

Appendix D

Transportation Trip Generation Data

This page intentionally left blank.

Appendix D Trip Generation

Percentage of Existing Housing Unit Types

ITE Land Use Code	Housing Unit Type (American FactFinder)	Island County	Skagit County	Anacortes	Coupeville	Mount Vernon	Oak Harbor
Single-Family Detached Housing	1-unit, detached	0.771	0.712	0.756	0.55	0.568	0.529
Low-Rise Residential Condominium/Townhouse	1-unit, attached	0.024	0.027	0.038	0.041	0.036	0.071
Low-Rise Apartment	2 units, 3 or 4 units, 5 to 9 units, 10 to 19 units, 20 or more units	0.114	0.167	0.185	0.241	0.332	0.34
Mobile Park Home	Mobile home, Boat, RV, van, etc.	0.093	0.093	0.021	0.169	0.065	0.061

Source: American FactFinder, 2014

Expected Distribution of Household Trips

Municipality	Dependents	Personnel
City of Oak Harbor	70.8%	100.0%
Town of Coupeville	5.9%	11.2%
Anacortes	7.6%	12.9%
Mount Vernon	5.1%	10.4%
Island County	5.3%	5.3%
Skagit County	5.3%	5.3%

Distribution of trips is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" Source: Navy, 2005

Note: All Navy personnel trips are assumed to start or end at Ault Field; all Navy personnel dependent trips are assumed to stay within municipality of residence
Assumed no new Navy personnel would live on base; the percentage of Navy personnel living on base (37%) was distributed proportionally across the study area

Total Number of Households by Alternative

Municipality	Alternative 1	Alternative 2	Alternative 3
Total Households	371	664	377
City of Oak Harbor	263	470	267
Town of Coupeville	22	39	22
Anacortes	28	50	29
Mount Vernon	19	34	19
Island County	20	35	20
Skagit County	20	35	20

Number of households is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" Source: Navy, 2005

Number of New Household Unit Type Under Alternative 1

ITE Land Use Code	Island County	Skagit County	Anacortes	Coupeville	Mount Vernon	Oak harbor
Single-Family Detached Housing	15	14	21	12	11	139
Low-rise Residential Condominium/ Townhou	0	1	1	1	1	19
Low-Rise Apartment	2	3	5	5	6	89
Mobile Park Home	2	2	1	4	1	16

Number of households is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" (Source: Navy, 2005) and percentage of existing housing unit types (Source: American FactFinder, 2014)

Number of New Household Unit Type Under Alternative 2

ITE Land Use Code	Island County	Skagit County	Anacortes	Coupeville	Mount Vernon	Oak harbor
Single-Family Detached Housing	27	25	38	22	19	249
Low-Rise Residential Condominium/ Townhou	1	1	2	2	1	33
Low-Rise Apartment	4	6	9	9	11	160
Mobile Park Home	3	3	1	7	2	29

Number of households is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" (Source: Navy, 2005) and percentage of existing housing unit types (Source: American FactFinder, 2014)

Number of New Household Unit Type Under Alternative 3

ITE Land Use Code	Island County	Skagit County	Anacortes	Coupeville	Mount Vernon	Oak harbor
Single-Family Detached Housing	15	14	22	12	11	141
Low-Rise Residential Condominium/ Townhou	0	1	1	1	1	19
Low-Rise Apartment	2	3	5	5	6	91
Mobile Park Home	2	2	1	4	1	16

Number of households is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" (Source: Navy, 2005) and percentage of existing housing unit types (Source: American FactFinder, 2014)

Dependent Trip Generation Under Alternative 1

ITE Land Use Code	Island County	Skagit County	Anacortes	Coupeville	Mount Vernon	Oak harbor
Single-Family Detached Housing	114	105	160	91	81	1045
Low-Rise Residential Condominium/ Townhou	2	2	4	3	3	71
Low-Rise Apartment	10	15	24	25	29	415
Mobile Park Home	5	5	2	11	4	48
Total	132	128	190	130	116	1579

