



# APPENDIX 13:

Benefit Cost Analysis Memo





# Technical Memorandum

## Benefit Cost Analysis

To: Greg Lockwood, DOT&PF Southcoast Region  
From: Erica Jensen, PE, PTOE, DOWL  
Date: April 18, 2025  
Project: Juneau Douglas North Crossing PEL Study  
Project Numbers: SFHWY00299/0003259

## Project Description

The City and Borough of Juneau (CBJ) has partnered with Alaska Department of Transportation and Public Facilities (DOT&PF) to study a transportation corridor to connect Juneau with the north end of Douglas Island. The primary purpose of the Juneau Douglas North Crossing project is to improve the connection between Douglas Island and Juneau. The secondary purposes are to improve transportation for non-motorized users and reduce transportation-related energy consumption.

An improved connection to Douglas Island would address the following needs:

- Alternate access and transportation infrastructure resilience: The community has expressed concerns regarding the lack of an alternate access during emergencies and the CBJ identified the issue in the 2013 Comprehensive Plan. In the event of the existing Douglas Island Bridge or another single-route travel corridor in the area (North Douglas Highway or Egan Drive) being inaccessible or out of service, emergency response would be delayed, and residents would be cut off from access to workplace and critical resources.
- Decrease traffic pressure on Douglas Island Bridge and its intersections: The traveling public is currently experiencing delays and congestion on the Douglas Island Bridge and its intersections during peak travel times. Results of analyses indicate the intersections operate at, or over, capacity during peak travel times and conditions will continue to deteriorate based on estimated future traffic counts.

The completed project would:

- Improve connection to North and West Douglas Island by creating additional traffic capacity to support the future development of affordable housing and economic development opportunities.
- Enhance and protect the public health and safety of travelers and the communities that transportation facilities traverse and serve.
- Avoid, minimize, and mitigate impacts to the environment and to residential areas.
- Maintain the visual, cultural, and scenic identity of Juneau and Douglas Island.

## Purpose of the Technical Memorandum

This technical memorandum presents the methods and results of a Benefit-Cost Analysis (BCA). The BCA quantifies and monetizes the expected benefits and costs of each action alternative. A variety of factors were identified and investigated to analyze the alternatives, including environmental impacts, traffic volume changes, travel time, construction costs, operating costs, right-of-way impacts, and neighborhood impacts. The BCA was conducted in accordance with the US Department of Transportation Benefit-Cost Analysis Guidance for Discretionary Grant Programs (December 2023) and their accompanying spreadsheet.

Costs include:

- Capital construction costs:
  - Construction
  - Environmental/ wetland mitigation
  - Right-of-way acquisition
  - Construction engineering
- Annual operations and maintenance (O&M) costs

Benefits include:

- Travel time savings (reduction of travel time for users)
- Vehicle operating costs savings (reduced operating costs due to reduced miles traveled)
- Emission reduction benefits (reduced emissions due to reduced miles traveled)
- Pedestrian comfort benefit (due to reduced vehicles on the existing road)
- Other benefits per reduced vehicle-mile traveled (e.g., congestion reduction, noise reduction, safety costs)
- Residual value (benefits continued for the life of the project, after the 30-year analysis period)

Future monetized values were adjusted for either inflation or discounting, as applicable, to ensure comparisons were conducted in common terms. Table 1 lists the assumptions common to all action alternatives used in the calculations. Individual parameter values (e.g., emissions reduction for vehicles) were taken directly from the BCA guidance and accompanying spreadsheet (Appendix 2).

*Table 1. Parameters and Assumptions for the BCA*

Variable/ Item	Value	Comments
Base year	2022	Recommended in the BCA guidance
First year of construction	2027	
Length of construction	2 years	
Operational period	30 years	Maximum value per BCA guidance
Project useful life	75 years	
Annual inflation	2.6%	Average annual inflation over previous 10 years
Discounting rate	3.1%	Recommended in the BCA guidance

## Existing Conditions

Currently, there is one bridge connecting downtown Juneau (and the surrounding area including Mendenhall Valley and Auke Bay) with Douglas Island. The bridge is two lanes (one lane in each direction) with a sidewalk on the north side. The bridge is classified as a minor arterial with average annual daily traffic (AADT) of 13,200 vehicles per day (2014 to 2020) .

## Proposed Alternatives

### No Build

Under the No Build alternative a new bridge would not be constructed between Juneau and Douglas Island. The No Build alternative provides a basis for comparison in the BCA. For the purpose of this BCA, the No Build alternative does not include improvements to the existing bridge.

### Proposed Action Alternatives

FIGURE 1 depicts the proposed alternatives evaluated for this BCA: Salmon Creek (red), Twin Lakes (yellow), Vanderbilt (green), Sunny Point East (teal), Sunny Point West (blue), and Mendenhall Peninsula (purple).

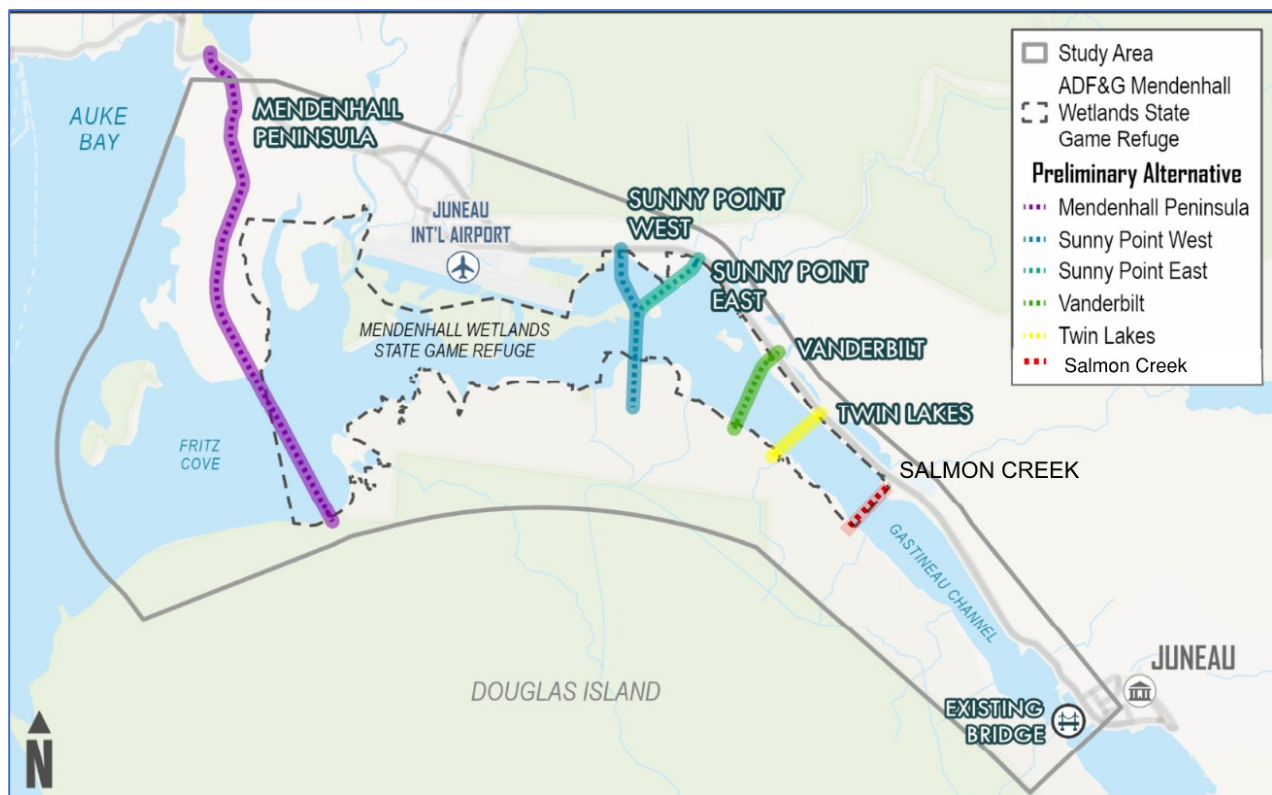


Figure 1. Proposed Alternatives Overview

## Benefit-Cost Analysis

### Salmon Creek

The Salmon Creek alternative is 2.7 miles north of the existing bridge along Egan Drive. Values used in the BCA for Salmon Creek are listed in Table 3.

