspina[3]			Columbia			Matanuska			Taku		
Fiscal Year	Year of Life	Cost[1]	Lynn Canal Costs[2] @ 40.4%	Year of Life	Cost[1]	Lynn Canal Costs[4] @ 55.0%	Year of Life	Cost[1]	Lynn Canal Costs[4] @ 55.0%	Year of Life	Cost[1]	Lynn Canal Costs[2] @ 12.5%	Year of Life	Cost[1]	Lynn Canal Costs[2] @ 10.3%	Year of Life	Cost[1]	Lynn Canal Costs[2] @ 0.3%
2046							23			12			23			23		
2047							24			13			24			24		
2048							25			14			25			25		
2049							26			15	11,500	1,438	26			26		
2050							27			16			27			27		

Notes:

1. Attachment D, *JAI - Marine Segments* , Capital Improvements Plan (CIP), Coastwise Corporation, November 2013.

2. Costs allocated to Lynn Canal based on 2012 Northern Lynn Canal vessel operating days ratio to total vessel operating days. Ratios from Attachment A: *JAI - Marine Segments* , JAI AMHS Mainline Operating Costs, Lynn Canal Annual Operating Expenditures - 2012, Coastwise Corporation, December 2013.

3. Malaspina is replaced by a Taku-equivalent vessel in 2024. A Taku-sized vessel will be a better match for the expected Alternative 1B summer day boat and other alternatives' winter mainline traffic the Malaspina would carry. Taku refurbishment costs are used for 2024 and later years.

4. Costs allocated to Lynn Canal are 55.0 percent based on Malaspina operation as a day boat in Lynn Canal during the summer season (22 weeks out of 40 weeks available annually for operation).

TABLE A-48

AMHS Vessel Replacement Costs
(2013 $000)

Vessel	Built	Retire	Construct	Cost[1]	Lynn Canal Service[2,3]	Lynn Canal Cost
Mainline Service: 1, 1B, 4A-D						
Taku	1963	2023	2021-22	175,420	0.3%	526
Matanuska	1963	2023	2021-22	226,530	10.3%	23,333
Columbia	1974	2034	2032-33	371,260	12.5%	46,408
Summer AUK-SGY Day Boat Service: 1B						
Malaspina	1963	2023	2021-22	175,420	55.0%	96,481

Notes:

1. Attachment B, *JAI - Marine Segments* , AMHS Vessel Replacement Costs, Coastwise Corporation, December 2013. Malaspina replacement cost is estimated to be the same as the Taku. The Malaspina is larger than required for both summer Lynn Canal day boat service and winter mainline service.
2. Mainline service percentages from Attachment A: *JAI - Marine Segments* , JAI AMHS Mainline Operating Costs, Lynn Canal Annual Operating Expenditures - 2012, Coastwise Corporation, December 2013.
3. Malaspina from Attachment B, *JAI - Marine Segments* , AMHS Vessel Replacement Costs, Coastwise Corporation, December 2013.

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TABLE A-49

AMHS Vessel Residual Values
New Vessels
(2013 $000)

Alternatives:	Removal 2020: 4A-B End of Study 2050: 1, 1B, 2B, 3, 4C-D				4A		4B		2B, 4A-D		3	
Number of Vessels:	one		one		two		two		one		one	
	Day Boat ACF-1		Day Boat ACF-2		HSF-1 (31 ASV)		HSF-2 (53 ASV)		HNS-SGY Shuttle (18 ASV)		HNS-SGY Shuttle (41 ASV)	
Fiscal Year	Year of Life	Value	Year of Life	Value	Year of Life	Value per vessel	Year of Life	Value per vessel	Year of Life	Value	Year of Life	Value
Construction Cost[1]:		61,000		56,000		82,203		98,309		22,315		48,906
2015												
2016	1											
2017	2		1									
2018	3		2									
2019	4		3									
2020	5	(55,917)	4	(52,267)								
2021	6		5		1		1		1		1	
2022	7		6		2		2		2		2	
2023	8		7		3		3		3		3	
2024	9		8		4		4		4		4	
2025	10		9		5		5		5		5	
2026	11		10		6		6		6		6	
2027	12		11		7		7		7		7	
2028	13		12		8		8		8		8	
2029	14		13		9		9		9		9	
2030	15		14		10		10		10		10	
2031	16		15		11		11		11		11	
2032	17		16		12		12		12		12	
2033	18		17		13		13		13		13	
2034	19		18		14		14		14		14	
2035	20		19		15		15		15		15	
2036	21		20		16		16		16		16	
2037	22		21		17		17		17		17	
2038	23		22		18		18		18		18	

TABLE A-49

AMHS Vessel Residual Values
New Vessels
(2013 $000)

Alternatives:	Removal 2020: 4A-B End of Study 2050: 1, 1B, 2B, 3, 4C-D				4A		4B		2B, 4A-D		3	
Number of Vessels:	one		one		two		two		one		one	
	Day Boat ACF-1		Day Boat ACF-2		HSF-1 (31 ASV)		HSF-2 (53 ASV)		HNS-SGY Shuttle (18 ASV)		HNS-SGY Shuttle (41 ASV)	
Fiscal Year	Year of Life	Value	Year of Life	Value	Year of Life	Value per vessel	Year of Life	Value per vessel	Year of Life	Value	Year of Life	Value
Construction Cost[1]:		61,000		56,000		82,203		98,309		22,315		48,906
2039	24		23		19		19		19		19	
2040	25		24		20		20		20		20	
2041	26		25		21		21		21		21	
2042	27		26		22		22		22		22	
2043	28		27		23		23		23		23	
2044	29		28		24		24		24		24	
2045	30		29		25		25		25		25	
2046	31		30		26		26		26		26	
2047	32		31		27		27		27		27	
2048	33		32		28		28		28		28	
2049	34		33		29		29		29		29	
2050	35	(25,417)	34	(24,267)	30	(5,138)	30	(6,144)	30	(11,158)	30	(24,453)

Notes:

1. Estimates for Day Boats ACF-1 & 2 from October 29, 2013 email from Jim Calvin to Milt Barker re: Day Boat ACF Construction Costs, based on *Day Boat ACF Design Study Report* , Elliott Bay Design Group, July 10, 2013. Other vessels' construction costs from Attachment B, *JAI - Marine Segments* , AMHS Vessel Replacement Costs, Coastwise Corporation, December 2013.

TABLE A-50

AMHS Vessel Residual Values
Existing Vessels & Replacements
(2013 $000)

Alternatives:	Existing Lynn Canal Service: Removal 2016									Mainline: Removal 2020: 2B, 3 End of Study 2050: 1, 1B, 4A-D								
	All Alternatives			All Alternatives except 1B			End of Study 2050: 1B											
	LeConte			Malaspina[1]			Malaspina[2]			Columbia			Matanuska			Taku		
	Year of Life	Cost[3]	Lynn Canal Value[4] @ 40.4%	Year of Life	Cost[3]	Lynn Canal Value[5] @ 55.0%	Year of Life	Cost[3]	Lynn Canal Value[5] @ 55.0%	Year of Life	Cost[3]	Lynn Canal Value[4] @ 12.5%	Year of Life	Cost[3]	Lynn Canal Value[4] @ 10.3%	Year of Life	Cost[3]	Lynn Canal Value[4] @ 0.3%
Construction Cost:		68,740	27,771		226,530	124,592		175,420	96,481		371,260	46,408		226,530	23,333		175,420	526
Fiscal Year																		
2015	41			52						41			52			52		
2016	42		(8,331)	53		(14,536)				42			53			53		
2017							54			43			54			54		
2018							55			44			55			55		
2019							56			45			56			56		
2020							57			46		(10,828)	57		(1,167)	57		(26)
2021							58			47			58			58		
2022							59			48			59			59		
2023							60			49			60			60		
2024							1			50			1			1		
2025							2			51			2			2		
2026							3			52			3			3		
2027							4			53			4			4		
2028							5			54			5			5		
2029							6			55			6			6		
2030							7			56			7			7		
2031							8			57			8			8		
2032							9			58			9			9		
2033							10			59			10			10		
2034							11			60			11			11		
2035							12			1			12			12		
2036							13			2			13			13		
2037							14			3			14			14		
2038							15			4			15			15		
2039							16			5			16			16		
2040							17			6			17			17		

TABLE A-50

AMHS Vessel Residual Values
Existing Vessels & Replacements
(2013 $000)

Alternatives:	Existing Lynn Canal Service: Removal 2016						Mainline: Removal 2020: 2B, 3 End of Study 2050: 1, 1B, 4A-D								
	All Alternatives			All Alternatives except 1B			End of Study 2050: 1B								
	LeConte			Malaspina[1]			Malaspina[2]			Columbia			Matanuska			Taku		
	Year of Life	Cost[3]	Lynn Canal Value[4] @ 40.4%	Year of Life	Cost[3]	Lynn Canal Value[5] @ 55.0%	Year of Life	Cost[3]	Lynn Canal Value[5] @ 55.0%	Year of Life	Cost[3]	Lynn Canal Value[4] @ 12.5%	Year of Life	Cost[3]	Lynn Canal Value[4] @ 10.3%	Year of Life	Cost[3]	Lynn Canal Value[4] @ 0.3%
Construction Cost:		68,740	27,771		226,530	124,592		175,420	96,481		371,260	46,408		226,530	23,333		175,420	526
Fiscal Year																		
2041							18			7			18			18		
2042							19			8			19			19		
2043							20			9			20			20		
2044							21			10			21			21		
2045							22			11			22			22		
2046							23			12			23			23		
2047							24			13			24			24		
2048							25			14			25			25		
2049							26			15			26			26		
2050							27		(53,065)	16		(34,032)	27		(12,833)	27		(289)

Notes:

1. Residual based on Matanuska/Malaspina replacement cost. This presumes Malaspina's removal from Lynn Canal in 2017 would lead to capacity ultilization closer to its 88 ASV than its Taku-sized (69 ASV) replacement for Lynn Canal under Alternative 1B.

2. Malaspina is replaced by a Taku-equivalent vessel in 2024. A Taku-sized vessel will be a better match for the expected Alternative 1B summer day boat traffic and other alternatives' winter mainline traffic that the Malaspina would carry. Taku replacement costs are used to figure residual value.

3. Attachment B, *JAI - Marine Segments*, AMHS Vessel Replacement Costs, Coastwise Corporation, December 2013.

4. Costs allocated to Lynn Canal based on ratio of 2012 Northern Lynn Canal vessel operating days to total vessel operating days. Ratios from Attachment A: *JAI - Marine Segments*, JAI AMHS Mainline Operating Costs, Lynn Canal Annual Operating Expenditures - 2012, Coastwise Corporation, December 2013.

5. Costs allocated to Lynn Canal are 55.0 percent based on Malaspina operation as a day boat in Lynn Canal during the summer season (22 weeks out of 40 weeks available annually for operation).

TABLE A-51

Operating & Maintenance Costs
Alternative 1 - No Action
(2013 $000)

Fiscal Year	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
	Highway Maintenance	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015			0		16,575	5,172	21,747	21,747	21,273	21,023
2016			0		16,575	5,172	21,747	21,747	20,357	19,648
2017			0	4,145	6,037	5,172	15,354	15,354	13,754	12,965
2018			0	4,145	6,037	5,172	15,354	15,354	13,162	12,117
2019			0	4,145	6,037	5,172	15,354	15,354	12,595	11,324
2020			0	4,145	6,037	5,172	15,354	15,354	12,053	10,583
2021			0	4,145	6,037	5,172	15,354	15,354	11,534	9,891
2022			0	4,145	6,037	5,172	15,354	15,354	11,037	9,244
2023			0	4,145	6,037	5,172	15,354	15,354	10,562	8,639
2024			0	4,145	6,037	5,172	15,354	15,354	10,107	8,074
2025			0	4,145	6,037	5,172	15,354	15,354	9,672	7,546
2026			0	4,145	6,037	5,172	15,354	15,354	9,255	7,052
2027			0	4,145	6,037	5,172	15,354	15,354	8,857	6,591
2028			0	4,145	6,037	5,172	15,354	15,354	8,475	6,159
2029			0	4,145	6,037	5,172	15,354	15,354	8,110	5,757
2030			0	4,145	6,037	5,172	15,354	15,354	7,761	5,380
2031			0	4,145	6,037	5,172	15,354	15,354	7,427	5,028
2032			0	4,145	6,037	5,172	15,354	15,354	7,107	4,699
2033			0	4,145	6,037	5,172	15,354	15,354	6,801	4,392
2034			0	4,145	6,037	5,172	15,354	15,354	6,508	4,104
2035			0	4,145	6,037	5,172	15,354	15,354	6,228	3,836
2036			0	4,145	6,037	5,172	15,354	15,354	5,960	3,585
2037			0	4,145	6,037	5,172	15,354	15,354	5,703	3,350
2038			0	4,145	6,037	5,172	15,354	15,354	5,457	3,131
2039			0	4,145	6,037	5,172	15,354	15,354	5,222	2,926
2040			0	4,145	6,037	5,172	15,354	15,354	4,998	2,735
2041			0	4,145	6,037	5,172	15,354	15,354	4,782	2,556

TABLE A-51

Operating & Maintenance Costs
Alternative 1 - No Action
(2013 $000)

Fiscal Year	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
	Highway Maintenance	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2042			0	4,145	6,037	5,172	15,354	15,354	4,576	2,389
2043			0	4,145	6,037	5,172	15,354	15,354	4,379	2,232
2044			0	4,145	6,037	5,172	15,354	15,354	4,191	2,086
2045			0	4,145	6,037	5,172	15,354	15,354	4,010	1,950
2046			0	4,145	6,037	5,172	15,354	15,354	3,838	1,822
2047			0	4,145	6,037	5,172	15,354	15,354	3,672	1,703
2048			0	4,145	6,037	5,172	15,354	15,354	3,514	1,592
2049			0	4,145	6,037	5,172	15,354	15,354	3,363	1,488
2050	0	0	0	4,145	6,037	5,172	15,354	15,354	3,218	1,390
Total	0	0	0	140,942	238,401	186,189	565,532	565,532	289,519	218,986

Notes:

1. "Attachment C - JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013, except Lynn Canal 2015-16 from Table 16.