Trip generation is based on number of new household unit type and *ITE Trip Generation Manual 9th Edition* (Source: Institute of Traffic Engineers, 2012)

Note: Assumed 2 trips per household from ITE trip generation rate were Navy personnel traveling to and from Ault Field

Dependent Trip Generation Under Alternative 2

ITE Land Use Code	Island County	Skagit County	Anacortes	Coupeville	Mount Vernon	Oak harbor
Single-Family Detached Housing	204	188	287	162	145	1870
Low-rise Residential Condominium/ Townhou	3	4	7	6	5	127
Low-Rise Apartment	19	27	43	44	52	743
Mobile Park Home	10	10	3	20	7	86
Total	236	229	341	232	208	2826

Trip generation is based on number of new household unit type and *ITE Trip Generation Manual 9th Edition* (Source: Institute of Traffic Engineers, 2012)

Note: Assumed 2 trips per household from ITE trip generation rate were Navy personnel traveling to and from Ault Field

Dependent Trip Generation Under Alternative 3

ITE Land Use Code	Island County	Skagit County	Anacortes	Coupeville	Mount Vernon	Oak harbor
Single-Family Detached Housing	116	107	163	92	82	1062
Low-Rise Residential Condominium/Townhou	2	2	4	3	3	72
Low-Rise Apartment	11	16	25	25	30	422
Mobile Park Home	6	6	2	11	4	49
Total	134	130	193	132	118	1605

Trip generation is based on number of new household unit type and *ITE Trip Generation Manual 9th Edition* (Source: Institute of Traffic Engineers, 2012)

Note: Assumed 2 trips per household from ITE trip generation rate were Navy personnel traveling to and from Ault Field

This page left intentionally blank.