*Table 2. Salmon Creek Alternative – Values for Benefit-Cost Analysis*

Item	Value	Comments
Construction Cost	\$390,000,000	
O&M costs	\$70,000	annually
User volume (AADT for base year)	4,150	from Bridge Volume Forecast Memo <sup>1</sup>
User volume (AADT 2060)	6,100	from Bridge Volume Forecast Memo
Distance from existing bridge	2.7 miles	
Travel time savings	62.5 seconds	from Bridge Volume Forecast Memo

### Twin Lakes

The Twin Lakes alternative is 3.5 miles north of the existing bridge along Egan Drive. Values used in the BCA for Twin Lakes are listed in Table 3.

*Table 3. Twin Lakes Alternative – Values for Benefit-Cost Analysis*

Item	Value	Comments
Construction Cost	\$360,000,000	
O&M costs	\$65,000	annually
User volume (AADT for base year)	4,150	from Bridge Volume Forecast Memo <sup>2</sup>
User volume (AADT 2060)	6,100	from Bridge Volume Forecast Memo
Distance from existing bridge	3.5 miles	
Travel time savings	62.5 seconds	from Bridge Volume Forecast Memo

<sup>1</sup> The Bridge Volume Forecast Memo is provided in Appendix 1.

<sup>2</sup> The Bridge Volume Forecast Memo is provided in Appendix 1.

## Vanderbilt

The Vanderbilt alternative is 4.2 miles north of the existing bridge along Egan Drive. Values used in the BCA for Vanderbilt are listed in Table 4.

*Table 4. Vanderbilt Alternative – Values for Benefit-Cost Analysis*

Item	Value	Comments
Construction Cost	\$340,000,000	
O&M costs	\$90,000	annually
User volume (AADT for base year)	2,800	from Bridge Volume Forecast Memo
User volume (AADT 2060)	4,600	from Bridge Volume Forecast Memo
Distance from existing bridge	4.2 miles	
Travel time savings	60 seconds	from Bridge Volume Forecast Memo

## Sunny Point East

The Sunny Point East alternative is 5.3 miles north of the existing bridge along Egan Drive. Values used in the BCA for Sunny Point East are listed in Table 5.

*Table 5. Sunny Point East Alternative – Values for Benefit-Cost Analysis*

Item	Value	Comments
Construction Cost	\$530,000,000	
O&M costs	\$175,000	annually
User volume (AADT for base year)	2,800	from Bridge Volume Forecast Memo
User volume (AADT 2060)	4,600	from Bridge Volume Forecast Memo
Distance from existing bridge	5.3 miles	
Travel time savings	60 seconds	from Bridge Volume Forecast Memo

## Sunny Point West

The Sunny Point West alternative is 6.0 miles north of the existing bridge along Egan Drive. Values used in the BCA for Sunny Point West are listed in Table 6.

*Table 6. Sunny Point West Alternative – Values for Benefit-Cost Analysis*

Item	Value	Comments
Construction Cost	\$490,000,000	
O&M costs	\$150,000	annually
User volume (AADT for base year)	2,800	from Bridge Volume Forecast Memo
User volume (AADT 2060)	4,600	from Bridge Volume Forecast Memo
Distance from existing bridge	6.0 miles	
Travel time savings	60 seconds	from Bridge Volume Forecast Memo

## Mendenhall Peninsula

The Mendenhall Peninsula alternative is 10.3 miles north of the existing bridge along Egan Drive. Values used in the BCA for Mendenhall Peninsula are listed in Table 7.

*Table 7. Mendenhall Peninsula Alternative – Values for Benefit-Cost Analysis*

Item	Value	Comments
Construction Cost	\$1,090,000,000	
O&M costs	\$365,000	annually
User volume (AADT for base year)	700	from Bridge Volume Forecast Memo
User volume (AADT 2060)	2,300	from Bridge Volume Forecast Memo
Distance from existing bridge	10.3 miles	
Travel time savings	27.5 seconds	from Bridge Volume Forecast Memo

## Summary

The calculated benefit-cost ratios are listed in Table 8. The detailed spreadsheets are in Appendix 2. Based on the benefit-cost analysis alone, the Twin Lakes alternative is the most beneficial action alternative.

*Table 8. Benefit-Cost Ratio Summary*

<b>Alternative</b>	<b>Benefit-Cost Ratio</b>
Salmon Creek	2.16
Twin Lakes	2.90
Vanderbilt	2.65
Sunny Point East	2.19
Sunny Point West	2.62
Mendenhall Peninsula	0.97



# APPENDIX 1:

Bridge Volume Forecast Memo

# Bridge Volume Forecast Memo

## Introduction

The Alaska Department of Transportation (DOT&PF) has retained Kinney Engineering, LLC (KE) as a subconsultant to DOWL for the *Juneau-Douglas North Channel Crossing Planning & Environmental Linkage (PEL) Study*, which will evaluate alternatives and determine recommended crossing location(s) for a second bridge crossing of the Gastineau channel to and from Douglas Island, north of the existing Juneau-Douglas Bridge. This memo provides volume forecasts for each bridge alternative location using data from two previous memos: the Origin-Destination Data memo and the Volume to Capacity of the Existing Juneau-Douglas Bridge memo.

Figure 1 shows the study areas from the Origin Destination memo and the bridge alternatives.

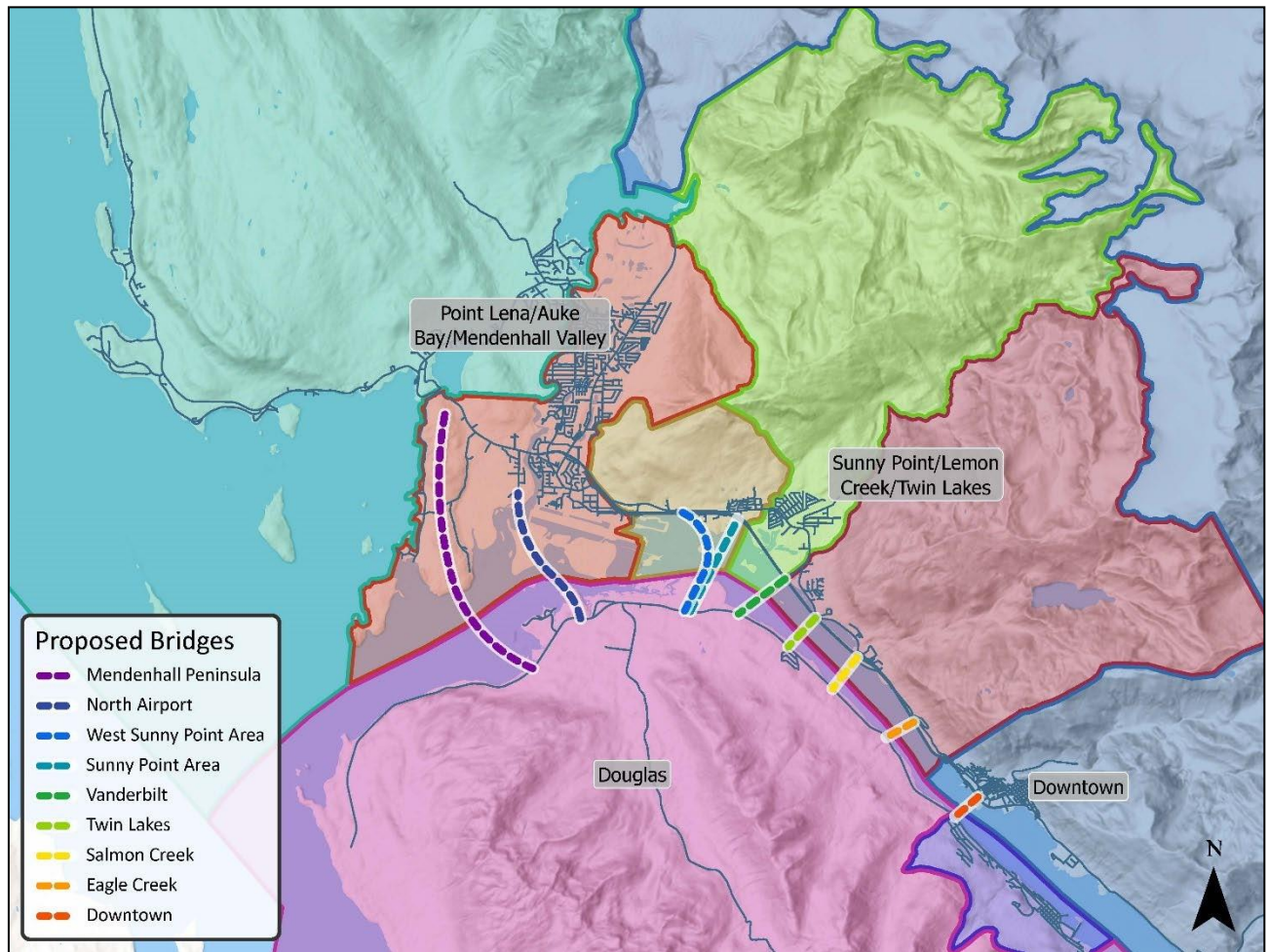
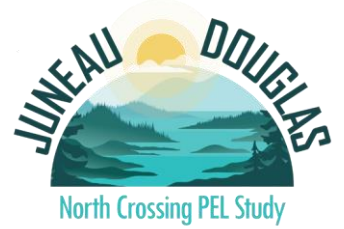


Figure 1: Study Areas and Bridge Alternative



# Analysis

## Travel Time & Travel Distance for Each Bridge Alternative Location

For the existing bridge and for each of the bridge alternative locations, the travel time and distance between each pair of census blocks was determined using Google Maps travel time and distance estimates, supplemented with estimates of travel time using distance and estimated speed, as applicable.