TABLE A-52

Operating & Maintenance Costs
Alternative 1B - Enhanced Service
(2013 $000)

Fiscal Year	Road			AMHS[1]				Road & AMHS	Road & AMHS Present Value as of 7/1/14 @	
	Highway Maintenance	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015			0		16,575	5,172	21,747	21,747	21,273	21,023
2016			0		16,575	5,172	21,747	21,747	20,357	19,648
2017			0	4,145	14,324	5,172	23,642	23,642	21,178	19,963
2018			0	4,145	14,324	5,172	23,642	23,642	20,266	18,657
2019			0	4,145	14,324	5,172	23,642	23,642	19,393	17,436
2020			0	4,145	14,324	5,172	23,642	23,642	18,558	16,295
2021			0	4,145	14,324	5,172	23,642	23,642	17,759	15,229
2022			0	4,145	14,324	5,172	23,642	23,642	16,994	14,233
2023			0	4,145	14,324	5,172	23,642	23,642	16,263	13,302
2024			0	4,145	14,324	5,172	23,642	23,642	15,562	12,432
2025			0	4,145	14,324	5,172	23,642	23,642	14,892	11,618
2026			0	4,145	14,324	5,172	23,642	23,642	14,251	10,858
2027			0	4,145	14,324	5,172	23,642	23,642	13,637	10,148
2028			0	4,145	14,324	5,172	23,642	23,642	13,050	9,484
2029			0	4,145	14,324	5,172	23,642	23,642	12,488	8,864
2030			0	4,145	14,324	5,172	23,642	23,642	11,950	8,284
2031			0	4,145	14,324	5,172	23,642	23,642	11,436	7,742
2032			0	4,145	14,324	5,172	23,642	23,642	10,943	7,235
2033			0	4,145	14,324	5,172	23,642	23,642	10,472	6,762
2034			0	4,145	14,324	5,172	23,642	23,642	10,021	6,320
2035			0	4,145	14,324	5,172	23,642	23,642	9,589	5,906
2036			0	4,145	14,324	5,172	23,642	23,642	9,177	5,520
2037			0	4,145	14,324	5,172	23,642	23,642	8,781	5,159
2038			0	4,145	14,324	5,172	23,642	23,642	8,403	4,821
2039			0	4,145	14,324	5,172	23,642	23,642	8,041	4,506
2040			0	4,145	14,324	5,172	23,642	23,642	7,695	4,211
2041			0	4,145	14,324	5,172	23,642	23,642	7,364	3,936

TABLE A-52

Operating & Maintenance Costs
Alternative 1B - Enhanced Service
(2013 $000)

Fiscal Year	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
	Highway Maintenance	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2042			0	4,145	14,324	5,172	23,642	23,642	7,047	3,678
2043			0	4,145	14,324	5,172	23,642	23,642	6,743	3,437
2044			0	4,145	14,324	5,172	23,642	23,642	6,453	3,213
2045			0	4,145	14,324	5,172	23,642	23,642	6,175	3,002
2046			0	4,145	14,324	5,172	23,642	23,642	5,909	2,806
2047			0	4,145	14,324	5,172	23,642	23,642	5,655	2,622
2048			0	4,145	14,324	5,172	23,642	23,642	5,411	2,451
2049			0	4,145	14,324	5,172	23,642	23,642	5,178	2,291
2050	0	0	0	4,145	14,324	5,172	23,642	23,642	4,955	2,141
Total	0	0	0	140,942	520,178	186,189	847,309	847,309	423,320	315,233

Notes:

1. "Attachment C - JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013, except Lynn Canal 2015-16 from Table 16.

TABLE A-53

Operating & Maintenance Costs
Alternative 2B - East Lynn Highway
(2013 $000)

Fiscal Year	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
	Highway Maintenance[1]	Avalanche Control[2]	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015			0		16,575	5,172	21,747	21,747	21,273	21,023
2016			0		16,575	5,172	21,747	21,747	20,357	19,648
2017			0	4,145	6,037	5,172	15,354	15,354	13,754	12,965
2018			0	4,145	6,037	5,172	15,354	15,354	13,162	12,117
2019			0	4,145	6,037	5,172	15,354	15,354	12,595	11,324
2020			0	4,145	6,037	5,172	15,354	15,354	12,053	10,583
2021	1,091	1,666	2,757	1,354	16,207		17,562	20,319	15,263	13,089
2022	1,091	1,666	2,757	1,354	16,207		17,562	20,319	14,606	12,233
2023	1,091	1,666	2,757	1,354	16,207		17,562	20,319	13,977	11,432
2024	1,091	1,666	2,757	1,354	16,207		17,562	20,319	13,375	10,684
2025	1,091	1,666	2,757	1,354	16,207		17,562	20,319	12,799	9,985
2026	1,091	1,666	2,757	1,354	16,207		17,562	20,319	12,248	9,332
2027	1,091	1,666	2,757	1,354	16,207		17,562	20,319	11,720	8,722
2028	1,091	1,666	2,757	1,354	16,207		17,562	20,319	11,216	8,151
2029	1,091	1,666	2,757	1,354	16,207		17,562	20,319	10,733	7,618
2030	1,091	1,666	2,757	1,354	16,207		17,562	20,319	10,271	7,120
2031	1,091	1,666	2,757	1,354	16,207		17,562	20,319	9,828	6,654
2032	1,091	1,666	2,757	1,354	16,207		17,562	20,319	9,405	6,218
2033	1,091	1,666	2,757	1,354	16,207		17,562	20,319	9,000	5,812
2034	1,091	1,666	2,757	1,354	16,207		17,562	20,319	8,613	5,431
2035	1,091	1,666	2,757	1,354	16,207		17,562	20,319	8,242	5,076
2036	1,091	1,666	2,757	1,354	16,207		17,562	20,319	7,887	4,744
2037	1,091	1,666	2,757	1,354	16,207		17,562	20,319	7,547	4,434
2038	1,091	1,666	2,757	1,354	16,207		17,562	20,319	7,222	4,144
2039	1,091	1,666	2,757	1,354	16,207		17,562	20,319	6,911	3,873
2040	1,091	1,666	2,757	1,354	16,207		17,562	20,319	6,614	3,619
2041	1,091	1,666	2,757	1,354	16,207		17,562	20,319	6,329	3,382

TABLE A-53

Operating & Maintenance Costs
Alternative 2B - East Lynn Highway
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance[1]	Avalanche Control[2]	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2042	1,091	1,666	2,757	1,354	16,207		17,562	20,319	6,056	3,161
2043	1,091	1,666	2,757	1,354	16,207		17,562	20,319	5,795	2,954
2044	1,091	1,666	2,757	1,354	16,207		17,562	20,319	5,546	2,761
2045	1,091	1,666	2,757	1,354	16,207		17,562	20,319	5,307	2,580
2046	1,091	1,666	2,757	1,354	16,207		17,562	20,319	5,078	2,412
2047	1,091	1,666	2,757	1,354	16,207		17,562	20,319	4,860	2,254
2048	1,091	1,666	2,757	1,354	16,207		17,562	20,319	4,651	2,106
2049	1,091	1,666	2,757	1,354	16,207		17,562	20,319	4,450	1,969
2050	1,091	1,666	2,757	1,354	16,207	0	17,562	20,319	4,259	1,840
Total	32,744	49,972	82,716	57,211	543,514	31,032	631,757	714,474	353,001	261,450

Notes:

1. Juneau Access, Highway Maintenance Cost Estimates, Southeast Region Maintenance & Operations, July 8, 2013.

2. Alaska Avalanche Specialists August 19, 2013 email to Reuben Yost re: Juneau Access budget changes due to avalanche explosives recalculation, with attached file "20130813LCMasterBudgetCompilationUpdatedNoContractRevExplosives.xls".

3. "Attachment C - JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013, except Lynn Canal 2015-16 from Table 16.

TABLE A-54

Operating & Maintenance Costs
Alternative 3 - West Lynn Highway
(2013 $000)

Fiscal Year	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
	Highway Maintenance[1]	Avalanche Control[2]	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015			0		16,575	5,172	21,747	21,747	21,273	21,023
2016			0		16,575	5,172	21,747	21,747	20,357	19,648
2017			0	4,145	6,037	5,172	15,354	15,354	13,754	12,965
2018			0	4,145	6,037	5,172	15,354	15,354	13,162	12,117
2019			0	4,145	6,037	5,172	15,354	15,354	12,595	11,324
2020			0	4,145	6,037	5,172	15,354	15,354	12,053	10,583
2021	951	1,384	2,335	7,057	12,307		19,364	21,699	16,300	13,978
2022	951	1,384	2,335	7,057	12,307		19,364	21,699	15,598	13,064
2023	951	1,384	2,335	7,057	12,307		19,364	21,699	14,926	12,209
2024	951	1,384	2,335	7,057	12,307		19,364	21,699	14,284	11,410
2025	951	1,384	2,335	7,057	12,307		19,364	21,699	13,668	10,664
2026	951	1,384	2,335	7,057	12,307		19,364	21,699	13,080	9,966
2027	951	1,384	2,335	7,057	12,307		19,364	21,699	12,517	9,314
2028	951	1,384	2,335	7,057	12,307		19,364	21,699	11,978	8,705
2029	951	1,384	2,335	7,057	12,307		19,364	21,699	11,462	8,135
2030	951	1,384	2,335	7,057	12,307		19,364	21,699	10,968	7,603
2031	951	1,384	2,335	7,057	12,307		19,364	21,699	10,496	7,106
2032	951	1,384	2,335	7,057	12,307		19,364	21,699	10,044	6,641
2033	951	1,384	2,335	7,057	12,307		19,364	21,699	9,611	6,206
2034	951	1,384	2,335	7,057	12,307		19,364	21,699	9,198	5,800
2035	951	1,384	2,335	7,057	12,307		19,364	21,699	8,801	5,421
2036	951	1,384	2,335	7,057	12,307		19,364	21,699	8,422	5,066
2037	951	1,384	2,335	7,057	12,307		19,364	21,699	8,060	4,735
2038	951	1,384	2,335	7,057	12,307		19,364	21,699	7,713	4,425
2039	951	1,384	2,335	7,057	12,307		19,364	21,699	7,381	4,136
2040	951	1,384	2,335	7,057	12,307		19,364	21,699	7,063	3,865
2041	951	1,384	2,335	7,057	12,307		19,364	21,699	6,759	3,612

TABLE A-54

Operating & Maintenance Costs
Alternative 3 - West Lynn Highway
(2013 $000)

Fiscal Year	Road			AMHS[1]				Road & AMHS	Present Value as of 7/1/14 @	
	Highway Maintenance[1]	Avalanche Control[2]	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2042	951	1,384	2,335	7,057	12,307		19,364	21,699	6,468	3,376
2043	951	1,384	2,335	7,057	12,307		19,364	21,699	6,189	3,155
2044	951	1,384	2,335	7,057	12,307		19,364	21,699	5,923	2,949
2045	951	1,384	2,335	7,057	12,307		19,364	21,699	5,668	2,756
2046	951	1,384	2,335	7,057	12,307		19,364	21,699	5,423	2,575
2047	951	1,384	2,335	7,057	12,307		19,364	21,699	5,190	2,407
2048	951	1,384	2,335	7,057	12,307		19,364	21,699	4,966	2,249
2049	951	1,384	2,335	7,057	12,307		19,364	21,699	4,753	2,102
2050	951	1,384	2,335	7,057	12,307	0	19,364	21,699	4,548	1,965
Total	28,531	41,526	70,057	228,292	426,499	31,032	685,822	755,880	370,649	273,255

Notes:

1. Juneau Access, Highway Maintenance Cost Estimates, Southeast Region Maintenance & Operations, July 8, 2013.

2. Alaska Avalanche Specialists August 19, 2013 email to Reuben Yost re: Juneau Access budget changes due to avalanche explosives recalculation, with attached file "20130813LCMasterBudgetCompilationUpdatedNoContractRevExplosives.xls".