Appendix D Transportation LOS

Road	Municipality	Location	Existing ADT	2010 HCM Table	K-Factor	D-Factor	Rural or Urban	Number of Lanes	Speed Limit	2-Lane Highway Type	Existing LOS	Percentage of NAS Whidbey Island Personnel Trip Generation Assignment	Percentage of NAS Whidbey Island Personnel Dependent Trip Generation Assignment	Growth Rate (2015-2020)*	No Action		Alternative 1		Alternative 2		Alternative 3	
															ADT	LOS	ADT	LOS	ADT	LOS	ADT	LOS
SR 525	Island County	At Clinton Ferry Dock	5,900	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	5.30%	10.60%	3.00%	6,077	C	6,248	C	6,383	C	6,251	C
SR 525	Island County	East of Humphrey Rd	7,000	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	5.30%	10.60%	3.00%	7,210	C	7,381	C	7,516	C	7,384	C
SR 525	Island County	West of Humphrey Rd	8,400	Exhibit 16-14	0.09	0.55	Urban	2	30	n/a	C	5.30%	10.60%	3.00%	8,652	C	8,823	C	8,958	C	8,826	C
SR 525	Island County	East of Cedar Vista Dr	9,000	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	5.30%	10.60%	3.00%	9,270	C	9,441	C	9,576	C	9,444	C
SR 525	Island County	West of Campbell Rd	9,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	5.30%	10.60%	3.00%	9,270	C	9,441	C	9,576	C	9,444	C
SR 525	Island County	East of Maxwellton Rd	9,700	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	5.30%	10.60%	3.00%	9,991	C	10,162	C	10,297	C	10,165	C
SR 525	Island County	West of Maxwellton Rd	11,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	5.30%	10.60%	3.00%	11,330	C	11,501	C	11,636	C	11,504	C
SR 525	Island County	West of Bayview Rd	12,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	5.30%	10.60%	3.00%	12,360	C	12,531	C	12,666	C	12,534	C
SR 525	Freeland	West of Fish Rd	13,000	Exhibit 16-14	0.09	0.55	Urban	2	45	n/a	C	5.30%	10.60%	3.00%	13,390	C	13,561	C	13,696	C	13,564	C
SR 525	Freeland	East of Honeymoon Bay Rd	11,000	Exhibit 16-14	0.09	0.55	Urban	2	45	n/a	C	5.30%	10.60%	3.00%	11,330	C	11,501	C	11,636	C	11,504	C
SR 525	Freeland	West of Honeymoon Bay Rd	6,500	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	5.30%	10.60%	3.00%	6,695	B	6,866	B	7,001	B	6,869	B
SR 525	Island County	North of Ellwood Dr	6,600	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	5.30%	10.60%	3.00%	6,798	B	6,969	B	7,104	B	6,972	B
SR 525	Island County	South of SR 20	7,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	5.30%	10.60%	3.00%	7,210	B	7,381	B	7,516	B	7,384	B
SR 20	Island County	West of SR 525 and Race Rd	1,100	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	5.30%	10.60%	3.00%	1,133	B	1,304	B	1,439	B	1,307	B
SR 20	Island County	North of SR 525 and Race Rd	6,600	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	5.30%	10.60%	3.00%	6,798	B	6,969	B	7,104	B	6,972	B
SR 20	Island County	East of Quail Trail Lane	8,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	5.30%	10.60%	3.00%	8,240	B	8,411	B	8,546	B	8,414	B
SR 20	Coupeville	East of Main St	7,900	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	11.20%	5.90%	3.00%	8,137	B	8,350	B	8,518	B	8,353	B
SR 20	Coupeville	West of Main St	9,900	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	11.20%	5.90%	3.00%	10,197	C	10,410	C	10,578	C	10,413	C
SR 20	Island County	South of Libbey Rd	11,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	11.20%	10.60%	3.00%	11,330	C	11,545	C	11,714	C	11,548	C
SR 20	Island County	North of Sidney St	11,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	11.20%	10.60%	3.00%	11,330	C	11,545	C	11,714	C	11,548	C
SR 20	Oak Harbor	South of Swantown Rd	14,000	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	100.00%	70.80%	3.00%	14,420	C	16,741	D	18,574	D	16,779	D
SR 20	Oak Harbor	North of Swantown Rd	21,000	Exhibit 16-14	0.09	0.55	Urban	4	40	n/a	C	100.00%	70.80%	3.00%	21,630	C	23,951	C	25,784	C	23,989	C
SR 20	Oak Harbor	West of Beekma Dr	18,000	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	100.00%	70.80%	3.00%	18,540	C	20,861	C	22,694	C	20,899	C
SR 20	Oak Harbor	North of SE Pioneer Way	16,000	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	100.00%	70.80%	3.00%	16,480	C	18,801	C	20,634	C	18,839	C
SR 20	Oak Harbor	North of SE Barrington Ave	20,000	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	100.00%	70.80%	3.00%	20,600	C	22,921	C	24,754	C	22,959	C