A table showing the calculated travel times and distances is presented in the Appendix.

## Forecast Bridge Volumes (Existing Bridge)

Volume forecasts for the existing bridge were developed previously in the Volume to Capacity of the Existing Juneau- Douglas Bridge memo and are presented in *Table 1*. Note that the forecasted volumes have been rounded to the nearest 100.

*Table 1: Forecast Bridge Volumes for Existing Juneau-Douglas Bridge*

Year	2022	2030	2040	2050	2060
AADT	13,900	14,200	14,600	14,900	15,300

## Origin-Destination Proportions

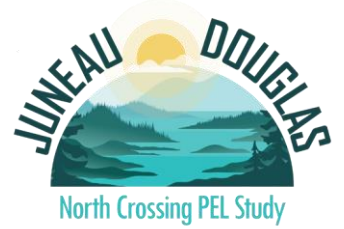
The proportion of the total traffic using the existing bridge that travels between each Census Block Group and Douglas Island was estimated using location based services (LBS) data, as described previously in the Origin-Destination Data memo.

## Forecast Bridge Volumes (Bridge Alternative Locations)

For each of the bridge alternative locations, the travel time using the alternative bridge location was compared to the travel time using the existing bridge. For each origin-destination pair, the proportion of the existing bridge traffic volume corresponding to that pair was assigned to either the alternative bridge or the existing bridge, based on the bridge with the shortest travel time for that pair. If the travel times for the alternative and the existing bridge were within 10% of each other, the proportion was split evenly between the two bridges. For the downtown alternative bridge location, it was assumed that traffic would split evenly on each bridge (assuming each bridge would serve one-way traffic).

Any traffic that would use a bridge in any of the alternative locations would increase traffic volumes on Douglas Highway and reduce volumes on Egan Drive. Since Egan Drive is not operating near capacity, average speeds on Egan Drive are mostly impacted by the traffic signals and would not change with a decrease in volumes. However, increased volumes on Douglas Highway could have an impact on speeds. The Highway Capacity Manual Exhibit 15-2 provides an estimate for how vehicle speeds are impacted by directional volumes on two-lane highways. After initial estimates of traffic volumes for each bridge were completed, travel speeds on Douglas Highway were revised to reflect the increased volume. This resulted in longer travel times on Douglas Highway. Estimates of the proportion of traffic using each bridge were adjusted to reflect these new travel times.

Table 2 shows the resulting proportion of traffic that is forecast to be using each bridge based on this analysis. The analysis indicates that 5 to 50% of the traffic would be diverted from the existing bridge to one of the proposed bridge alternatives. The table also shows the travel time savings for each set of bridges, calculated as the average travel time saved per user. While a bridge at the Mendenhall/North Airport location would result in the highest time savings for



individual users (up to 15 minutes), the Sunny Point/Vanderbilt/Twin Lakes/Salmon Creek locations would result in the greatest overall travel time benefit.

Table 3 shows the range of volumes forecasted for each alternative bridge location.

*Table 2: Proportion of Traffic Volumes Selecting each Bridge Alternative Location*

Bridge	Mendenhall or North Airport	Sunny Point Area or Vanderbilt	Twin Lakes or Salmon Creek	Eagle Creek Bridge	Downtown/ Juneau Douglas
Proposed	5 to 15%	20 to 30%	30 to 40%	40 to 45%	50%
Existing	85 to 95%	70 to 80%	60 to 70%	55 to 60%	50%
Individual Travel Time Savings	Up to 15 minutes	Up to 13 minutes	Up to 10 minutes	Up to 5 minutes	Minimal
Average Time Saved	20 to 35 seconds per vehicle	55 to 65 seconds per vehicle	60 to 65 seconds per vehicle	40 seconds per vehicle	Minimal

*Table 3: Alternative Bridge Location Volume Forecast*

Mendenhall or North Airport					Sunny Point Area or Vanderbilt				
AA DT 2022	AA DT 2030	AA DT 2040	AA DT 2050	AA DT 2060	AA DT 2022	AA DT 2030	AA DT 2040	AA DT 2050	AA DT 2060
Proposed Bridge					Proposed Bridge				
700 to 2100	700 to 2150	750 to 2200	750 to 2250	750 to 2300	2800 to 4150	2850 to 4250	2900 to 4400	3000 to 4450	3050 to 4600
Existing Bridge					Existing Bridge				
11800 to 13200	12050 to 13500	12400 to 13850	12650 to 14150	13000 to 14550	9750 to 11100	9950 to 11350	10200 to 11700	10450 to 11900	10700 to 12250

Table 3: Alternative Bridge Location Volume Forecast (cont)

Twin Lakes or Salmon Creek					Eagle Creek				
AADT 2022	AADT 2030	AADT 2040	AADT 2050	AADT 2060	AADT 2022	AADT 2030	AADT 2040	AADT 2050	AADT 2060
Proposed Bridge					Proposed Bridge				
4150 to 5550	4250 to 5700	4400 to 5850	4450 to 5950	4600 to 6100	5550 to 6250	5700 to 6400	5850 to 6550	5950 to 6550	6100 to 6900
Existing Bridge					Existing Bridge				
8350 to 9750	8500 to 9950	8750 to 10200	8950 to 10450	9200 to 10700	7400 to 7850	7600 to 8050	7800 to 8250	7950 to 8450	8150 to 8650

Downtown/Juneau Douglas				
AADT 2022	AADT 2030	AADT 2040	AADT 2050	AADT 2060
Proposed Bridge				
6750 to 7150	6900 to 7300	7100 to 7500	7250 to 7650	7400 to 7900
Existing Bridge				
6750 to 7150	6900 to 7300	7100 to 7500	7250 to 7650	7400 to 7900

In winter, the Eaglecrest Ski Area is estimated to attract 500 to 800 trips per day to the North Douglas area. This could result in a shift of traffic of up to approximately 5% from the Downtown/Juneau Douglas Bridge to the proposed bridges.

*this page intentionally left blank*



# APPENDIX 2:

## Benefit-Cost Analysis

## Common to All Alternatives

\*All parameter values and table references are from the USDOT BCA Guidelines and accompanying spreadsheet.

### Travel Time Savings

Recommended hourly values of time travel savings, per person-hour and average occupancy:

Table A-2 Value of travel time savings: recommended monetized values:

Category	Hourly Value (2022 \$)
All purpose	\$19.60

Table A-3: Average vehicle occupancy rates for highway passenger vehicles

Vehicle Type	Average Occupancy
Passenger Vehicles (All Travel)	1.67

### Vehicle Operating Costs

Based on an average light duty vehicle and includes operating costs such as gasoline, maintenance, tires, and depreciation (assuming an average of 15,000 miles driven per year). The value omits other ownership costs that are mostly fixed or transfers (insurance, license, registration, taxes, and financing charges).

Table A-4 Vehicle operating costs:

Vehicle Type	Recommended value per mile (2022 \$)
Light duty vehicle	\$0.52

### Emissions

Emission rates are based on estimates from EPA's MOVES Model. The monetization applies the 2035-year emission value to approximate increasing emission damage costs over time. Non-CO<sub>2</sub> emission damages were discounted at 3.1 percent, while CO<sub>2</sub> emission damages were discounted at 2.0 percent.

Table A-14 External highway use costs:

Vehicle Type and location	Recommended value per mile (2022 \$)	Recommended value per mile (2022 \$)
	Non-CO <sub>2</sub> emissions	CO <sub>2</sub> emissions
All vehicles – all locations	\$0.015	\$0.129

### Other Highway Use Externalities

Congestion costs updated from the 1997 Highway Cost Allocation Study to reflect increased traffic volumes, changes in vehicle occupancy, and increases in the value of time per person-hour since that time. Both congestion and noise costs are also adjusted from 1994 dollars to 2022 dollars using the GDP deflator.