3. "Attachment C - JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013, except Lynn Canal 2015-16 from Table 16.

TABLE A-55

Operating & Maintenance Costs
Alternative 4A - Fast Ferry Auke Bay
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015			0		16,575	5,172	21,747	21,747	21,273	21,023
2016			0		16,575	5,172	21,747	21,747	20,357	19,648
2017			0	4,145	6,037	5,172	15,354	15,354	13,754	12,965
2018			0	4,145	6,037	5,172	15,354	15,354	13,162	12,117
2019			0	4,145	6,037	5,172	15,354	15,354	12,595	11,324
2020			0	4,145	6,037	5,172	15,354	15,354	12,053	10,583
2021			0	2,009	26,514	5,172	33,695	33,695	25,311	21,705
2022			0	2,009	26,514	5,172	33,695	33,695	24,221	20,285
2023			0	2,009	26,514	5,172	33,695	33,695	23,178	18,958
2024			0	2,009	26,514	5,172	33,695	33,695	22,180	17,718
2025			0	2,009	26,514	5,172	33,695	33,695	21,225	16,559
2026			0	2,009	26,514	5,172	33,695	33,695	20,311	15,476
2027			0	2,009	26,514	5,172	33,695	33,695	19,436	14,463
2028			0	2,009	26,514	5,172	33,695	33,695	18,599	13,517
2029			0	2,009	26,514	5,172	33,695	33,695	17,798	12,633
2030			0	2,009	26,514	5,172	33,695	33,695	17,032	11,806
2031			0	2,009	26,514	5,172	33,695	33,695	16,298	11,034
2032			0	2,009	26,514	5,172	33,695	33,695	15,596	10,312
2033			0	2,009	26,514	5,172	33,695	33,695	14,925	9,637
2034			0	2,009	26,514	5,172	33,695	33,695	14,282	9,007
2035			0	2,009	26,514	5,172	33,695	33,695	13,667	8,418
2036			0	2,009	26,514	5,172	33,695	33,695	13,079	7,867
2037			0	2,009	26,514	5,172	33,695	33,695	12,515	7,352
2038			0	2,009	26,514	5,172	33,695	33,695	11,976	6,871
2039			0	2,009	26,514	5,172	33,695	33,695	11,461	6,422
2040			0	2,009	26,514	5,172	33,695	33,695	10,967	6,002
2041			0	2,009	26,514	5,172	33,695	33,695	10,495	5,609

TABLE A-55

Operating & Maintenance Costs
Alternative 4A - Fast Ferry Auke Bay
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2042			0	2,009	26,514	5,172	33,695	33,695	10,043	5,242
2043			0	2,009	26,514	5,172	33,695	33,695	9,610	4,899
2044			0	2,009	26,514	5,172	33,695	33,695	9,197	4,579
2045			0	2,009	26,514	5,172	33,695	33,695	8,801	4,279
2046			0	2,009	26,514	5,172	33,695	33,695	8,422	3,999
2047			0	2,009	26,514	5,172	33,695	33,695	8,059	3,738
2048			0	2,009	26,514	5,172	33,695	33,695	7,712	3,493
2049			0	2,009	26,514	5,172	33,695	33,695	7,380	3,265
2050	0	0	0	2,009	26,514	5,172	33,695	33,695	7,062	3,051
Total	0	0	0	76,844	852,714	186,189	1,115,747	1,115,747	524,030	375,855

Notes:

1. "Attachment C - JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013, except Lynn Canal 2015-16 from Table 16.

TABLE A-56

Operating & Maintenance Costs
Alternative 4B - Fast Ferry Berners Bay
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance[1]	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015			0		16,575	5,172	21,747	21,747	21,273	21,023
2016			0		16,575	5,172	21,747	21,747	20,357	19,648
2017			0	4,145	6,037	5,172	15,354	15,354	13,754	12,965
2018			0	4,145	6,037	5,172	15,354	15,354	13,162	12,117
2019			0	4,145	6,037	5,172	15,354	15,354	12,595	11,324
2020			0	4,145	6,037	5,172	15,354	15,354	12,053	10,583
2021	45		45	2,009	24,794	5,172	31,974	32,019	24,052	20,626
2022	45		45	2,009	24,794	5,172	31,974	32,019	23,017	19,277
2023	45		45	2,009	24,794	5,172	31,974	32,019	22,025	18,016
2024	45		45	2,009	24,794	5,172	31,974	32,019	21,077	16,837
2025	45		45	2,009	24,794	5,172	31,974	32,019	20,169	15,736
2026	45		45	2,009	24,794	5,172	31,974	32,019	19,301	14,706
2027	45		45	2,009	24,794	5,172	31,974	32,019	18,470	13,744
2028	45		45	2,009	24,794	5,172	31,974	32,019	17,674	12,845
2029	45		45	2,009	24,794	5,172	31,974	32,019	16,913	12,005
2030	45		45	2,009	24,794	5,172	31,974	32,019	16,185	11,219
2031	45		45	2,009	24,794	5,172	31,974	32,019	15,488	10,485
2032	45		45	2,009	24,794	5,172	31,974	32,019	14,821	9,799
2033	45		45	2,009	24,794	5,172	31,974	32,019	14,183	9,158
2034	45		45	2,009	24,794	5,172	31,974	32,019	13,572	8,559
2035	45		45	2,009	24,794	5,172	31,974	32,019	12,988	7,999
2036	45		45	2,009	24,794	5,172	31,974	32,019	12,428	7,476
2037	45		45	2,009	24,794	5,172	31,974	32,019	11,893	6,987
2038	45		45	2,009	24,794	5,172	31,974	32,019	11,381	6,530
2039	45		45	2,009	24,794	5,172	31,974	32,019	10,891	6,103
2040	45		45	2,009	24,794	5,172	31,974	32,019	10,422	5,703
2041	45		45	2,009	24,794	5,172	31,974	32,019	9,973	5,330

TABLE A-56

Operating & Maintenance Costs
Alternative 4B - Fast Ferry Berners Bay
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance[1]	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2042	45		45	2,009	24,794	5,172	31,974	32,019	9,544	4,981
2043	45		45	2,009	24,794	5,172	31,974	32,019	9,133	4,656
2044	45		45	2,009	24,794	5,172	31,974	32,019	8,739	4,351
2045	45		45	2,009	24,794	5,172	31,974	32,019	8,363	4,066
2046	45		45	2,009	24,794	5,172	31,974	32,019	8,003	3,800
2047	45		45	2,009	24,794	5,172	31,974	32,019	7,658	3,552
2048	45		45	2,009	24,794	5,172	31,974	32,019	7,329	3,319
2049	45		45	2,009	24,794	5,172	31,974	32,019	7,013	3,102
2050	45	0	45	2,009	24,794	5,172	31,974	32,019	6,711	2,899
Total	1,351	0	1,351	76,844	801,106	186,189	1,064,139	1,065,490	502,610	361,527

Notes:

1. Juneau Access, Highway Maintenance Cost Estimates, Southeast Region Maintenance & Operations, July 8, 2013.

2. "Attachment C - JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013, except Lynn Canal 2015-16 from Table 16.

TABLE A-57

Operating & Maintenance Costs
Alternative 4C - Monohull Auke Bay
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015			0		16,575	5,172	21,747	21,747	21,273	21,023
2016			0		16,575	5,172	21,747	21,747	20,357	19,648
2017			0	4,145	6,037	5,172	15,354	15,354	13,754	12,965
2018			0	4,145	6,037	5,172	15,354	15,354	13,162	12,117
2019			0	4,145	6,037	5,172	15,354	15,354	12,595	11,324
2020			0	4,145	6,037	5,172	15,354	15,354	12,053	10,583
2021			0	2,009	12,751	5,172	19,931	19,931	14,972	12,839
2022			0	2,009	12,751	5,172	19,931	19,931	14,327	11,999
2023			0	2,009	12,751	5,172	19,931	19,931	13,710	11,214
2024			0	2,009	12,751	5,172	19,931	19,931	13,120	10,481
2025			0	2,009	12,751	5,172	19,931	19,931	12,555	9,795
2026			0	2,009	12,751	5,172	19,931	19,931	12,014	9,154
2027			0	2,009	12,751	5,172	19,931	19,931	11,497	8,555
2028			0	2,009	12,751	5,172	19,931	19,931	11,002	7,996
2029			0	2,009	12,751	5,172	19,931	19,931	10,528	7,473
2030			0	2,009	12,751	5,172	19,931	19,931	10,075	6,984
2031			0	2,009	12,751	5,172	19,931	19,931	9,641	6,527
2032			0	2,009	12,751	5,172	19,931	19,931	9,226	6,100
2033			0	2,009	12,751	5,172	19,931	19,931	8,828	5,701
2034			0	2,009	12,751	5,172	19,931	19,931	8,448	5,328
2035			0	2,009	12,751	5,172	19,931	19,931	8,084	4,979
2036			0	2,009	12,751	5,172	19,931	19,931	7,736	4,654
2037			0	2,009	12,751	5,172	19,931	19,931	7,403	4,349
2038			0	2,009	12,751	5,172	19,931	19,931	7,084	4,065
2039			0	2,009	12,751	5,172	19,931	19,931	6,779	3,799
2040			0	2,009	12,751	5,172	19,931	19,931	6,487	3,550
2041			0	2,009	12,751	5,172	19,931	19,931	6,208	3,318

TABLE A-57

Operating & Maintenance Costs
Alternative 4C - Monohull Auke Bay
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2042			0	2,009	12,751	5,172	19,931	19,931	5,941	3,101
2043			0	2,009	12,751	5,172	19,931	19,931	5,685	2,898
2044			0	2,009	12,751	5,172	19,931	19,931	5,440	2,708
2045			0	2,009	12,751	5,172	19,931	19,931	5,206	2,531
2046			0	2,009	12,751	5,172	19,931	19,931	4,982	2,366
2047			0	2,009	12,751	5,172	19,931	19,931	4,767	2,211
2048			0	2,009	12,751	5,172	19,931	19,931	4,562	2,066
2049			0	2,009	12,751	5,172	19,931	19,931	4,365	1,931
2050	0	0	0	2,009	12,751	5,172	19,931	19,931	4,177	1,805
Total	0	0	0	76,844	439,812	186,189	702,845	702,845	348,044	258,134

Notes:

1. "Attachment C - JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013, except Lynn Canal 2015-16 from Table 16.

TABLE A-58

Operating & Maintenance Costs
Alternative 4D - Monohull Berners Bay
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance[1]	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015			0		16,575	5,172	21,747	21,747	21,273	21,023
2016			0		16,575	5,172	21,747	21,747	20,357	19,648
2017			0	4,145	6,037	5,172	15,354	15,354	13,754	12,965
2018			0	4,145	6,037	5,172	15,354	15,354	13,162	12,117
2019			0	4,145	6,037	5,172	15,354	15,354	12,595	11,324
2020			0	4,145	6,037	5,172	15,354	15,354	12,053	10,583
2021	45		45	2,009	13,609	5,172	20,790	20,835	15,651	13,422
2022	45		45	2,009	13,609	5,172	20,790	20,835	14,977	12,543
2023	45		45	2,009	13,609	5,172	20,790	20,835	14,332	11,723
2024	45		45	2,009	13,609	5,172	20,790	20,835	13,715	10,956
2025	45		45	2,009	13,609	5,172	20,790	20,835	13,124	10,239
2026	45		45	2,009	13,609	5,172	20,790	20,835	12,559	9,569
2027	45		45	2,009	13,609	5,172	20,790	20,835	12,018	8,943
2028	45		45	2,009	13,609	5,172	20,790	20,835	11,501	8,358
2029	45		45	2,009	13,609	5,172	20,790	20,835	11,005	7,811
2030	45		45	2,009	13,609	5,172	20,790	20,835	10,532	7,300
2031	45		45	2,009	13,609	5,172	20,790	20,835	10,078	6,823
2032	45		45	2,009	13,609	5,172	20,790	20,835	9,644	6,376
2033	45		45	2,009	13,609	5,172	20,790	20,835	9,229	5,959
2034	45		45	2,009	13,609	5,172	20,790	20,835	8,831	5,569
2035	45		45	2,009	13,609	5,172	20,790	20,835	8,451	5,205
2036	45		45	2,009	13,609	5,172	20,790	20,835	8,087	4,865
2037	45		45	2,009	13,609	5,172	20,790	20,835	7,739	4,546
2038	45		45	2,009	13,609	5,172	20,790	20,835	7,406	4,249
2039	45		45	2,009	13,609	5,172	20,790	20,835	7,087	3,971
2040	45		45	2,009	13,609	5,172	20,790	20,835	6,782	3,711
2041	45		45	2,009	13,609	5,172	20,790	20,835	6,490	3,468

TABLE A-58

Operating & Maintenance Costs
Alternative 4D - Monohull Berners Bay
(2013 $000)

	Road			AMHS[1]				Road & AMHS		
									Present Value as of 7/1/14 @	
Fiscal Year	Highway Maintenance[1]	Avalanche Control	Total	Haines-Skagway Shuttle	Lynn Canal	Mainline	Total	Total	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2042	45		45	2,009	13,609	5,172	20,790	20,835	6,210	3,241
2043	45		45	2,009	13,609	5,172	20,790	20,835	5,943	3,029
2044	45		45	2,009	13,609	5,172	20,790	20,835	5,687	2,831
2045	45		45	2,009	13,609	5,172	20,790	20,835	5,442	2,646
2046	45		45	2,009	13,609	5,172	20,790	20,835	5,208	2,473
2047	45		45	2,009	13,609	5,172	20,790	20,835	4,983	2,311
2048	45		45	2,009	13,609	5,172	20,790	20,835	4,769	2,160
2049	45		45	2,009	13,609	5,172	20,790	20,835	4,563	2,019
2050	45	0	45	2,009	13,609	5,172	20,790	20,835	4,367	1,887
Total	1,351	0	1,351	76,844	465,579	186,189	728,612	729,963	359,602	265,866

Notes:

1. Juneau Access, Highway Maintenance Cost Estimates, Southeast Region Maintenance & Operations, July 8, 2013.
2. "Attachment C - JAI Marine Alternatives Operating and Capital Costs 12_03_13_Draft.pdf", Coastwise Corporation, December 2013, except Lynn Canal 2015-16 from Table 16.