SR 20	Oak Harbor	South of SE Sixth Ave	21,000	Exhibit 16-14	0.09	0.55	Urban	4	40	n/a	C	100.00%	70.80%	3.00%	21,630	C	23,951	C	25,784	C	23,989	C
SR 20	Oak Harbor	North of SE Sixth Ave	21,000	Exhibit 16-14	0.09	0.55	Urban	4	40	n/a	C	100.00%	70.80%	3.00%	21,630	C	23,951	C	25,784	C	23,989	C
SR 20	Oak Harbor	South of SE Midway Blvd	17,000	Exhibit 16-14	0.09	0.55	Urban	4	40	n/a	C	100.00%	70.80%	3.00%	17,510	C	19,831	C	21,664	C	19,869	C
SR 20	Oak Harbor	North of Goldie St	15,000	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	100.00%	70.80%	3.00%	15,450	D	17,771	D	19,604	D	17,809	D
SR 20	Oak Harbor	North of Case Rd	17,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	100.00%	70.80%	3.00%	17,510	D	19,831	D	21,664	D	19,869	D
SR 20	Oak Harbor	North of Regatta Dr	17,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	100.00%	70.80%	3.00%	17,510	D	19,831	D	21,664	D	19,869	D
SR 20	Island County	South of Frostad Rd	18,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	12.90%	10.60%	3.00%	18,540	D	18,767	D	18,947	D	18,771	D
SR 20	Island County	North of Frostad Rd	17,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	12.90%	10.60%	3.00%	17,510	D	17,737	D	17,917	D	17,741	D
SR 20	Island County	North of Banta Rd	17,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	12.90%	10.60%	3.00%	17,510	D	17,737	D	17,917	D	17,741	D
SR 20	Skagit County	South of Rosario Dr	16,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I Rolling	D	12.90%	10.60%	5.40%	16,864	D	17,088	D	17,264	D	17,091	D
SR 20	Skagit County	North of Rosario Dr	14,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I Rolling	D	12.90%	10.60%	5.40%	14,756	D	14,980	D	15,156	D	14,983	D
SR 20	Anacortes	South of SR 20 Spur	16,000	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	12.90%	7.60%	5.40%	16,864	D	17,150	D	17,376	D	17,155	D
SR 20	Anacortes	East of SR 20 Spur	31,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	12.90%	7.60%	5.40%	32,674	B	32,960	B	33,186	B	32,965	B
SR 20	Skagit County	West of March Point Rd	31,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	32,674	B	32,879	B	33,041	B	32,883	B
SR 20	Skagit County	East of March Point Rd	31,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	32,674	B	32,879	B	33,041	B	32,883	B
SR 20	Skagit County	West of LaConner Whitney Rd	31,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	32,674	B	32,879	B	33,041	B	32,883	B
SR 20	Skagit County	East of LaConner Whitney Rd	31,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	32,674	B	32,879	B	33,041	B	32,883	B
SR 20	Skagit County	West of SR 536	31,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	32,674	B	32,879	B	33,041	B	32,883	B
SR 20	Skagit County	East of SR 536	21,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	22,134	B	22,339	B	22,501	B	22,343	B
SR 20	Skagit County	West of Avon Allen Rd	22,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	23,188	B	23,393	B	23,555	B	23,397	B
SR 20	Skagit County	East of Avon Allen Rd	24,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	25,296	B	25,501	B	25,663	B	25,505	B
SR 20	Skagit County	East of Pulver Rd	23,000	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	10.40%	10.60%	5.40%	24,242	B	24,447	B	24,609	B	24,451	B
SR 20	Burlington	Under I-5	23,000	Exhibit 14-19	0.09	0.55	Urban	4	35	n/a	B	10.40%	5.10%	5.40%	24,242	B	24,435	B	24,588	B	24,439	B
I-5	Burlington	North of SR 20	54,000	Exhibit 10-8	0.09	0.55	Urban	4	55	n/a	B	10.40%	5.10%	5.40%	56,916	B	57,109	B	57,262	B	57,113	B
I-5	Burlington	South of SR 20	69,000	Exhibit 10-8	0.09	0.55	Urban	4	55	n/a	C	10.40%	5.10%	5.40%	72,726	C	72,919	C	73,072	C	72,923	C

Assumptions
 All military personnel trips are assumed to start or end at Ault Field; all military dependent trips are assumed to stay within municipality of residence
 All trips are assumed to start or end at NAS Whidbey Island

Percentage of trips on individual road segments is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" Source: Navy, 2005

* Source: Washington State Office of Financial Management, 2012

Key:

ADT = average daily traffic

LOS = level of service

K-Factor = The proportion of average daily traffic that occurs during the peak hour

D-Factor = The proportion of traffic moving in the peak direction of travel on a given roadway during the peak hour.

This page left intentionally blank.