Table A-14 External highway use costs:

Vehicle Type and location	Congestion cost per VMT*	Noise cost per VMT	Safety cost per VMT	Total savings per VMT
All vehicles – all locations	\$0.128	\$0.0031	\$0.04	\$0.169

\*VMT = vehicle mile travelled

### Pedestrian Benefits

Benefits realized from reduced traffic volumes, ambient noise, and exhaust exposure along the existing corridor (i.e. Egan Road). For the mile-based benefits, the estimated value per user should be capped at 0.86 miles, the average length of a walking trip in the 2017 National Household Travel Survey, unless the applicant has specific documentation suggesting longer trips or that a trip shorter than 0.86 miles is not feasible on the facility in question. In other words, applicants should not assume all pedestrians travel the full distance of a proposed facility if the facility is longer than 0.86 miles without a clear justification for doing so.

Table A-14 External highway use costs:

Vehicle Type and location	Congestion cost per VMT*	Noise cost per VMT	Safety cost per VMT	Total savings per VMT
All vehicles – all locations	\$0.128	\$0.0031	\$0.04	\$0.169

Miles of benefit for reduced traffic:

Item	Value
Benefit realized	0.86 miles

## Summary

*\*Details of each alternative are included on the following pages*

Summary of Benefit-Cost Analysis

Category	Value					
	Salmon Creek	Twin Lakes	Vanderbilt	Sunny Point East	Sunny Point West	Mendenhall Peninsula
Total Discounted Benefits	\$617,610,750	\$766,970,973	\$662,890,054	\$852,681,378	\$942,564,204	\$773,565,239
Total Discounted Costs	\$286,419,699	\$264,387,415	\$249,699,225	\$389,237,027	\$359,860,648	\$800,506,339
Benefit-Cost Ratio	<b>2.16</b>	<b>2.90</b>	<b>2.65</b>	<b>2.19</b>	<b>2.62</b>	<b>0.97</b>

Summary by Benefit Area

Salmon Creek

Table 1. Summary of Benefits

Year	User Volume	Operations and Maintenance	Travel Time Savings	Vehicle Operating Cost Savings	Non-CO2 Emission Reduction	CO2 Emission Reduction	Avoided Highway Externality	Residual Value	Pedestrian: reduction in traffic volume	Total Benefits	Total Discounted Benefits
2029	4150	\$70,000	\$860,778	\$2,126,709	\$61,347	\$527,587	\$24,185,837	\$0	\$1,303	\$27,693,561	\$22,398,185
2030	4219	\$70,000	\$875,089	\$2,162,069	\$62,367	\$536,359	\$24,587,963	\$0	\$1,324	\$28,155,172	\$22,091,721
2031	4288	\$70,000	\$889,401	\$2,197,428	\$63,387	\$545,131	\$24,990,089	\$0	\$1,346	\$28,616,783	\$21,783,643
2032	4357	\$70,000	\$903,713	\$2,232,788	\$64,407	\$553,903	\$25,392,215	\$0	\$1,368	\$29,078,394	\$21,474,323
2033	4426	\$70,000	\$918,025	\$2,268,148	\$65,427	\$562,675	\$25,794,341	\$0	\$1,389	\$29,540,005	\$21,164,110
2034	4495	\$70,000	\$932,336	\$2,303,508	\$66,447	\$571,447	\$26,196,467	\$0	\$1,411	\$30,001,616	\$20,853,335
2035	4564	\$70,000	\$946,648	\$2,338,867	\$67,467	\$580,219	\$26,598,593	\$0	\$1,433	\$30,463,227	\$20,542,309
2036	4633	\$70,000	\$960,960	\$2,374,227	\$68,487	\$588,991	\$27,000,719	\$0	\$1,454	\$30,924,838	\$20,231,325
2037	4702	\$70,000	\$975,272	\$2,409,587	\$69,507	\$597,763	\$27,402,844	\$0	\$1,476	\$31,386,449	\$19,920,658
2038	4771	\$70,000	\$989,583	\$2,444,947	\$70,527	\$606,535	\$27,804,970	\$0	\$1,498	\$31,848,060	\$19,610,569
2039	4840	\$70,000	\$1,003,895	\$2,480,306	\$71,547	\$615,307	\$28,207,096	\$0	\$1,519	\$32,309,671	\$19,301,299
2040	4909	\$70,000	\$1,018,207	\$2,515,666	\$72,567	\$624,079	\$28,609,222	\$0	\$1,541	\$32,771,282	\$18,993,077
2041	4978	\$70,000	\$1,032,518	\$2,551,026	\$73,587	\$632,851	\$29,011,348	\$0	\$1,563	\$33,232,893	\$18,686,117
2042	5047	\$70,000	\$1,046,830	\$2,586,386	\$74,607	\$641,623	\$29,413,474	\$0	\$1,584	\$33,694,504	\$18,380,619
2043	5116	\$70,000	\$1,061,142	\$2,621,745	\$75,627	\$650,395	\$29,815,600	\$0	\$1,606	\$34,156,115	\$18,076,769
2044	5185	\$70,000	\$1,075,454	\$2,657,105	\$76,647	\$659,166	\$30,217,726	\$0	\$1,628	\$34,617,726	\$17,774,743
2045	5254	\$70,000	\$1,089,765	\$2,692,465	\$77,667	\$667,938	\$30,619,852	\$0	\$1,649	\$35,079,337	\$17,474,702
2046	5323	\$70,000	\$1,104,077	\$2,727,825	\$78,687	\$676,710	\$31,021,978	\$0	\$1,671	\$35,540,948	\$17,176,797
2047	5392	\$70,000	\$1,118,389	\$2,763,184	\$79,707	\$685,482	\$31,424,104	\$0	\$1,693	\$36,002,559	\$16,881,169
2048	5461	\$70,000	\$1,132,701	\$2,798,544	\$80,727	\$694,254	\$31,826,230	\$0	\$1,714	\$36,464,170	\$16,587,948
2049	5530	\$70,000	\$1,147,012	\$2,833,904	\$81,747	\$703,026	\$32,228,356	\$0	\$1,736	\$36,925,781	\$16,297,253
2050	5599	\$70,000	\$1,161,324	\$2,869,264	\$82,767	\$711,798	\$32,630,482	\$0	\$1,758	\$37,387,392	\$16,009,195
2051	5668	\$70,000	\$1,175,636	\$2,904,623	\$83,787	\$720,570	\$33,032,608	\$0	\$1,779	\$37,849,003	\$15,723,877
2052	5737	\$70,000	\$1,189,947	\$2,939,983	\$84,807	\$729,342	\$33,434,734	\$0	\$1,801	\$38,310,614	\$15,441,391
2053	5806	\$70,000	\$1,204,259	\$2,975,343	\$85,827	\$738,114	\$33,836,860	\$0	\$1,823	\$38,772,225	\$15,161,822
2054	5875	\$70,000	\$1,218,571	\$3,010,703	\$86,847	\$746,886	\$34,238,986	\$0	\$1,844	\$39,233,836	\$14,885,249
2055	5944	\$70,000	\$1,232,883	\$3,046,062	\$87,867	\$755,658	\$34,641,112	\$0	\$1,866	\$39,695,447	\$14,611,741
2056	6013	\$70,000	\$1,247,194	\$3,081,422	\$88,887	\$764,430	\$35,043,238	\$0	\$1,887	\$40,157,058	\$14,341,363
2057	6082	\$70,000	\$1,261,506	\$3,116,782	\$89,907	\$773,202	\$35,445,364	\$0	\$1,909	\$40,618,669	\$14,074,170
2058	6100	\$70,000	\$1,265,240	\$3,126,006	\$90,173	\$775,490	\$35,550,266	\$234,000,000	\$1,915	\$274,739,090	\$91,661,273
Undiscounted Total		\$2,100,000	\$32,038,354	\$79,156,621	\$2,283,364	\$19,636,931	\$900,202,673	\$234,000,000	\$48,486	\$1,265,266,430	
Discounted Total		\$1,127,757	\$16,687,503	\$41,229,532	\$1,189,313	\$12,761,416	\$468,879,730	\$77,965,758	\$25,255	\$615,077,430	\$617,610,750