TABLE A-59

Revenues
Juneau - Haines & Skagway
Alternative 1 - No Action
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	68	3	1	0	1	225	71	5,852	5,853	5,726	5,659	5,853	5,725	5,658
2016	68	3	1	0	1	225	71	5,856	5,857	5,483	5,292	5,856	5,482	5,291
2017	86	3	1	0	1	285	71	7,363	7,364	6,597	6,218	7,363	6,596	6,217
2018	86	3	1	0	1	285	71	7,368	7,369	6,317	5,815	7,368	6,316	5,814
2019	86	3	1	0	1	285	71	7,373	7,374	6,049	5,438	7,373	6,048	5,438
2020	86	3	1	0	1	285	71	7,377	7,378	5,792	5,086	7,378	5,791	5,085
2021	86	3	1	0	1	285	71	7,379	7,380	5,544	4,754	7,379	5,543	4,753
2022	86	3	1	0	1	285	71	7,377	7,378	5,304	4,442	7,377	5,303	4,441
2023	86	3	1	0	1	285	71	7,375	7,376	5,074	4,150	7,375	5,073	4,150
2024	86	3	1	0	1	285	71	7,373	7,374	4,854	3,878	7,374	4,854	3,877
2025	86	3	1	0	1	285	71	7,372	7,373	4,644	3,623	7,372	4,644	3,623
2026	86	3	1	0	1	285	71	7,370	7,371	4,443	3,385	7,370	4,443	3,385
2027	86	3	1	0	1	285	71	7,368	7,369	4,251	3,163	7,368	4,250	3,163
2028	86	3	1	0	1	285	71	7,366	7,367	4,067	2,955	7,366	4,066	2,955
2029	86	3	1	0	1	285	71	7,364	7,365	3,890	2,761	7,365	3,890	2,761
2030	86	3	1	0	1	285	71	7,362	7,363	3,722	2,580	7,363	3,722	2,580
2031	86	3	1	0	1	285	71	7,361	7,362	3,561	2,411	7,361	3,561	2,410
2032	86	3	1	0	1	285	71	7,359	7,360	3,407	2,252	7,359	3,406	2,252
2033	86	3	1	0	1	285	71	7,357	7,358	3,259	2,105	7,357	3,259	2,104
2034	86	3	1	0	1	285	71	7,355	7,356	3,118	1,966	7,355	3,118	1,966
2035	86	3	1	0	1	284	71	7,353	7,354	2,983	1,837	7,354	2,983	1,837
2036	86	3	1	0	1	284	71	7,352	7,353	2,854	1,717	7,352	2,854	1,717
2037	86	3	1	0	1	284	71	7,350	7,351	2,730	1,604	7,350	2,730	1,604
2038	86	3	1	0	1	284	71	7,348	7,349	2,612	1,499	7,348	2,612	1,499
2039	86	3	1	0	1	284	71	7,346	7,347	2,499	1,400	7,346	2,499	1,400
2040	86	3	1	0	1	284	71	7,344	7,345	2,391	1,308	7,345	2,391	1,308
2041	86	3	1	0	1	284	71	7,342	7,343	2,287	1,222	7,343	2,287	1,222
2042	86	3	1	0	1	284	71	7,341	7,342	2,188	1,142	7,341	2,188	1,142
2043	86	3	1	0	1	284	71	7,339	7,340	2,094	1,067	7,339	2,093	1,067
2044	86	3	1	0	1	284	71	7,337	7,338	2,003	997	7,337	2,003	997
2045	86	3	1	0	1	284	71	7,335	7,336	1,916	932	7,336	1,916	932

TABLE A-59

Revenues
Juneau - Haines & Skagway
Alternative 1 - No Action
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	86	3	1	0	1	284	71	7,333	7,334	1,833	871	7,334	1,833	870
2047	86	3	1	0	1	284	71	7,332	7,333	1,754	813	7,332	1,754	813
2048	86	3	1	0	1	284	71	7,330	7,331	1,678	760	7,330	1,678	760
2049	86	3	1	0	1	283	71	7,328	7,329	1,605	710	7,328	1,605	710
2050	86	3	1	0	1	283	71	7,326	7,327	1,536	663	7,326	1,536	663
Total			26	11	37			261,763	261,800	130,062	96,477	261,774	130,050	96,467

TABLE A-60

Revenues
Juneau - Haines & Skagway
Alternative 1B - Enhanced Service
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	68	3	1	0	1	225	71	5,852	5,853	5,726	5,659	5,853	5,725	5,658
2016	68	3	1	0	1	225	71	5,856	5,857	5,483	5,292	5,856	5,482	5,291
2017	114	2	1	0	1	378	58	7,935	7,936	7,109	6,701	7,935	7,108	6,700
2018	114	2	1	0	1	378	58	7,940	7,941	6,807	6,267	7,940	6,806	6,266
2019	115	2	1	0	1	378	58	7,945	7,946	6,518	5,860	7,945	6,518	5,860
2020	115	2	1	0	1	378	58	7,950	7,951	6,242	5,481	7,950	6,241	5,480
2021	115	2	1	0	1	378	58	7,952	7,953	5,974	5,123	7,952	5,973	5,123
2022	115	2	1	0	1	378	58	7,950	7,951	5,715	4,787	7,950	5,715	4,786
2023	115	2	1	0	1	378	58	7,948	7,949	5,468	4,472	7,948	5,467	4,472
2024	115	2	1	0	1	378	58	7,946	7,947	5,231	4,179	7,946	5,231	4,178
2025	115	2	1	0	1	378	58	7,944	7,945	5,005	3,905	7,944	5,004	3,904
2026	115	2	1	0	1	378	58	7,942	7,943	4,788	3,648	7,942	4,787	3,648
2027	114	2	1	0	1	378	58	7,940	7,941	4,581	3,409	7,940	4,580	3,408
2028	114	2	1	0	1	378	58	7,938	7,939	4,382	3,185	7,938	4,382	3,185
2029	114	2	1	0	1	378	58	7,936	7,937	4,193	2,976	7,936	4,192	2,975
2030	114	2	1	0	1	378	58	7,934	7,935	4,011	2,780	7,934	4,011	2,780
2031	114	2	1	0	1	377	58	7,932	7,933	3,837	2,598	7,932	3,837	2,598
2032	114	2	1	0	1	377	58	7,930	7,931	3,671	2,427	7,930	3,671	2,427
2033	114	2	1	0	1	377	58	7,928	7,929	3,512	2,268	7,929	3,512	2,268
2034	114	2	1	0	1	377	58	7,926	7,927	3,360	2,119	7,927	3,360	2,119
2035	114	2	1	0	1	377	58	7,924	7,925	3,215	1,980	7,925	3,214	1,980
2036	114	2	1	0	1	377	58	7,922	7,924	3,076	1,850	7,923	3,075	1,850
2037	114	2	1	0	1	377	58	7,920	7,922	2,942	1,729	7,921	2,942	1,728
2038	114	2	1	0	1	377	58	7,918	7,920	2,815	1,615	7,919	2,815	1,615
2039	114	2	1	0	1	377	58	7,916	7,918	2,693	1,509	7,917	2,693	1,509
2040	114	2	1	0	1	377	58	7,914	7,916	2,576	1,410	7,915	2,576	1,410
2041	114	2	1	0	1	376	58	7,912	7,914	2,465	1,317	7,913	2,465	1,317
2042	114	2	1	0	1	376	58	7,911	7,912	2,358	1,231	7,911	2,358	1,231
2043	114	2	1	0	1	376	58	7,909	7,910	2,256	1,150	7,909	2,256	1,150
2044	114	2	1	0	1	376	58	7,907	7,908	2,158	1,075	7,907	2,158	1,074
2045	114	2	1	0	1	376	58	7,905	7,906	2,065	1,004	7,905	2,065	1,004

TABLE A-60

Revenues
Juneau - Haines & Skagway
Alternative 1B - Enhanced Service
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	114	2	1	0	1	376	58	7,903	7,904	1,976	938	7,903	1,975	938
2047	114	2	1	0	1	376	58	7,901	7,902	1,890	877	7,901	1,890	876
2048	114	2	1	0	1	376	58	7,899	7,900	1,808	819	7,899	1,808	819
2049	114	2	1	0	1	376	58	7,897	7,898	1,730	765	7,897	1,730	765
2050	114	2	1	0	1	376	58	7,895	7,896	1,655	715	7,895	1,655	715
Total			31	13	44			281,175	281,220	139,292	103,118	281,189	139,276	103,107

TABLE A-61

Revenues
Juneau - Haines & Skagway
Alternative 2B - East Lynn Highway
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	68	3	1	0	1	225	71	5,852	5,853	5,726	5,659	5,853	5,725	5,658
2016	68	3	1	0	1	225	71	5,856	5,857	5,483	5,292	5,856	5,482	5,291
2017	86	3	1	0	1	285	71	7,363	7,364	6,597	6,218	7,363	6,596	6,217
2018	86	3	1	0	1	285	71	7,368	7,369	6,317	5,815	7,368	6,316	5,814
2019	86	3	1	0	1	285	71	7,373	7,374	6,049	5,438	7,373	6,048	5,438
2020	86	3	1	0	1	285	71	7,377	7,378	5,792	5,086	7,378	5,791	5,085
2021	832	79	206	90	295	1,913	14	10,059	10,355	7,778	6,670	10,149	7,624	6,538
2022	832	79	206	89	295	1,913	14	10,057	10,352	7,441	6,232	10,146	7,294	6,108
2023	831	79	206	89	295	1,912	14	10,054	10,350	7,119	5,823	10,144	6,978	5,707
2024	831	79	206	89	295	1,912	14	10,052	10,347	6,811	5,441	10,141	6,676	5,333
2025	831	79	206	89	295	1,911	14	10,049	10,345	6,516	5,084	10,139	6,387	4,983
2026	831	79	206	89	295	1,911	14	10,047	10,342	6,234	4,750	10,136	6,110	4,656
2027	831	79	206	89	295	1,910	14	10,044	10,339	5,964	4,438	10,134	5,845	4,350
2028	830	79	206	89	295	1,910	14	10,042	10,337	5,706	4,147	10,131	5,592	4,064
2029	830	79	205	89	295	1,909	14	10,039	10,334	5,459	3,875	10,129	5,350	3,797
2030	830	79	205	89	295	1,909	14	10,037	10,332	5,222	3,620	10,126	5,119	3,548
2031	830	79	205	89	295	1,908	14	10,035	10,329	4,996	3,382	10,124	4,897	3,315
2032	829	79	205	89	295	1,908	14	10,032	10,327	4,780	3,160	10,121	4,685	3,098
2033	829	79	205	89	295	1,907	14	10,030	10,324	4,573	2,953	10,119	4,482	2,894
2034	829	79	205	89	294	1,907	14	10,027	10,322	4,375	2,759	10,116	4,288	2,704
2035	829	79	205	89	294	1,906	14	10,025	10,319	4,186	2,578	10,114	4,102	2,527
2036	829	79	205	89	294	1,906	14	10,022	10,316	4,004	2,409	10,111	3,925	2,361
2037	828	79	205	89	294	1,905	14	10,020	10,314	3,831	2,251	10,109	3,755	2,206
2038	828	79	205	89	294	1,905	14	10,017	10,311	3,665	2,103	10,106	3,592	2,061
2039	828	79	205	89	294	1,905	14	10,015	10,309	3,506	1,965	10,104	3,437	1,926
2040	828	79	205	89	294	1,904	14	10,012	10,306	3,355	1,836	10,101	3,288	1,799
2041	828	79	205	89	294	1,904	14	10,010	10,304	3,209	1,715	10,099	3,146	1,681
2042	827	79	205	89	294	1,903	14	10,007	10,301	3,070	1,603	10,096	3,009	1,571
2043	827	79	205	89	294	1,903	14	10,005	10,299	2,937	1,497	10,094	2,879	1,468
2044	827	79	205	89	294	1,902	14	10,002	10,296	2,810	1,399	10,091	2,754	1,371
2045	827	79	205	89	294	1,902	14	10,000	10,294	2,689	1,307	10,089	2,635	1,281

TABLE A-61

Revenues
Juneau - Haines & Skagway
Alternative 2B - East Lynn Highway
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	827	79	205	89	294	1,901	14	9,997	10,291	2,572	1,221	10,086	2,521	1,197
2047	826	79	205	89	294	1,901	14	9,995	10,288	2,461	1,141	10,084	2,412	1,119
2048	826	79	205	89	293	1,900	14	9,992	10,286	2,354	1,066	10,081	2,307	1,045
2049	826	79	204	89	293	1,900	14	9,990	10,283	2,252	996	10,079	2,208	977
2050	826	79	204	89	293	1,899	14	9,988	10,281	2,155	931	10,076	2,112	912
Total			6,159	2,678	8,836			341,891	350,727	167,995	121,860	344,569	165,366	120,100

TABLE A-62

Revenues
Juneau - Haines & Skagway
Alternative 3 - West Lynn Highway
(2013 $000)

			Highway Fuel Taxes				AMHS Fares		Total Taxes & Fares			State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
Fiscal Year	AADT	Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015	68	3	1	0	1	225	71	5,852	5,853	5,726	5,659	5,853	5,725	5,658
2016	68	3	1	0	1	225	71	5,856	5,857	5,483	5,292	5,856	5,482	5,291
2017	86	3	1	0	1	285	71	7,363	7,364	6,597	6,218	7,363	6,596	6,217
2018	86	3	1	0	1	285	71	7,368	7,369	6,317	5,815	7,368	6,316	5,814
2019	86	3	1	0	1	285	71	7,373	7,374	6,049	5,438	7,373	6,048	5,438
2020	86	3	1	0	1	285	71	7,377	7,378	5,792	5,086	7,378	5,791	5,085
2021	657	74	152	66	218	1,511	22	12,036	12,255	9,205	7,894	12,102	9,091	7,796
2022	657	74	152	66	218	1,510	22	12,033	12,252	8,807	7,376	12,099	8,697	7,284
2023	656	74	152	66	218	1,510	22	12,030	12,249	8,426	6,892	12,096	8,321	6,806
2024	656	74	152	66	218	1,509	22	12,027	12,246	8,061	6,439	12,093	7,961	6,359
2025	656	74	152	66	218	1,509	22	12,024	12,243	7,712	6,016	12,090	7,616	5,942
2026	656	74	152	66	218	1,509	22	12,021	12,240	7,378	5,621	12,087	7,286	5,552
2027	656	74	152	66	218	1,508	22	12,018	12,237	7,058	5,252	12,084	6,971	5,187
2028	656	74	152	66	218	1,508	22	12,015	12,233	6,753	4,908	12,081	6,669	4,847
2029	655	74	152	66	218	1,508	22	12,012	12,230	6,460	4,585	12,079	6,380	4,528
2030	655	74	152	66	218	1,507	22	12,009	12,227	6,181	4,284	12,076	6,104	4,231
2031	655	74	152	66	218	1,507	22	12,007	12,224	5,913	4,003	12,073	5,840	3,953
2032	655	74	152	66	218	1,506	22	12,004	12,221	5,657	3,740	12,070	5,587	3,694
2033	655	74	152	66	218	1,506	22	12,001	12,218	5,412	3,495	12,067	5,345	3,451
2034	655	74	152	66	218	1,506	22	11,998	12,215	5,178	3,265	12,064	5,113	3,225
2035	654	74	152	66	218	1,505	22	11,995	12,212	4,954	3,051	12,061	4,892	3,013
2036	654	74	152	66	218	1,505	22	11,992	12,209	4,739	2,851	12,058	4,680	2,815
2037	654	74	152	66	218	1,505	22	11,989	12,206	4,534	2,663	12,055	4,478	2,630
2038	654	74	152	66	218	1,504	22	11,986	12,203	4,338	2,489	12,052	4,284	2,458
2039	654	74	152	66	217	1,504	22	11,983	12,200	4,150	2,325	12,049	4,098	2,296
2040	654	74	152	66	217	1,503	22	11,980	12,197	3,970	2,173	12,046	3,921	2,146
2041	654	74	151	66	217	1,503	22	11,977	12,194	3,798	2,030	12,043	3,751	2,005
2042	653	74	151	66	217	1,503	22	11,974	12,191	3,634	1,897	12,040	3,589	1,873
2043	653	74	151	66	217	1,502	22	11,971	12,188	3,476	1,772	12,037	3,433	1,750
2044	653	74	151	66	217	1,502	22	11,968	12,185	3,326	1,656	12,034	3,285	1,635
2045	653	74	151	66	217	1,502	22	11,965	12,182	3,182	1,547	12,031	3,142	1,528

TABLE A-62

Revenues
Juneau - Haines & Skagway
Alternative 3 - West Lynn Highway
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	653	74	151	66	217	1,501	22	11,962	12,179	3,044	1,446	12,028	3,006	1,428
2047	653	74	151	66	217	1,501	22	11,959	12,176	2,912	1,351	12,025	2,876	1,334
2048	652	74	151	66	217	1,500	22	11,956	12,173	2,786	1,262	12,022	2,752	1,246
2049	652	74	151	66	217	1,500	22	11,953	12,170	2,666	1,179	12,019	2,632	1,164
2050	652	74	151	66	217	1,500	22	11,950	12,167	2,550	1,102	12,016	2,518	1,088
Total			4,555	1,981	6,536			400,985	407,521	192,220	138,072	402,966	190,276	136,769

TABLE A-63

Revenues
Juneau - Haines & Skagway
Alternative 4A - Fast Ferry Auke Bay
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	68	3	1	0	1	225	71	5,852	5,853	5,726	5,659	5,853	5,725	5,658
2016	68	3	1	0	1	225	71	5,856	5,857	5,483	5,292	5,856	5,482	5,291
2017	86	3	1	0	1	285	71	7,363	7,364	6,597	6,218	7,363	6,596	6,217
2018	86	3	1	0	1	285	71	7,368	7,369	6,317	5,815	7,368	6,316	5,814
2019	86	3	1	0	1	285	71	7,373	7,374	6,049	5,438	7,373	6,048	5,438
2020	86	3	1	0	1	285	71	7,377	7,378	5,792	5,086	7,378	5,791	5,085
2021	167	2	1	1	2	551	72	14,550	14,552	10,931	9,374	14,551	10,930	9,373
2022	167	2	1	1	2	551	72	14,547	14,549	10,458	8,759	14,547	10,457	8,758
2023	167	2	1	1	2	551	72	14,543	14,545	10,005	8,184	14,544	10,004	8,183
2024	167	2	1	1	2	551	72	14,540	14,541	9,572	7,646	14,540	9,571	7,646
2025	167	2	1	1	2	550	72	14,536	14,538	9,158	7,144	14,537	9,157	7,144
2026	167	2	1	1	2	550	72	14,533	14,534	8,761	6,675	14,533	8,760	6,675
2027	167	2	1	1	2	550	72	14,529	14,531	8,382	6,237	14,529	8,381	6,237
2028	167	2	1	1	2	550	72	14,525	14,527	8,019	5,828	14,526	8,018	5,827
2029	167	2	1	1	2	550	72	14,522	14,524	7,672	5,445	14,522	7,671	5,445
2030	167	2	1	1	2	550	72	14,518	14,520	7,339	5,088	14,519	7,339	5,087
2031	167	2	1	1	2	550	72	14,515	14,516	7,022	4,754	14,515	7,021	4,753
2032	167	2	1	1	2	549	72	14,511	14,513	6,718	4,442	14,512	6,717	4,441
2033	166	2	1	1	2	549	72	14,507	14,509	6,427	4,150	14,508	6,426	4,150
2034	166	2	1	1	2	549	72	14,504	14,506	6,148	3,878	14,504	6,148	3,877
2035	166	2	1	1	2	549	72	14,500	14,502	5,882	3,623	14,501	5,882	3,623
2036	166	2	1	1	2	549	72	14,497	14,498	5,628	3,385	14,497	5,627	3,385
2037	166	2	1	1	2	549	72	14,493	14,495	5,384	3,163	14,494	5,383	3,163
2038	166	2	1	1	2	549	72	14,490	14,491	5,151	2,955	14,490	5,150	2,955
2039	166	2	1	1	2	549	72	14,486	14,488	4,928	2,761	14,486	4,927	2,761
2040	166	2	1	1	2	548	72	14,482	14,484	4,714	2,580	14,483	4,714	2,580
2041	166	2	1	1	2	548	72	14,479	14,481	4,510	2,411	14,479	4,510	2,410
2042	166	2	1	1	2	548	72	14,475	14,477	4,315	2,252	14,476	4,315	2,252
2043	166	2	1	1	2	548	72	14,472	14,473	4,128	2,104	14,472	4,128	2,104
2044	166	2	1	1	2	548	72	14,468	14,470	3,949	1,966	14,469	3,949	1,966
2045	166	2	1	1	2	548	72	14,464	14,466	3,778	1,837	14,465	3,778	1,837

TABLE A-63

Revenues
Juneau - Haines & Skagway
Alternative 4A - Fast Ferry Auke Bay
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	166	2	1	1	2	548	72	14,461	14,463	3,615	1,717	14,461	3,615	1,716
2047	166	2	1	1	2	547	72	14,457	14,459	3,458	1,604	14,458	3,458	1,604
2048	166	2	1	1	2	547	72	14,454	14,456	3,309	1,499	14,454	3,308	1,498
2049	166	2	1	1	2	547	72	14,450	14,452	3,165	1,400	14,451	3,165	1,400
2050	166	2	1	1	2	547	72	14,447	14,448	3,028	1,308	14,447	3,028	1,308
Total			41	18	59			476,144	476,203	221,517	157,676	476,162	221,498	157,662

TABLE A-64

Revenues
Juneau - Haines & Skagway
Alternative 4B - Fast Ferry Berners Bay
(2013 $000)

			Highway Fuel Taxes				AMHS Fares		Total Taxes & Fares			State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
Fiscal Year	AADT	Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015	68	3	1	0	1	225	71	5,852	5,853	5,726	5,659	5,853	5,725	5,658
2016	68	3	1	0	1	225	71	5,856	5,857	5,483	5,292	5,856	5,482	5,291
2017	86	3	1	0	1	285	71	7,363	7,364	6,597	6,218	7,363	6,596	6,217
2018	86	3	1	0	1	285	71	7,368	7,369	6,317	5,815	7,368	6,316	5,814
2019	86	3	1	0	1	285	71	7,373	7,374	6,049	5,438	7,373	6,048	5,438
2020	86	3	1	0	1	285	71	7,377	7,378	5,792	5,086	7,378	5,791	5,085
2021	266	24	20	9	29	876	52	16,789	16,818	12,634	10,834	16,798	12,618	10,821
2022	265	24	20	9	29	876	52	16,785	16,814	12,087	10,123	16,794	12,072	10,111
2023	265	24	20	9	29	876	52	16,781	16,810	11,563	9,458	16,790	11,549	9,447
2024	265	24	20	9	29	876	52	16,777	16,806	11,063	8,837	16,786	11,049	8,827
2025	265	24	20	9	29	875	52	16,773	16,802	10,584	8,257	16,782	10,571	8,247
2026	265	24	20	9	29	875	52	16,769	16,798	10,125	7,715	16,777	10,113	7,706
2027	265	24	20	9	29	875	52	16,764	16,794	9,687	7,209	16,773	9,675	7,200
2028	265	24	20	9	29	875	52	16,760	16,789	9,268	6,735	16,769	9,256	6,727
2029	265	24	20	9	29	874	52	16,756	16,785	8,866	6,293	16,765	8,856	6,285
2030	265	24	20	9	29	874	52	16,752	16,781	8,482	5,880	16,761	8,472	5,873
2031	265	24	20	9	29	874	52	16,748	16,777	8,115	5,494	16,757	8,105	5,487
2032	265	24	20	9	29	874	52	16,744	16,773	7,764	5,133	16,753	7,754	5,127
2033	265	24	20	9	29	874	52	16,740	16,769	7,428	4,796	16,748	7,419	4,790
2034	265	24	20	9	29	873	52	16,735	16,765	7,106	4,481	16,744	7,097	4,476
2035	265	24	20	9	29	873	52	16,731	16,760	6,798	4,187	16,740	6,790	4,182
2036	265	24	20	9	29	873	52	16,727	16,756	6,504	3,912	16,736	6,496	3,908
2037	264	24	20	9	29	873	52	16,723	16,752	6,222	3,655	16,732	6,215	3,651
2038	264	24	20	9	29	873	52	16,719	16,748	5,953	3,415	16,728	5,946	3,411
2039	264	24	20	9	29	872	52	16,715	16,744	5,695	3,191	16,724	5,688	3,187
2040	264	24	20	9	29	872	52	16,711	16,740	5,449	2,982	16,719	5,442	2,978
2041	264	24	20	9	29	872	52	16,707	16,736	5,213	2,786	16,715	5,206	2,783
2042	264	24	20	9	29	872	52	16,702	16,731	4,987	2,603	16,711	4,981	2,600
2043	264	24	20	9	29	871	52	16,698	16,727	4,771	2,432	16,707	4,765	2,429
2044	264	24	20	9	29	871	52	16,694	16,723	4,564	2,272	16,703	4,559	2,270
2045	264	24	20	9	29	871	52	16,690	16,719	4,367	2,123	16,699	4,362	2,121