Table 2. Summary of Costs

Year	Capital Cost	Discounted Capital Cost
2027	\$171,513,302	\$147,232,769
2028	\$167,166,961	\$139,186,930
2029	\$0	\$0
2030	\$0	\$0
2031	\$0	\$0
2032	\$0	\$0
2033	\$0	\$0
2034	\$0	\$0
2035	\$0	\$0
2036	\$0	\$0
2037	\$0	\$0
2038	\$0	\$0
2039	\$0	\$0
2040	\$0	\$0
2041	\$0	\$0
Total	\$338,680,263	\$286,419,699

**Summary by Benefit Area**

**Twin Lakes**

Table 1. Summary of Benefits

Year	User Volume	Operations and Maintenance	Travel Time Savings	Vehicle Operating Cost Savings	Non-CO2 Emission Reduction	CO2 Emission Reduction	Avoided Highway Externality	Residual Value	Pedestrian: reduction in traffic volume	Total Benefits	Total Discounted Benefits
2029	4150	\$65,000	\$860,778	\$2,756,845	\$79,524	\$683,910	\$31,352,011	\$0	\$1,303	\$35,669,370	\$28,849,189
2030	4219	\$65,000	\$875,089	\$2,802,682	\$80,847	\$695,281	\$31,873,285	\$0	\$1,324	\$36,263,508	\$28,454,171
2031	4288	\$65,000	\$889,401	\$2,848,518	\$82,169	\$706,652	\$32,394,559	\$0	\$1,346	\$36,857,645	\$28,057,095
2032	4357	\$65,000	\$903,713	\$2,894,355	\$83,491	\$718,023	\$32,915,834	\$0	\$1,368	\$37,451,783	\$27,658,435
2033	4426	\$65,000	\$918,025	\$2,940,192	\$84,813	\$729,394	\$33,437,108	\$0	\$1,389	\$38,045,921	\$27,258,644
2034	4495	\$65,000	\$932,336	\$2,986,029	\$86,135	\$740,765	\$33,958,383	\$0	\$1,411	\$38,640,059	\$26,858,145
2035	4564	\$65,000	\$946,648	\$3,031,865	\$87,458	\$752,136	\$34,479,657	\$0	\$1,433	\$39,234,196	\$26,457,338
2036	4633	\$65,000	\$960,960	\$3,077,702	\$88,780	\$763,507	\$35,000,931	\$0	\$1,454	\$39,828,334	\$26,056,599
2037	4702	\$65,000	\$975,272	\$3,123,539	\$90,102	\$774,878	\$35,522,206	\$0	\$1,476	\$40,422,472	\$25,656,284
2038	4771	\$65,000	\$989,583	\$3,169,375	\$91,424	\$786,249	\$36,043,480	\$0	\$1,498	\$41,016,610	\$25,256,725
2039	4840	\$65,000	\$1,003,895	\$3,215,212	\$92,747	\$797,620	\$36,564,755	\$0	\$1,519	\$41,610,747	\$24,858,235
2040	4909	\$65,000	\$1,018,207	\$3,261,049	\$94,069	\$808,991	\$37,086,029	\$0	\$1,541	\$42,204,885	\$24,461,107
2041	4978	\$65,000	\$1,032,518	\$3,306,885	\$95,391	\$820,362	\$37,607,303	\$0	\$1,563	\$42,799,023	\$24,065,615
2042	5047	\$65,000	\$1,046,830	\$3,352,722	\$96,713	\$831,733	\$38,128,578	\$0	\$1,584	\$43,393,160	\$23,672,017
2043	5116	\$65,000	\$1,061,142	\$3,398,559	\$98,035	\$843,104	\$38,649,852	\$0	\$1,606	\$43,987,298	\$23,280,553
2044	5185	\$65,000	\$1,075,454	\$3,444,396	\$99,358	\$854,475	\$39,171,127	\$0	\$1,628	\$44,581,436	\$22,891,447
2045	5254	\$65,000	\$1,089,765	\$3,490,232	\$100,680	\$865,846	\$39,692,401	\$0	\$1,649	\$45,175,574	\$22,504,907
2046	5323	\$65,000	\$1,104,077	\$3,536,069	\$102,002	\$877,217	\$40,213,675	\$0	\$1,671	\$45,769,711	\$22,121,128
2047	5392	\$65,000	\$1,118,389	\$3,581,906	\$103,324	\$888,588	\$40,734,950	\$0	\$1,693	\$46,363,849	\$21,740,290
2048	5461	\$65,000	\$1,132,701	\$3,627,742	\$104,646	\$899,959	\$41,256,224	\$0	\$1,714	\$46,957,987	\$21,362,559
2049	5530	\$65,000	\$1,147,012	\$3,673,579	\$105,969	\$911,330	\$41,777,499	\$0	\$1,736	\$47,552,124	\$20,988,089
2050	5599	\$65,000	\$1,161,324	\$3,719,416	\$107,291	\$922,701	\$42,298,773	\$0	\$1,758	\$48,146,262	\$20,617,023
2051	5668	\$65,000	\$1,175,636	\$3,765,252	\$108,613	\$934,072	\$42,820,047	\$0	\$1,779	\$48,740,400	\$20,249,492
2052	5737	\$65,000	\$1,189,947	\$3,811,089	\$109,935	\$945,443	\$43,341,322	\$0	\$1,801	\$49,334,538	\$19,885,616
2053	5806	\$65,000	\$1,204,259	\$3,856,926	\$111,257	\$956,814	\$43,862,596	\$0	\$1,823	\$49,928,675	\$19,525,503
2054	5875	\$65,000	\$1,218,571	\$3,902,763	\$112,580	\$968,185	\$44,383,870	\$0	\$1,844	\$50,522,813	\$19,169,253
2055	5944	\$65,000	\$1,232,883	\$3,948,599	\$113,902	\$979,556	\$44,905,145	\$0	\$1,866	\$51,116,951	\$18,816,957
2056	6013	\$65,000	\$1,247,194	\$3,994,436	\$115,224	\$990,927	\$45,426,419	\$0	\$1,887	\$51,711,088	\$18,468,696
2057	6082	\$65,000	\$1,261,506	\$4,040,273	\$116,546	\$1,002,298	\$45,947,694	\$0	\$1,909	\$52,305,226	\$18,124,543
2058	6100	\$65,000	\$1,265,240	\$4,052,230	\$116,891	\$1,005,265	\$46,083,678	\$216,000,000	\$1,915	\$268,460,219	\$89,605,318
Undiscounted Total		\$1,950,000	\$32,038,354	\$102,610,435	\$2,959,916	\$25,455,281	\$1,166,929,391	\$216,000,000	\$48,486	\$1,544,091,864	
Discounted Total		\$1,047,203	\$16,687,503	\$53,445,690	\$1,541,703	\$16,542,576	\$607,807,057	\$71,968,392	\$25,255	\$763,687,039	<b>\$766,970,973</b>

Table 2. Summary of Costs

Year	Capital Cost	Discounted Capital Cost
2027	\$158,319,971	\$135,907,172
2028	\$154,307,964	\$128,480,243
2029	\$0	\$0
2030	\$0	\$0
2031	\$0	\$0
2032	\$0	\$0
2033	\$0	\$0
2034	\$0	\$0
2035	\$0	\$0
2036	\$0	\$0
2037	\$0	\$0
2038	\$0	\$0
2039	\$0	\$0
2040	\$0	\$0
2041	\$0	\$0
Total	\$312,627,935	<b>\$264,387,415</b>