TABLE A-64

Revenues
Juneau - Haines & Skagway
Alternative 4B - Fast Ferry Berners Bay
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	264	24	20	9	29	871	52	16,686	16,715	4,178	1,984	16,695	4,173	1,981
2047	264	24	20	9	29	871	52	16,682	16,711	3,997	1,854	16,691	3,992	1,851
2048	264	24	20	9	29	870	52	16,678	16,707	3,824	1,732	16,686	3,819	1,730
2049	264	24	20	9	29	870	52	16,674	16,703	3,658	1,618	16,682	3,654	1,616
2050	264	24	20	9	29	870	52	16,669	16,698	3,500	1,512	16,678	3,496	1,510
Total			613	267	880			543,068	543,947	250,414	177,013	543,334	250,150	176,836

TABLE A-65

Revenues
Juneau - Haines & Skagway
Alternative 4C - Monohull Auke Bay
(2013 $000)

			Highway Fuel Taxes				AMHS Fares		Total Taxes & Fares			State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
Fiscal Year	AADT	Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015	68	3	1	0	1	225	71	5,852	5,853	5,726	5,659	5,853	5,725	5,658
2016	68	3	1	0	1	225	71	5,856	5,857	5,483	5,292	5,856	5,482	5,291
2017	86	3	1	0	1	285	71	7,363	7,364	6,597	6,218	7,363	6,596	6,217
2018	86	3	1	0	1	285	71	7,368	7,369	6,317	5,815	7,368	6,316	5,814
2019	86	3	1	0	1	285	71	7,373	7,374	6,049	5,438	7,373	6,048	5,438
2020	86	3	1	0	1	285	71	7,377	7,378	5,792	5,086	7,378	5,791	5,085
2021	103	2	1	0	1	339	72	8,909	8,910	6,693	5,740	8,909	6,693	5,739
2022	103	2	1	0	1	338	72	8,907	8,908	6,403	5,363	8,907	6,403	5,362
2023	103	2	1	0	1	338	72	8,905	8,906	6,126	5,011	8,905	6,126	5,010
2024	103	2	1	0	1	338	72	8,903	8,904	5,861	4,682	8,903	5,860	4,681
2025	102	2	1	0	1	338	72	8,900	8,901	5,607	4,375	8,901	5,607	4,374
2026	102	2	1	0	1	338	72	8,898	8,899	5,364	4,087	8,898	5,364	4,087
2027	102	2	1	0	1	338	72	8,896	8,897	5,132	3,819	8,896	5,132	3,819
2028	102	2	1	0	1	338	72	8,894	8,895	4,910	3,568	8,894	4,909	3,568
2029	102	2	1	0	1	338	72	8,892	8,893	4,697	3,334	8,892	4,697	3,334
2030	102	2	1	0	1	338	72	8,889	8,890	4,494	3,115	8,890	4,493	3,115
2031	102	2	1	0	1	338	72	8,887	8,888	4,299	2,911	8,888	4,299	2,910
2032	102	2	1	0	1	338	72	8,885	8,886	4,113	2,720	8,885	4,113	2,719
2033	102	2	1	0	1	338	72	8,883	8,884	3,935	2,541	8,883	3,935	2,541
2034	102	2	1	0	1	337	72	8,881	8,882	3,765	2,374	8,881	3,764	2,374
2035	102	2	1	0	1	337	72	8,878	8,880	3,602	2,218	8,879	3,601	2,218
2036	102	2	1	0	1	337	72	8,876	8,877	3,446	2,073	8,877	3,445	2,072
2037	102	2	1	0	1	337	72	8,874	8,875	3,297	1,937	8,874	3,296	1,936
2038	102	2	1	0	1	337	72	8,872	8,873	3,154	1,809	8,872	3,154	1,809
2039	102	2	1	0	1	337	72	8,870	8,871	3,017	1,691	8,870	3,017	1,691
2040	102	2	1	0	1	337	72	8,867	8,869	2,887	1,580	8,868	2,886	1,580
2041	102	2	1	0	1	337	72	8,865	8,866	2,762	1,476	8,866	2,761	1,476
2042	102	2	1	0	1	337	72	8,863	8,864	2,642	1,379	8,863	2,642	1,379
2043	102	2	1	0	1	337	72	8,861	8,862	2,528	1,289	8,861	2,527	1,288
2044	102	2	1	0	1	337	72	8,859	8,860	2,418	1,204	8,859	2,418	1,204
2045	102	2	1	0	1	337	72	8,856	8,858	2,313	1,125	8,857	2,313	1,125

TABLE A-65

Revenues
Juneau - Haines & Skagway
Alternative 4C - Monohull Auke Bay
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	102	2	1	0	1	336	72	8,854	8,855	2,213	1,051	8,855	2,213	1,051
2047	102	2	1	0	1	336	72	8,852	8,853	2,117	982	8,852	2,117	982
2048	102	2	1	0	1	336	72	8,850	8,851	2,026	918	8,850	2,026	917
2049	102	2	1	0	1	336	72	8,848	8,849	1,938	857	8,848	1,938	857
2050	102	2	1	0	1	336	72	8,846	8,847	1,854	801	8,846	1,854	801
Total			27	12	39			307,509	307,548	149,576	109,535	307,521	149,563	109,525

TABLE A-66

Revenues
Juneau - Haines & Skagway
Alternative 4D - Monohull Berners Bay
(2013 $000)

			Highway Fuel Taxes				AMHS Fares		Total Taxes & Fares			State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
Fiscal Year	AADT	Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015	68	3	1	0	1	225	71	5,852	5,853	5,726	5,659	5,853	5,725	5,658
2016	68	3	1	0	1	225	71	5,856	5,857	5,483	5,292	5,856	5,482	5,291
2017	86	3	1	0	1	285	71	7,363	7,364	6,597	6,218	7,363	6,596	6,217
2018	86	3	1	0	1	285	71	7,368	7,369	6,317	5,815	7,368	6,316	5,814
2019	86	3	1	0	1	285	71	7,373	7,374	6,049	5,438	7,373	6,048	5,438
2020	86	3	1	0	1	285	71	7,377	7,378	5,792	5,086	7,378	5,791	5,085
2021	248	27	21	9	30	820	50	15,089	15,119	11,357	9,739	15,098	11,341	9,726
2022	248	27	21	9	30	820	50	15,085	15,115	10,865	9,100	15,094	10,850	9,087
2023	248	27	21	9	30	819	50	15,082	15,111	10,395	8,502	15,091	10,381	8,491
2024	248	27	21	9	30	819	50	15,078	15,108	9,945	7,944	15,087	9,931	7,933
2025	248	27	21	9	30	819	50	15,074	15,104	9,514	7,423	15,083	9,501	7,413
2026	248	27	21	9	30	819	50	15,070	15,100	9,102	6,935	15,080	9,090	6,926
2027	248	27	21	9	30	819	50	15,067	15,097	8,708	6,480	15,076	8,696	6,471
2028	248	27	21	9	30	818	50	15,063	15,093	8,331	6,055	15,072	8,320	6,046
2029	248	27	21	9	30	818	50	15,059	15,089	7,970	5,657	15,068	7,959	5,649
2030	248	27	21	9	30	818	50	15,056	15,085	7,625	5,286	15,065	7,615	5,278
2031	248	27	21	9	30	818	50	15,052	15,082	7,295	4,939	15,061	7,285	4,932
2032	248	27	21	9	30	818	50	15,048	15,078	6,979	4,615	15,057	6,970	4,608
2033	248	27	21	9	30	817	50	15,044	15,074	6,677	4,312	15,053	6,668	4,306
2034	248	27	21	9	30	817	50	15,041	15,070	6,388	4,029	15,050	6,379	4,023
2035	248	27	21	9	30	817	50	15,037	15,067	6,111	3,764	15,046	6,103	3,759
2036	247	27	21	9	30	817	50	15,033	15,063	5,847	3,517	15,042	5,839	3,512
2037	247	27	21	9	30	817	50	15,030	15,059	5,594	3,286	15,039	5,586	3,282
2038	247	27	21	9	30	816	50	15,026	15,056	5,351	3,070	15,035	5,344	3,066
2039	247	27	21	9	30	816	50	15,022	15,052	5,120	2,869	15,031	5,113	2,865
2040	247	27	21	9	30	816	50	15,018	15,048	4,898	2,680	15,027	4,891	2,677
2041	247	27	21	9	30	816	50	15,015	15,044	4,686	2,504	15,024	4,679	2,501
2042	247	27	21	9	30	816	50	15,011	15,041	4,483	2,340	15,020	4,477	2,337
2043	247	27	21	9	30	815	50	15,007	15,037	4,289	2,186	15,016	4,283	2,183
2044	247	27	21	9	30	815	50	15,004	15,033	4,103	2,043	15,013	4,098	2,040
2045	247	27	21	9	30	815	50	15,000	15,030	3,926	1,909	15,009	3,920	1,906

TABLE A-66

Revenues
Juneau - Haines & Skagway
Alternative 4D - Monohull Berners Bay
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes			AMHS Fares			Total Taxes & Fares			State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
			Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2046	247	27	21	9	30	815	50	14,996	15,026	3,756	1,783	15,005	3,750	1,781
2047	247	27	21	9	30	815	50	14,993	15,022	3,593	1,666	15,002	3,588	1,664
2048	247	27	21	9	30	814	50	14,989	15,018	3,437	1,557	14,998	3,433	1,555
2049	247	27	21	9	30	814	50	14,985	15,015	3,289	1,455	14,994	3,284	1,453
2050	247	27	21	9	30	814	50	14,981	15,011	3,146	1,359	14,990	3,142	1,357
Total			626	272	898			492,245	493,143	228,743	162,512	492,518	228,474	162,331

TABLE A-67

Revenues
Haines - Skagway
Alternative 1 - No Action
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	17	4	0	0	0	37	18	239	239	234	231	239	234	231
2016	17	4	0	0	0	37	18	239	239	224	216	239	224	216
2017	24	4	0	0	0	54	18	342	342	307	289	342	306	289
2018	24	4	0	0	0	54	18	342	342	293	270	342	293	270
2019	24	4	0	0	0	54	18	342	342	281	253	342	281	252
2020	24	4	0	0	0	54	18	342	342	269	236	342	268	236
2021	24	4	0	0	0	54	18	342	342	257	221	342	257	220
2022	24	4	0	0	0	54	18	342	342	246	206	342	246	206
2023	24	4	0	0	0	54	18	342	342	236	193	342	235	192
2024	24	4	0	0	0	54	18	342	342	225	180	342	225	180
2025	24	4	0	0	0	54	18	342	342	216	168	342	215	168
2026	24	4	0	0	0	54	18	342	342	206	157	342	206	157
2027	24	4	0	0	0	54	18	342	342	197	147	342	197	147
2028	24	4	0	0	0	54	18	342	342	189	137	342	189	137
2029	24	4	0	0	0	54	18	342	342	181	128	342	181	128
2030	24	4	0	0	0	54	18	342	342	173	120	342	173	120
2031	24	4	0	0	0	54	18	342	342	166	112	342	165	112
2032	24	4	0	0	0	54	18	342	342	158	105	342	158	105
2033	24	4	0	0	0	54	18	342	342	152	98	342	152	98
2034	24	4	0	0	0	54	18	342	342	145	92	342	145	91
2035	24	4	0	0	0	54	18	342	342	139	86	342	139	85
2036	24	4	0	0	0	54	18	342	342	133	80	342	133	80
2037	24	4	0	0	0	54	18	342	342	127	75	342	127	75
2038	24	4	0	0	0	54	18	342	342	122	70	342	122	70
2039	24	4	0	0	0	54	18	342	342	116	65	342	116	65
2040	24	4	0	0	0	54	18	342	342	111	61	342	111	61
2041	24	4	0	0	0	54	18	342	342	107	57	342	107	57
2042	24	4	0	0	0	54	18	342	342	102	53	342	102	53
2043	24	4	0	0	0	54	18	342	342	98	50	342	98	50
2044	24	4	0	0	0	54	18	342	342	93	47	342	93	46
2045	24	4	0	0	0	54	18	342	342	89	43	342	89	43