**Summary by Benefit Area**

**Vanderbilt**

Table 1. Summary of Benefits

Year	User Volume	Operations and Maintenance	Travel Time Savings	Vehicle Operating Cost Savings	Non-CO2 Emission Reduction	CO2 Emission Reduction	Avoided Highway Externality	Residual Value	Pedestrian: reduction in traffic volume	Total Benefits	Total Discounted Benefits
2029	2800	\$90,000	\$557,535	\$2,232,048	\$64,386	\$553,720	\$25,383,797	\$0	\$879	\$28,702,364	\$23,214,527
2030	2864	\$90,000	\$570,279	\$2,283,066	\$65,858	\$566,376	\$25,963,998	\$0	\$899	\$29,360,475	\$23,037,947
2031	2928	\$90,000	\$583,022	\$2,334,084	\$67,329	\$579,032	\$26,544,199	\$0	\$919	\$30,018,587	\$22,851,277
2032	2992	\$90,000	\$595,766	\$2,385,103	\$68,801	\$591,689	\$27,124,400	\$0	\$939	\$30,676,698	\$22,655,279
2033	3056	\$90,000	\$608,510	\$2,436,121	\$70,273	\$604,345	\$27,704,601	\$0	\$959	\$31,334,809	\$22,450,678
2034	3120	\$90,000	\$621,253	\$2,487,139	\$71,744	\$617,002	\$28,284,802	\$0	\$979	\$31,992,920	\$22,238,164
2035	3184	\$90,000	\$633,997	\$2,538,157	\$73,216	\$629,658	\$28,865,003	\$0	\$999	\$32,651,031	\$22,018,396
2036	3248	\$90,000	\$646,741	\$2,589,176	\$74,688	\$642,315	\$29,445,204	\$0	\$1,020	\$33,309,142	\$21,791,996
2037	3312	\$90,000	\$659,484	\$2,640,194	\$76,159	\$654,971	\$30,025,405	\$0	\$1,040	\$33,967,254	\$21,559,558
2038	3376	\$90,000	\$672,228	\$2,691,212	\$77,631	\$667,628	\$30,605,606	\$0	\$1,060	\$34,625,365	\$21,321,647
2039	3440	\$90,000	\$684,972	\$2,742,230	\$79,103	\$680,284	\$31,185,807	\$0	\$1,080	\$35,283,476	\$21,078,797
2040	3504	\$90,000	\$697,715	\$2,793,249	\$80,574	\$692,941	\$31,766,008	\$0	\$1,100	\$35,941,587	\$20,831,517
2041	3568	\$90,000	\$710,459	\$2,844,267	\$82,046	\$705,597	\$32,346,209	\$0	\$1,120	\$36,599,698	\$20,580,289
2042	3632	\$90,000	\$723,203	\$2,895,285	\$83,518	\$718,253	\$32,926,410	\$0	\$1,140	\$37,257,810	\$20,325,570
2043	3696	\$90,000	\$735,946	\$2,946,303	\$84,990	\$730,910	\$33,506,611	\$0	\$1,160	\$37,915,921	\$20,067,794
2044	3760	\$90,000	\$748,690	\$2,997,322	\$86,461	\$743,566	\$34,086,813	\$0	\$1,180	\$38,574,032	\$19,807,372
2045	3824	\$90,000	\$761,434	\$3,048,340	\$87,933	\$756,223	\$34,667,014	\$0	\$1,200	\$39,232,143	\$19,544,691
2046	3888	\$90,000	\$774,177	\$3,099,358	\$89,405	\$768,879	\$35,247,215	\$0	\$1,220	\$39,890,254	\$19,280,119
2047	3952	\$90,000	\$786,921	\$3,150,376	\$90,876	\$781,536	\$35,827,416	\$0	\$1,241	\$40,548,365	\$19,014,006
2048	4016	\$90,000	\$799,665	\$3,201,395	\$92,348	\$794,192	\$36,407,617	\$0	\$1,261	\$41,206,477	\$18,746,678
2049	4080	\$90,000	\$812,408	\$3,252,413	\$93,820	\$806,849	\$36,987,818	\$0	\$1,281	\$41,864,588	\$18,478,446
2050	4144	\$90,000	\$825,152	\$3,303,431	\$95,291	\$819,505	\$37,568,019	\$0	\$1,301	\$42,522,699	\$18,209,603
2051	4208	\$90,000	\$837,896	\$3,354,449	\$96,763	\$832,161	\$38,148,220	\$0	\$1,321	\$43,180,810	\$17,940,425
2052	4272	\$90,000	\$850,639	\$3,405,468	\$98,235	\$844,818	\$38,728,421	\$0	\$1,341	\$43,838,921	\$17,671,172
2053	4336	\$90,000	\$863,383	\$3,456,486	\$99,706	\$857,474	\$39,308,622	\$0	\$1,361	\$44,497,032	\$17,402,089
2054	4400	\$90,000	\$876,127	\$3,507,504	\$101,178	\$870,131	\$39,888,823	\$0	\$1,381	\$45,155,144	\$17,133,405
2055	4464	\$90,000	\$888,870	\$3,558,522	\$102,650	\$882,787	\$40,469,024	\$0	\$1,401	\$45,813,255	\$16,865,337
2056	4528	\$90,000	\$901,614	\$3,609,540	\$104,121	\$895,444	\$41,049,225	\$0	\$1,421	\$46,471,366	\$16,598,088
2057	4592	\$90,000	\$914,358	\$3,660,559	\$105,593	\$908,100	\$41,629,426	\$0	\$1,441	\$47,129,477	\$16,331,848
2058	4600	\$90,000	\$915,950	\$3,666,936	\$105,777	\$909,682	\$41,701,952	\$204,000,000	\$1,444	\$251,211,741	\$83,843,340
Undiscounted Total		\$2,700,000	\$22,258,393	\$89,109,733	\$2,570,473	\$22,106,068	\$1,013,393,684	\$204,000,000	\$35,089	\$1,350,773,441	
Discounted Total		\$1,449,973	\$11,492,502	\$46,009,332	\$1,327,192	\$14,285,094	\$523,237,641	\$67,970,148	\$18,117	\$660,018,813	\$662,890,054

Table 2. Summary of Costs

Year	Capital Cost	Discounted Capital Cost
2027	\$149,524,417	\$128,356,773
2028	\$145,735,299	\$121,342,452
2029	\$0	\$0
2030	\$0	\$0
2031	\$0	\$0
2032	\$0	\$0
2033	\$0	\$0
2034	\$0	\$0
2035	\$0	\$0
2036	\$0	\$0
2037	\$0	\$0
2038	\$0	\$0
2039	\$0	\$0
2040	\$0	\$0
2041	\$0	\$0
Total	\$295,259,716	\$249,699,225

**Summary by Benefit Area**  
**Sunny Point East**

Table 1. Summary of Benefits

Year	User Volume	Operations and Maintenance	Travel Time Savings	Vehicle Operating Cost Savings	Non-CO2 Emission Reduction	CO2 Emission Reduction	Avoided Highway Externality	Residual Value	Pedestrian: reduction in traffic volume	Total Benefits	Total Discounted Benefits
2029	2800	\$175,000	\$557,535	\$2,816,632	\$81,249	\$698,741	\$32,031,934	\$0	\$879	\$36,011,970	\$29,126,802
2030	2864	\$175,000	\$570,279	\$2,881,012	\$83,106	\$714,713	\$32,764,092	\$0	\$899	\$36,839,101	\$28,906,400
2031	2928	\$175,000	\$583,022	\$2,945,392	\$84,963	\$730,684	\$33,496,251	\$0	\$919	\$37,666,232	\$28,673,270
2032	2992	\$175,000	\$595,766	\$3,009,772	\$86,820	\$746,655	\$34,228,409	\$0	\$939	\$38,493,362	\$28,428,373
2033	3056	\$175,000	\$608,510	\$3,074,153	\$88,677	\$762,626	\$34,960,568	\$0	\$959	\$39,320,493	\$28,172,620
2034	3120	\$175,000	\$621,253	\$3,138,533	\$90,535	\$778,598	\$35,692,726	\$0	\$979	\$40,147,624	\$27,906,882
2035	3184	\$175,000	\$633,997	\$3,202,913	\$92,392	\$794,569	\$36,424,885	\$0	\$999	\$40,974,755	\$27,631,985
2036	3248	\$175,000	\$646,741	\$3,267,293	\$94,249	\$810,540	\$37,157,043	\$0	\$1,020	\$41,801,885	\$27,348,714
2037	3312	\$175,000	\$659,484	\$3,331,673	\$96,106	\$826,511	\$37,889,202	\$0	\$1,040	\$42,629,016	\$27,057,816
2038	3376	\$175,000	\$672,228	\$3,396,053	\$97,963	\$842,482	\$38,621,360	\$0	\$1,060	\$43,456,147	\$26,760,003
2039	3440	\$175,000	\$684,972	\$3,460,434	\$99,820	\$858,454	\$39,353,519	\$0	\$1,080	\$44,283,278	\$26,455,946
2040	3504	\$175,000	\$697,715	\$3,524,814	\$101,677	\$874,425	\$40,085,677	\$0	\$1,100	\$45,110,408	\$26,146,287
2041	3568	\$175,000	\$710,459	\$3,589,194	\$103,534	\$890,396	\$40,817,836	\$0	\$1,120	\$45,937,539	\$25,831,633
2042	3632	\$175,000	\$723,203	\$3,653,574	\$105,392	\$906,367	\$41,549,994	\$0	\$1,140	\$46,764,670	\$25,512,558
2043	3696	\$175,000	\$735,946	\$3,717,954	\$107,249	\$922,339	\$42,282,153	\$0	\$1,160	\$47,591,801	\$25,189,609
2044	3760	\$175,000	\$748,690	\$3,782,334	\$109,106	\$938,310	\$43,014,311	\$0	\$1,180	\$48,418,931	\$24,863,303
2045	3824	\$175,000	\$761,434	\$3,846,715	\$110,963	\$954,281	\$43,746,470	\$0	\$1,200	\$49,246,062	\$24,534,128
2046	3888	\$175,000	\$774,177	\$3,911,095	\$112,820	\$970,252	\$44,478,628	\$0	\$1,220	\$50,073,193	\$24,202,549
2047	3952	\$175,000	\$786,921	\$3,975,475	\$114,677	\$986,224	\$45,210,787	\$0	\$1,241	\$50,900,324	\$23,869,003
2048	4016	\$175,000	\$799,665	\$4,039,855	\$116,534	\$1,002,195	\$45,942,945	\$0	\$1,261	\$51,727,454	\$23,533,903
2049	4080	\$175,000	\$812,408	\$4,104,235	\$118,391	\$1,018,166	\$46,675,103	\$0	\$1,281	\$52,554,585	\$23,197,641
2050	4144	\$175,000	\$825,152	\$4,168,615	\$120,249	\$1,034,137	\$47,407,262	\$0	\$1,301	\$53,381,716	\$22,860,585
2051	4208	\$175,000	\$837,896	\$4,232,996	\$122,106	\$1,050,109	\$48,139,420	\$0	\$1,321	\$54,208,847	\$22,523,083
2052	4272	\$175,000	\$850,639	\$4,297,376	\$123,963	\$1,066,080	\$48,871,579	\$0	\$1,341	\$55,035,977	\$22,185,462
2053	4336	\$175,000	\$863,383	\$4,361,756	\$125,820	\$1,082,051	\$49,603,737	\$0	\$1,361	\$55,863,108	\$21,848,031
2054	4400	\$175,000	\$876,127	\$4,426,136	\$127,677	\$1,098,022	\$50,335,896	\$0	\$1,381	\$56,690,239	\$21,511,080
2055	4464	\$175,000	\$888,870	\$4,490,516	\$129,534	\$1,113,993	\$51,068,054	\$0	\$1,401	\$57,517,370	\$21,174,880
2056	4528	\$175,000	\$901,614	\$4,554,896	\$131,391	\$1,129,965	\$51,800,213	\$0	\$1,421	\$58,344,500	\$20,839,688
2057	4592	\$175,000	\$914,358	\$4,619,276	\$133,248	\$1,145,936	\$52,532,371	\$0	\$1,441	\$59,171,631	\$20,505,743
2058	4600	\$175,000	\$915,950	\$4,627,324	\$133,481	\$1,147,932	\$52,623,891	\$318,000,000	\$1,444	\$377,275,022	\$125,883,400
Undiscounted Total		\$5,250,000	\$22,258,393	\$112,447,997	\$3,243,692	\$27,895,753	\$1,278,806,316	\$318,000,000	\$35,089	\$1,757,437,240	
Discounted Total		\$2,819,392	\$11,492,502	\$58,059,395	\$1,674,790	\$18,026,429	\$660,276,070	\$105,953,466	\$18,117	\$849,058,145	<b>\$852,681,378</b>

Table 2. Summary of Costs

Year	Capital Cost	Discounted Capital Cost
2027	\$233,082,179	\$200,085,558
2028	\$227,175,613	\$189,151,469
2029	\$0	\$0
2030	\$0	\$0
2031	\$0	\$0
2032	\$0	\$0
2033	\$0	\$0
2034	\$0	\$0
2035	\$0	\$0
2036	\$0	\$0
2037	\$0	\$0
2038	\$0	\$0
2039	\$0	\$0
2040	\$0	\$0
2041	\$0	\$0
Total	\$460,257,793	<b>\$389,237,027</b>

**Summary by Benefit Area**

**Sunny Point West**

Table 1. Summary of Benefits

Year	User Volume	Operations and Maintenance	Travel Time Savings	Vehicle Operating Cost Savings	Non-CO2 Emission Reduction	CO2 Emission Reduction	Avoided Highway Externality	Residual Value	Pedestrian: reduction in traffic volume	Total Benefits	Total Discounted Benefits
2029	2800	\$150,000	\$557,535	\$3,188,640	\$91,980	\$791,028	\$36,262,567	\$0	\$879	\$40,742,629	\$32,953,032
2030	2864	\$150,000	\$570,279	\$3,261,523	\$94,082	\$809,109	\$37,091,425	\$0	\$899	\$41,677,317	\$32,702,822
2031	2928	\$150,000	\$583,022	\$3,334,406	\$96,185	\$827,189	\$37,920,284	\$0	\$919	\$42,612,006	\$32,438,265
2032	2992	\$150,000	\$595,766	\$3,407,290	\$98,287	\$845,270	\$38,749,143	\$0	\$939	\$43,546,694	\$32,160,443
2033	3056	\$150,000	\$608,510	\$3,480,173	\$100,390	\$863,351	\$39,578,001	\$0	\$959	\$44,481,383	\$31,870,387
2034	3120	\$150,000	\$621,253	\$3,553,056	\$102,492	\$881,431	\$40,406,860	\$0	\$979	\$45,416,072	\$31,569,078
2035	3184	\$150,000	\$633,997	\$3,625,939	\$104,594	\$899,512	\$41,235,719	\$0	\$999	\$46,350,760	\$31,257,450
2036	3248	\$150,000	\$646,741	\$3,698,822	\$106,697	\$917,592	\$42,064,577	\$0	\$1,020	\$47,285,449	\$30,936,390
2037	3312	\$150,000	\$659,484	\$3,771,706	\$108,799	\$935,673	\$42,893,436	\$0	\$1,040	\$48,220,138	\$30,606,740
2038	3376	\$150,000	\$672,228	\$3,844,589	\$110,902	\$953,754	\$43,722,295	\$0	\$1,060	\$49,154,826	\$30,269,302
2039	3440	\$150,000	\$684,972	\$3,917,472	\$113,004	\$971,834	\$44,551,153	\$0	\$1,080	\$50,089,515	\$29,924,837
2040	3504	\$150,000	\$697,715	\$3,990,355	\$115,106	\$989,915	\$45,380,012	\$0	\$1,100	\$51,024,204	\$29,574,067
2041	3568	\$150,000	\$710,459	\$4,063,238	\$117,209	\$1,007,996	\$46,208,870	\$0	\$1,120	\$51,958,892	\$29,217,677
2042	3632	\$150,000	\$723,203	\$4,136,122	\$119,311	\$1,026,076	\$47,037,729	\$0	\$1,140	\$52,893,581	\$28,856,317
2043	3696	\$150,000	\$735,946	\$4,209,005	\$121,414	\$1,044,157	\$47,866,588	\$0	\$1,160	\$53,828,270	\$28,490,603
2044	3760	\$150,000	\$748,690	\$4,281,888	\$123,516	\$1,062,238	\$48,695,446	\$0	\$1,180	\$54,762,958	\$28,121,118
2045	3824	\$150,000	\$761,434	\$4,354,771	\$125,618	\$1,080,318	\$49,524,305	\$0	\$1,200	\$55,697,647	\$27,748,415
2046	3888	\$150,000	\$774,177	\$4,427,654	\$127,721	\$1,098,399	\$50,353,164	\$0	\$1,220	\$56,632,336	\$27,373,016
2047	3952	\$150,000	\$786,921	\$4,500,538	\$129,823	\$1,116,480	\$51,182,022	\$0	\$1,241	\$57,567,024	\$26,995,415
2048	4016	\$150,000	\$799,665	\$4,573,421	\$131,926	\$1,134,560	\$52,010,881	\$0	\$1,261	\$58,501,713	\$26,616,080
2049	4080	\$150,000	\$812,408	\$4,646,304	\$134,028	\$1,152,641	\$52,839,740	\$0	\$1,281	\$59,436,402	\$26,235,451
2050	4144	\$150,000	\$825,152	\$4,719,187	\$136,130	\$1,170,721	\$53,668,598	\$0	\$1,301	\$60,371,090	\$25,853,943
2051	4208	\$150,000	\$837,896	\$4,792,070	\$138,233	\$1,188,802	\$54,497,457	\$0	\$1,321	\$61,305,779	\$25,471,951
2052	4272	\$150,000	\$850,639	\$4,864,954	\$140,335	\$1,206,883	\$55,326,316	\$0	\$1,341	\$62,240,468	\$25,089,842
2053	4336	\$150,000	\$863,383	\$4,937,837	\$142,438	\$1,224,963	\$56,155,174	\$0	\$1,361	\$63,175,156	\$24,707,965
2054	4400	\$150,000	\$876,127	\$5,010,720	\$144,540	\$1,243,044	\$56,984,033	\$0	\$1,381	\$64,109,845	\$24,326,647
2055	4464	\$150,000	\$888,870	\$5,083,603	\$146,642	\$1,261,125	\$57,812,892	\$0	\$1,401	\$65,044,533	\$23,946,196
2056	4528	\$150,000	\$901,614	\$5,156,486	\$148,745	\$1,279,205	\$58,641,750	\$0	\$1,421	\$65,979,222	\$23,566,898
2057	4592	\$150,000	\$914,358	\$5,229,370	\$150,847	\$1,297,286	\$59,470,609	\$0	\$1,441	\$66,913,911	\$23,189,026
2058	4600	\$150,000	\$915,950	\$5,238,480	\$151,110	\$1,299,546	\$59,574,216	\$294,000,000	\$1,444	\$361,030,747	\$120,494,828
Undiscounted Total		\$4,500,000	\$22,258,393	\$127,299,619	\$3,672,104	\$31,580,098	\$1,447,705,263	\$294,000,000	\$35,089	\$1,922,050,566	
Discounted Total		\$2,416,622	\$11,492,502	\$65,727,617	\$1,895,989	\$20,407,278	\$747,482,344	\$97,956,978	\$18,117	\$938,462,431	<b>\$942,564,204</b>