TABLE A-67

Revenues
Haines - Skagway
Alternative 1 - No Action
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	24	4	0	0	0	54	18	342	342	86	41	342	85	41
2047	24	4	0	0	0	54	18	342	342	82	38	342	82	38
2048	24	4	0	0	0	54	18	342	342	78	35	342	78	35
2049	24	4	0	0	0	54	18	342	342	75	33	342	75	33
2050	24	4	0	0	0	54	18	342	342	72	31	342	72	31
Total			12	5	17			12,102	12,119	5,985	4,423	12,107	5,980	4,419

TABLE A-68

Revenues
Haines - Skagway
Alternative 1B - Enhanced Service
(2013 $000)

Fiscal Year	AADT	Highway Fuel Taxes: Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	17	4	0	0	0	37	18	239	239	234	231	239	234	231
2016	17	4	0	0	0	37	18	239	239	224	216	239	224	216
2017	24	4	0	0	0	54	14	274	274	245	231	274	245	231
2018	24	4	0	0	0	54	14	274	274	235	216	274	235	216
2019	24	4	0	0	0	54	14	274	274	225	202	274	224	202
2020	24	4	0	0	0	54	14	274	274	215	189	274	215	189
2021	24	4	0	0	0	54	14	274	274	206	176	274	206	176
2022	24	4	0	0	0	54	14	274	274	197	165	274	197	165
2023	24	4	0	0	0	54	14	274	274	188	154	274	188	154
2024	24	4	0	0	0	54	14	274	274	180	144	274	180	144
2025	24	4	0	0	0	54	14	274	274	173	135	274	172	134
2026	24	4	0	0	0	54	14	274	274	165	126	274	165	126
2027	24	4	0	0	0	54	14	274	274	158	118	274	158	117
2028	24	4	0	0	0	54	14	274	274	151	110	274	151	110
2029	24	4	0	0	0	54	14	274	274	145	103	274	145	103
2030	24	4	0	0	0	54	14	274	274	138	96	274	138	96
2031	24	4	0	0	0	54	14	274	274	133	90	274	132	90
2032	24	4	0	0	0	54	14	274	274	127	84	274	127	84
2033	24	4	0	0	0	54	14	274	274	121	78	274	121	78
2034	24	4	0	0	0	54	14	274	274	116	73	274	116	73
2035	24	4	0	0	0	54	14	274	274	111	68	274	111	68
2036	24	4	0	0	0	54	14	274	274	106	64	274	106	64
2037	24	4	0	0	0	54	14	274	274	102	60	274	102	60
2038	24	4	0	0	0	54	14	274	274	97	56	274	97	56
2039	24	4	0	0	0	54	14	274	274	93	52	274	93	52
2040	24	4	0	0	0	54	14	274	274	89	49	274	89	49
2041	24	4	0	0	0	54	14	274	274	85	46	274	85	46
2042	24	4	0	0	0	54	14	274	274	82	43	274	82	43
2043	24	4	0	0	0	54	14	274	274	78	40	274	78	40
2044	24	4	0	0	0	54	14	274	274	75	37	274	75	37
2045	24	4	0	0	0	54	14	274	274	72	35	274	71	35

TABLE A-68

Revenues
Haines - Skagway
Alternative 1B - Enhanced Service
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	24	4	0	0	0	54	14	274	274	68	33	274	68	32
2047	24	4	0	0	0	54	14	274	274	66	30	274	65	30
2048	24	4	0	0	0	54	14	274	274	63	28	274	63	28
2049	24	4	0	0	0	54	14	274	274	60	27	274	60	27
2050	24	4	0	0	0	54	14	274	274	57	25	274	57	25
Total			12	5	17			9,777	9,794	4,881	3,629	9,782	4,876	3,625

TABLE A-69

Revenues
Haines - Skagway
Alternative 2B - East Lynn Highway
(2013 $000)

			Highway Fuel Taxes				AMHS Fares		Total Taxes & Fares			State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
Fiscal Year	AADT	Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2015	17	4	0	0	0	37	18	239	239	234	231	239	234	231
2016	17	4	0	0	0	37	18	239	239	224	216	239	224	216
2017	24	4	0	0	0	54	18	342	342	307	289	342	306	289
2018	24	4	0	0	0	54	18	342	342	293	270	342	293	270
2019	24	4	0	0	0	54	18	342	342	281	253	342	281	252
2020	24	4	0	0	0	54	18	342	342	269	236	342	268	236
2021	24	4	0	0	0	54	19	366	366	275	236	366	275	236
2022	24	4	0	0	0	54	19	366	366	263	220	366	263	220
2023	24	4	0	0	0	54	19	366	366	252	206	366	252	206
2024	24	4	0	0	0	54	19	366	366	241	193	366	241	192
2025	24	4	0	0	0	54	19	366	366	231	180	366	230	180
2026	24	4	0	0	0	54	19	366	366	221	168	366	220	168
2027	24	4	0	0	0	54	19	366	366	211	157	366	211	157
2028	24	4	0	0	0	54	19	366	366	202	147	366	202	147
2029	24	4	0	0	0	54	19	366	366	193	137	366	193	137
2030	24	4	0	0	0	54	19	366	366	185	128	366	185	128
2031	24	4	0	0	0	54	19	366	366	177	120	366	177	120
2032	24	4	0	0	0	54	19	366	366	169	112	366	169	112
2033	24	4	0	0	0	54	19	366	366	162	105	366	162	105
2034	24	4	0	0	0	54	19	366	366	155	98	366	155	98
2035	24	4	0	0	0	54	19	366	366	149	91	366	148	91
2036	24	4	0	0	0	54	19	366	366	142	85	366	142	85
2037	24	4	0	0	0	54	19	366	366	136	80	366	136	80
2038	24	4	0	0	0	54	19	366	366	130	75	366	130	75
2039	24	4	0	0	0	54	19	366	366	125	70	366	124	70
2040	24	4	0	0	0	54	19	366	366	119	65	366	119	65
2041	24	4	0	0	0	54	19	366	366	114	61	366	114	61
2042	24	4	0	0	0	54	19	366	366	109	57	366	109	57
2043	24	4	0	0	0	54	19	366	366	104	53	366	104	53
2044	24	4	0	0	0	54	19	366	366	100	50	366	100	50
2045	24	4	0	0	0	54	19	366	366	96	46	366	96	46

TABLE A-69

Revenues
Haines - Skagway
Alternative 2B - East Lynn Highway
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	24	4	0	0	0	54	19	366	366	92	43	366	91	43
2047	24	4	0	0	0	54	19	366	366	88	41	366	87	41
2048	24	4	0	0	0	54	19	366	366	84	38	366	84	38
2049	24	4	0	0	0	54	19	366	366	80	35	366	80	35
2050	24	4	0	0	0	54	19	366	366	77	33	366	77	33
Total			12	5	17			12,815	12,831	6,289	4,626	12,820	6,283	4,622

TABLE A-70

Revenues
Haines - Skagway
Alternative 3 - West Lynn Highway
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	17	4	0	0	0	37	18	239	239	234	231	239	234	231
2016	17	4	0	0	0	37	18	239	239	224	216	239	224	216
2017	24	4	0	0	0	54	18	342	342	307	289	342	306	289
2018	24	4	0	0	0	54	18	342	342	293	270	342	293	270
2019	24	4	0	0	0	54	18	342	342	281	253	342	281	252
2020	24	4	0	0	0	54	18	342	342	269	236	342	268	236
2021	30	4	0	0	1	65	18	418	419	314	270	418	314	269
2022	30	4	0	0	1	65	18	418	419	301	252	418	301	252
2023	30	4	0	0	1	65	18	418	419	288	235	418	288	235
2024	30	4	0	0	1	65	18	418	419	275	220	418	275	220
2025	30	4	0	0	1	65	18	418	419	264	206	418	263	205
2026	30	4	0	0	1	65	18	418	419	252	192	418	252	192
2027	30	4	0	0	1	65	18	418	419	241	180	418	241	179
2028	30	4	0	0	1	65	18	418	419	231	168	418	231	168
2029	30	4	0	0	1	65	18	418	419	221	157	418	221	157
2030	30	4	0	0	1	65	18	418	419	212	147	418	211	146
2031	30	4	0	0	1	65	18	418	419	202	137	418	202	137
2032	30	4	0	0	1	65	18	418	419	194	128	418	194	128
2033	30	4	0	0	1	65	18	418	419	185	120	418	185	120
2034	30	4	0	0	1	65	18	418	419	177	112	418	177	112
2035	30	4	0	0	1	65	18	418	419	170	105	418	170	104
2036	30	4	0	0	1	65	18	418	419	162	98	418	162	98
2037	30	4	0	0	1	65	18	418	419	155	91	418	155	91
2038	30	4	0	0	1	65	18	418	419	149	85	418	149	85
2039	30	4	0	0	1	65	18	418	419	142	80	418	142	80
2040	30	4	0	0	1	65	18	418	419	136	75	418	136	74
2041	30	4	0	0	1	65	18	418	419	130	70	418	130	70
2042	30	4	0	0	1	65	18	418	419	125	65	418	125	65
2043	30	4	0	0	1	65	18	418	419	119	61	418	119	61
2044	30	4	0	0	1	65	18	418	419	114	57	418	114	57
2045	30	4	0	0	1	65	18	418	419	109	53	418	109	53

TABLE A-70

Revenues
Haines - Skagway
Alternative 3 - West Lynn Highway
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	30	4	0	0	1	65	18	418	419	105	50	418	105	50
2047	30	4	0	0	1	65	18	418	419	100	46	418	100	46
2048	30	4	0	0	1	65	18	418	419	96	43	418	96	43
2049	30	4	0	0	1	65	18	418	419	92	41	418	92	41
2050	30	4	0	0	1	65	18	418	419	88	38	418	88	38
Total			14	6	20			14,383	14,403	6,959	5,075	14,389	6,952	5,070

TABLE A-71

Revenues
Haines - Skagway
Alternative 4A - Fast Ferry Auke Bay
(2013 $000)

Fiscal Year	AADT	Highway Fuel Taxes: Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	17	4	0	0	0	37	18	239	239	234	231	239	234	231
2016	17	4	0	0	0	37	18	239	239	224	216	239	224	216
2017	24	4	0	0	0	54	18	342	342	307	289	342	306	289
2018	24	4	0	0	0	54	18	342	342	293	270	342	293	270
2019	24	4	0	0	0	54	18	342	342	281	253	342	281	252
2020	24	4	0	0	0	54	18	342	342	269	236	342	268	236
2021	24	4	0	0	0	54	18	342	342	257	221	342	257	220
2022	24	4	0	0	0	54	18	342	342	246	206	342	246	206
2023	24	4	0	0	0	54	18	342	342	236	193	342	235	192
2024	24	4	0	0	0	54	18	342	342	225	180	342	225	180
2025	24	4	0	0	0	54	18	342	342	216	168	342	215	168
2026	24	4	0	0	0	54	18	342	342	206	157	342	206	157
2027	24	4	0	0	0	54	18	342	342	197	147	342	197	147
2028	24	4	0	0	0	54	18	342	342	189	137	342	189	137
2029	24	4	0	0	0	54	18	342	342	181	128	342	181	128
2030	24	4	0	0	0	54	18	342	342	173	120	342	173	120
2031	24	4	0	0	0	54	18	342	342	166	112	342	165	112
2032	24	4	0	0	0	54	18	342	342	158	105	342	158	105
2033	24	4	0	0	0	54	18	342	342	152	98	342	152	98
2034	24	4	0	0	0	54	18	342	342	145	92	342	145	91
2035	24	4	0	0	0	54	18	342	342	139	86	342	139	85
2036	24	4	0	0	0	54	18	342	342	133	80	342	133	80
2037	24	4	0	0	0	54	18	342	342	127	75	342	127	75
2038	24	4	0	0	0	54	18	342	342	122	70	342	122	70
2039	24	4	0	0	0	54	18	342	342	116	65	342	116	65
2040	24	4	0	0	0	54	18	342	342	111	61	342	111	61
2041	24	4	0	0	0	54	18	342	342	107	57	342	107	57
2042	24	4	0	0	0	54	18	342	342	102	53	342	102	53
2043	24	4	0	0	0	54	18	342	342	98	50	342	98	50
2044	24	4	0	0	0	54	18	342	342	93	47	342	93	46
2045	24	4	0	0	0	54	18	342	342	89	43	342	89	43