Table 2. Summary of Costs

Year	Capital Cost	Discounted Capital Cost
2027	\$215,491,071	\$184,984,762
2028	\$210,030,284	\$174,875,886
2029	\$0	\$0
2030	\$0	\$0
2031	\$0	\$0
2032	\$0	\$0
2033	\$0	\$0
2034	\$0	\$0
2035	\$0	\$0
2036	\$0	\$0
2037	\$0	\$0
2038	\$0	\$0
2039	\$0	\$0
2040	\$0	\$0
2041	\$0	\$0
Total	\$425,521,355	<b>\$359,860,648</b>

Summary by Benefit Area

Mendenhall Peninsula

Table 1. Summary of Benefits

Year	User Volume	Operations and Maintenance	Travel Time Savings	Vehicle Operating Cost Savings	Non-CO2 Emission Reduction	CO2 Emission Reduction	Avoided Highway Externality	Residual Value	Pedestrian: reduction in traffic volume	Total Benefits	Total Discounted Benefits
2029	700	\$365,000	\$63,884	\$1,368,458	\$39,475	\$339,483	\$15,562,685	\$0	\$220	\$17,009,204	\$13,757,791
2030	757	\$365,000	\$69,086	\$1,479,890	\$42,689	\$367,126	\$16,829,932	\$0	\$238	\$18,423,961	\$14,457,340
2031	814	\$365,000	\$74,288	\$1,591,321	\$45,903	\$394,770	\$18,097,179	\$0	\$256	\$19,838,718	\$15,102,909
2032	871	\$365,000	\$79,490	\$1,702,753	\$49,118	\$422,414	\$19,364,426	\$0	\$273	\$21,253,474	\$15,697,104
2033	928	\$365,000	\$84,692	\$1,814,184	\$52,332	\$450,057	\$20,631,674	\$0	\$291	\$22,668,231	\$16,242,423
2034	985	\$365,000	\$89,894	\$1,925,616	\$55,547	\$477,701	\$21,898,921	\$0	\$309	\$24,082,988	\$16,741,260
2035	1042	\$365,000	\$95,096	\$2,037,047	\$58,761	\$505,344	\$23,166,168	\$0	\$327	\$25,497,744	\$17,195,911
2036	1099	\$365,000	\$100,298	\$2,148,479	\$61,975	\$532,988	\$24,433,415	\$0	\$345	\$26,912,501	\$17,608,573
2037	1156	\$365,000	\$105,500	\$2,259,911	\$65,190	\$560,632	\$25,700,662	\$0	\$363	\$28,327,257	\$17,981,354
2038	1213	\$365,000	\$110,702	\$2,371,342	\$68,404	\$588,275	\$26,967,910	\$0	\$381	\$29,742,014	\$18,316,272
2039	1270	\$365,000	\$115,904	\$2,482,774	\$71,618	\$615,919	\$28,235,157	\$0	\$399	\$31,156,771	\$18,615,260
2040	1327	\$365,000	\$121,106	\$2,594,205	\$74,833	\$643,562	\$29,502,404	\$0	\$417	\$32,571,527	\$18,880,169
2041	1384	\$365,000	\$126,308	\$2,705,637	\$78,047	\$671,206	\$30,769,651	\$0	\$434	\$33,986,284	\$19,112,770
2042	1441	\$365,000	\$131,510	\$2,817,069	\$81,262	\$698,850	\$32,036,898	\$0	\$452	\$35,401,041	\$19,314,761
2043	1498	\$365,000	\$136,712	\$2,928,500	\$84,476	\$726,493	\$33,304,145	\$0	\$470	\$36,815,797	\$19,487,765
2044	1555	\$365,000	\$141,914	\$3,039,932	\$87,690	\$754,137	\$34,571,393	\$0	\$488	\$38,230,554	\$19,633,337
2045	1612	\$365,000	\$147,116	\$3,151,363	\$90,905	\$781,781	\$35,838,640	\$0	\$506	\$39,645,311	\$19,752,962
2046	1669	\$365,000	\$152,318	\$3,262,795	\$94,119	\$809,424	\$37,105,887	\$0	\$524	\$41,060,067	\$19,848,064
2047	1726	\$365,000	\$157,520	\$3,374,226	\$97,333	\$837,068	\$38,373,134	\$0	\$542	\$42,474,824	\$19,920,002
2048	1783	\$365,000	\$162,722	\$3,485,658	\$100,548	\$864,711	\$39,640,381	\$0	\$560	\$43,889,581	\$19,970,077
2049	1840	\$365,000	\$167,924	\$3,597,090	\$103,762	\$892,355	\$40,907,629	\$0	\$578	\$45,304,337	\$19,999,534
2050	1897	\$365,000	\$173,126	\$3,708,521	\$106,977	\$919,999	\$42,174,876	\$0	\$595	\$46,719,094	\$20,009,559
2051	1954	\$365,000	\$178,328	\$3,819,953	\$110,191	\$947,642	\$43,442,123	\$0	\$613	\$48,133,850	\$20,001,291
2052	2011	\$365,000	\$183,530	\$3,931,384	\$113,405	\$975,286	\$44,709,370	\$0	\$631	\$49,548,607	\$19,975,812
2053	2068	\$365,000	\$188,732	\$4,042,816	\$116,620	\$1,002,929	\$45,976,617	\$0	\$649	\$50,963,364	\$19,934,161
2054	2125	\$365,000	\$193,934	\$4,154,248	\$119,834	\$1,030,573	\$47,243,865	\$0	\$667	\$52,378,120	\$19,877,326
2055	2182	\$365,000	\$199,136	\$4,265,679	\$123,048	\$1,058,217	\$48,511,112	\$0	\$685	\$53,792,877	\$19,806,254
2056	2239	\$365,000	\$204,338	\$4,377,111	\$126,263	\$1,085,860	\$49,778,359	\$0	\$703	\$55,207,634	\$19,721,846
2057	2296	\$365,000	\$209,540	\$4,488,542	\$129,477	\$1,113,504	\$51,045,606	\$0	\$721	\$56,622,390	\$19,624,962
2058	2300	\$365,000	\$209,905	\$4,496,362	\$129,703	\$1,115,444	\$51,134,536	\$654,000,000	\$722	\$710,721,671	\$236,978,387
Undiscounted Total		\$10,950,000	\$4,174,560	\$89,422,865	\$2,579,506	\$22,183,749	\$1,016,954,755	\$654,000,000	\$14,358	\$1,778,379,794	
Discounted Total		\$5,880,447	\$2,053,786	\$43,993,962	\$1,269,057	\$13,899,519	\$500,317,999	\$217,904,299	\$7,064	\$770,579,607	\$773,565,239

Table 2. Summary of Costs

Year	Capital Cost	Discounted Capital Cost
2027	\$479,357,690	\$411,496,714
2028	\$467,210,224	\$389,009,624
2029	\$0	\$0
2030	\$0	\$0
2031	\$0	\$0
2032	\$0	\$0
2033	\$0	\$0
2034	\$0	\$0
2035	\$0	\$0
2036	\$0	\$0
2037	\$0	\$0
2038	\$0	\$0
2039	\$0	\$0
2040	\$0	\$0
2041	\$0	\$0
Total	\$946,567,913	\$800,506,339