TABLE A-71

Revenues
Haines - Skagway
Alternative 4A - Fast Ferry Auke Bay
(2013 $000)

Fiscal Year	AADT	Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2046	24	4	0	0	0	54	18	342	342	86	41	342	85	41
2047	24	4	0	0	0	54	18	342	342	82	38	342	82	38
2048	24	4	0	0	0	54	18	342	342	78	35	342	78	35
2049	24	4	0	0	0	54	18	342	342	75	33	342	75	33
2050	24	4	0	0	0	54	18	342	342	72	31	342	72	31
Total			12	5	17			12,102	12,119	5,985	4,423	12,107	5,980	4,419

TABLE A-72

Revenues
Haines - Skagway
Alternative 4B - Fast Ferry Berners Bay
(2013 $000)

Fiscal Year	AADT	Highway Fuel Taxes: Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	AMHS Fares: Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Taxes & Fares: Total Revenue	Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	17	4	0	0	0	37	18	239	239	234	231	239	234	231
2016	17	4	0	0	0	37	18	239	239	224	216	239	224	216
2017	24	4	0	0	0	54	18	342	342	307	289	342	306	289
2018	24	4	0	0	0	54	18	342	342	293	270	342	293	270
2019	24	4	0	0	0	54	18	342	342	281	253	342	281	252
2020	24	4	0	0	0	54	18	342	342	269	236	342	268	236
2021	24	4	0	0	0	54	18	342	342	257	221	342	257	220
2022	24	4	0	0	0	54	18	342	342	246	206	342	246	206
2023	24	4	0	0	0	54	18	342	342	236	193	342	235	192
2024	24	4	0	0	0	54	18	342	342	225	180	342	225	180
2025	24	4	0	0	0	54	18	342	342	216	168	342	215	168
2026	24	4	0	0	0	54	18	342	342	206	157	342	206	157
2027	24	4	0	0	0	54	18	342	342	197	147	342	197	147
2028	24	4	0	0	0	54	18	342	342	189	137	342	189	137
2029	24	4	0	0	0	54	18	342	342	181	128	342	181	128
2030	24	4	0	0	0	54	18	342	342	173	120	342	173	120
2031	24	4	0	0	0	54	18	342	342	166	112	342	165	112
2032	24	4	0	0	0	54	18	342	342	158	105	342	158	105
2033	24	4	0	0	0	54	18	342	342	152	98	342	152	98
2034	24	4	0	0	0	54	18	342	342	145	92	342	145	91
2035	24	4	0	0	0	54	18	342	342	139	86	342	139	85
2036	24	4	0	0	0	54	18	342	342	133	80	342	133	80
2037	24	4	0	0	0	54	18	342	342	127	75	342	127	75
2038	24	4	0	0	0	54	18	342	342	122	70	342	122	70
2039	24	4	0	0	0	54	18	342	342	116	65	342	116	65
2040	24	4	0	0	0	54	18	342	342	111	61	342	111	61
2041	24	4	0	0	0	54	18	342	342	107	57	342	107	57
2042	24	4	0	0	0	54	18	342	342	102	53	342	102	53
2043	24	4	0	0	0	54	18	342	342	98	50	342	98	50
2044	24	4	0	0	0	54	18	342	342	93	47	342	93	46
2045	24	4	0	0	0	54	18	342	342	89	43	342	89	43

TABLE A-72

Revenues
Haines - Skagway
Alternative 4B - Fast Ferry Berners Bay
(2013 $000)

			Highway Fuel Taxes				AMHS Fares		Total Taxes & Fares			State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
Fiscal Year	AADT	Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2046	24	4	0	0	0	54	18	342	342	86	41	342	85	41
2047	24	4	0	0	0	54	18	342	342	82	38	342	82	38
2048	24	4	0	0	0	54	18	342	342	78	35	342	78	35
2049	24	4	0	0	0	54	18	342	342	75	33	342	75	33
2050	24	4	0	0	0	54	18	342	342	72	31	342	72	31
Total			12	5	17			12,102	12,119	5,985	4,423	12,107	5,980	4,419

TABLE A-73

Revenues
Haines - Skagway
Alternative 4C - Monohull Auke Bay
(2013 $000)

Fiscal Year	AADT	Highway Fuel Taxes: Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: PV as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: PV as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	17	4	0	0	0	37	18	239	239	234	231	239	234	231
2016	17	4	0	0	0	37	18	239	239	224	216	239	224	216
2017	24	4	0	0	0	54	18	342	342	307	289	342	306	289
2018	24	4	0	0	0	54	18	342	342	293	270	342	293	270
2019	24	4	0	0	0	54	18	342	342	281	253	342	281	252
2020	24	4	0	0	0	54	18	342	342	269	236	342	268	236
2021	24	4	0	0	0	54	18	342	342	257	221	342	257	220
2022	24	4	0	0	0	54	18	342	342	246	206	342	246	206
2023	24	4	0	0	0	54	18	342	342	236	193	342	235	192
2024	24	4	0	0	0	54	18	342	342	225	180	342	225	180
2025	24	4	0	0	0	54	18	342	342	216	168	342	215	168
2026	24	4	0	0	0	54	18	342	342	206	157	342	206	157
2027	24	4	0	0	0	54	18	342	342	197	147	342	197	147
2028	24	4	0	0	0	54	18	342	342	189	137	342	189	137
2029	24	4	0	0	0	54	18	342	342	181	128	342	181	128
2030	24	4	0	0	0	54	18	342	342	173	120	342	173	120
2031	24	4	0	0	0	54	18	342	342	166	112	342	165	112
2032	24	4	0	0	0	54	18	342	342	158	105	342	158	105
2033	24	4	0	0	0	54	18	342	342	152	98	342	152	98
2034	24	4	0	0	0	54	18	342	342	145	92	342	145	91
2035	24	4	0	0	0	54	18	342	342	139	86	342	139	85
2036	24	4	0	0	0	54	18	342	342	133	80	342	133	80
2037	24	4	0	0	0	54	18	342	342	127	75	342	127	75
2038	24	4	0	0	0	54	18	342	342	122	70	342	122	70
2039	24	4	0	0	0	54	18	342	342	116	65	342	116	65
2040	24	4	0	0	0	54	18	342	342	111	61	342	111	61
2041	24	4	0	0	0	54	18	342	342	107	57	342	107	57
2042	24	4	0	0	0	54	18	342	342	102	53	342	102	53
2043	24	4	0	0	0	54	18	342	342	98	50	342	98	50
2044	24	4	0	0	0	54	18	342	342	93	47	342	93	46
2045	24	4	0	0	0	54	18	342	342	89	43	342	89	43

TABLE A-73

Revenues
Haines - Skagway
Alternative 4C - Monohull Auke Bay
(2013 $000)

			Highway Fuel Taxes				AMHS Fares		Total Taxes & Fares				State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
Fiscal Year	AADT	Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2046	24	4	0	0	0	54	18	342	342	86	41	342	85	41
2047	24	4	0	0	0	54	18	342	342	82	38	342	82	38
2048	24	4	0	0	0	54	18	342	342	78	35	342	78	35
2049	24	4	0	0	0	54	18	342	342	75	33	342	75	33
2050	24	4	0	0	0	54	18	342	342	72	31	342	72	31
Total			12	5	17			12,102	12,119	5,985	4,423	12,107	5,980	4,419

TABLE A-74

Revenues
Haines - Skagway
Alternative 4D - Monohull Berners Bay
(2013 $000)

Fiscal Year	AADT	Highway Fuel Taxes: Average Road Miles	Highway Fuel Taxes: Federal ($0.184/gal)	Highway Fuel Taxes: State ($0.08/gal)	Highway Fuel Taxes: Total Tax Revenue	AMHS Fares: Annual Average Daily Users	AMHS Fares: Average Fare Costs/User	AMHS Fares: Total Fare Revenue	Total Taxes & Fares: Total Revenue	Total Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	Total Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return	State Taxes & Fares: Total Revenue	State Taxes & Fares: Present Value as of 7/1/14 @ 4.5% State Govt Opportunity Cost	State Taxes & Fares: Present Value as of 7/1/14 @ 7.0% Private Sector Rate of Return
2015	17	4	0	0	0	37	18	239	239	234	231	239	234	231
2016	17	4	0	0	0	37	18	239	239	224	216	239	224	216
2017	24	4	0	0	0	54	18	342	342	307	289	342	306	289
2018	24	4	0	0	0	54	18	342	342	293	270	342	293	270
2019	24	4	0	0	0	54	18	342	342	281	253	342	281	252
2020	24	4	0	0	0	54	18	342	342	269	236	342	268	236
2021	24	4	0	0	0	54	18	342	342	257	221	342	257	220
2022	24	4	0	0	0	54	18	342	342	246	206	342	246	206
2023	24	4	0	0	0	54	18	342	342	236	193	342	235	192
2024	24	4	0	0	0	54	18	342	342	225	180	342	225	180
2025	24	4	0	0	0	54	18	342	342	216	168	342	215	168
2026	24	4	0	0	0	54	18	342	342	206	157	342	206	157
2027	24	4	0	0	0	54	18	342	342	197	147	342	197	147
2028	24	4	0	0	0	54	18	342	342	189	137	342	189	137
2029	24	4	0	0	0	54	18	342	342	181	128	342	181	128
2030	24	4	0	0	0	54	18	342	342	173	120	342	173	120
2031	24	4	0	0	0	54	18	342	342	166	112	342	165	112
2032	24	4	0	0	0	54	18	342	342	158	105	342	158	105
2033	24	4	0	0	0	54	18	342	342	152	98	342	152	98
2034	24	4	0	0	0	54	18	342	342	145	92	342	145	91
2035	24	4	0	0	0	54	18	342	342	139	86	342	139	85
2036	24	4	0	0	0	54	18	342	342	133	80	342	133	80
2037	24	4	0	0	0	54	18	342	342	127	75	342	127	75
2038	24	4	0	0	0	54	18	342	342	122	70	342	122	70
2039	24	4	0	0	0	54	18	342	342	116	65	342	116	65
2040	24	4	0	0	0	54	18	342	342	111	61	342	111	61
2041	24	4	0	0	0	54	18	342	342	107	57	342	107	57
2042	24	4	0	0	0	54	18	342	342	102	53	342	102	53
2043	24	4	0	0	0	54	18	342	342	98	50	342	98	50
2044	24	4	0	0	0	54	18	342	342	93	47	342	93	46
2045	24	4	0	0	0	54	18	342	342	89	43	342	89	43

TABLE A-74

Revenues
Haines - Skagway
Alternative 4D - Monohull Berners Bay
(2013 $000)

			Highway Fuel Taxes				AMHS Fares		Total Taxes & Fares			State Taxes & Fares		
										Present Value as of 7/1/14 @			Present Value as of 7/1/14 @	
Fiscal Year	AADT	Average Road Miles	Federal ($0.184/gal)	State ($0.08/gal)	Total Tax Revenue	Annual Average Daily Users	Average Fare Costs/User	Total Fare Revenue	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return	Total Revenue	4.5% State Govt Opportunity Cost	7.0% Private Sector Rate of Return
2046	24	4	0	0	0	54	18	342	342	86	41	342	85	41
2047	24	4	0	0	0	54	18	342	342	82	38	342	82	38
2048	24	4	0	0	0	54	18	342	342	78	35	342	78	35
2049	24	4	0	0	0	54	18	342	342	75	33	342	75	33
2050	24	4	0	0	0	54	18	342	342	72	31	342	72	31
Total			12	5	17			12,102	12,119	5,985	4,423	12,107	5,980	4,419

TABLE A-75

Present Value of Project Costs
as of 7/1/14
@ 7.0% Private Sector Rate of Return
(2013 $000)

	Total Funds					State Funds				
Alternative	Capital Costs	Operating Costs	Total Costs	Revenue	Net Costs	Capital Costs	Operating Costs	Total Costs	Revenue	Net Costs
1 - No Action	64,444	218,986	283,430	(100,900)	182,530	5,819	218,986	224,805	(100,886)	123,919
1B - Enhanced Service	137,930	315,233	453,163	(106,747)	346,415	12,455	315,233	327,688	(106,732)	220,956
2B - East Lynn Highway	474,871	261,450	736,321	(126,487)	609,834	126,756	261,450	388,205	(124,723)	263,483
3 - West Lynn Highway	430,714	273,255	703,969	(143,146)	560,823	122,241	273,255	395,496	(141,839)	253,657
4A - Fast Ferry Auke Bay	215,618	375,855	591,474	(162,099)	429,374	94,772	375,855	470,627	(162,081)	308,545
4B - Fast Ferry Berners Bay	273,408	361,527	634,935	(181,437)	453,498	100,621	361,527	462,148	(181,255)	280,892
4C - Monohull Auke Bay	120,238	258,134	378,372	(113,959)	264,414	48,806	258,134	306,940	(113,944)	192,996
4D - Monohull Berners Bay	141,709	265,866	407,575	(166,935)	240,640	54,808	265,866	320,674	(166,750)	153,924

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