

## Appendix D Transportation Trip Generation Data

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## Appendix D: Trip Generation Data

### 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	0.773	0.734	0.764	0.65	0.59	0.501
Low-Rise Residential Condominium/Townhouse	1-unit, attached	0.03	0.026	0.037	0.032	0.029	0.095
Low-Rise Apartment	2 units, 3 or 4 units, 5 to 9 units, 10 to 19 units, 20 or more units	0.112	0.159	0.174	0.199	0.318	0.34
Mobile Park Home	Mobile home, Boat, RV, van, etc.	0.084	0.08	0.024	0.12	0.062	0.063

Source: USCB n.d. c; Institute of Traffic Engineers, 2012

### Expected Distribution of Household Trips

Municipality	Dependents	Personnel
City of Oak Harbor	69.9%	100.0%
Town of Coupeville	4.6%	8.8%
Anacortes	12.2%	21.4%
Mount Vernon	5.0%	9.2%
Island County	4.2%	4.2%
Skagit County	4.2%	4.2%

Distribution of trips is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" Source: Coury, 2018

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 (41.6%) was distributed proportionally across the study area

### Total Number of Households by Alternative

Municipality	Alternative 1	Alternative 2	Alternative 3
Total Households	335	628	341
City of Oak Harbor	234	439	238
Town of Coupeville	15	29	16
Anacortes	41	77	42
Mount Vernon	17	31	17
Island County	14	26	14
Skagit County	14	26	14

Number of households is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" Source: Coury, 2018

**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	11	10	31	10	10	117
Low-Rise Residential Condominium/ Townho	0	0	2	0	0	22
Low-Rise Apartment	2	2	7	3	5	80
Mobile Park Home	1	1	1	2	1	15

Number of households is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" (Source: Coury, 2018) and percentage of existing housing unit types (Source: USCB n.d. c)

**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	20	19	59	19	19	220
Low-Rise Residential Condominium/ Townho	1	1	3	1	1	42
Low-Rise Apartment	3	4	13	6	10	149
Mobile Park Home	2	2	2	3	2	28

Number of households is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" (Source: Coury, 2018) and percentage of existing housing unit types (Source: USCB n.d. c)

**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	11	11	32	10	10	119
Low-Rise Residential Condominium/ Townho	0	0	2	1	0	23
Low-Rise Apartment	2	2	7	3	5	81
Mobile Park Home	1	1	1	2	1	15

Number of households is based on "Personnel Stationed and Employed at NAS Whidbey Island by Place of Residence" (Source: Coury, 2018) and percentage of existing housing unit types (Source: USCB n.d. c)

**Dependent Trip Generation Under Alternative 1**

ITE Land Use Code	Island County	Skagit County	Anacortes	Coupeville	Mount Vernon	Oak harbor
Single-Family Detached Housing	82	78	235	75	74	882
Low-Rise Residential Condominium/ Townho	2	1	6	2	2	85
Low-Rise Apartment	7	10	33	14	25	370
Mobile Park Home	4	3	3	6	3	44
<b>Total</b>	<b>94</b>	<b>93</b>	<b>277</b>	<b>97</b>	<b>104</b>	<b>1381</b>

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	153	146	440	141	139	1654
Low-Rise Residential Condominium/ Townhou	3	3	11	4	3	159
Low-Rise Apartment	14	20	62	27	46	694
Mobile Park Home	7	6	5	10	6	83
<b>Total</b>	<b>177</b>	<b>174</b>	<b>518</b>	<b>182</b>	<b>195</b>	<b>2589</b>

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	83	79	239	77	76	898
Low-Rise Residential Condominium/Townhou	2	1	6	2	2	86
Low-Rise Apartment	7	11	34	15	25	377
Mobile Park Home	4	3	3	6	3	45
<b>Total</b>	<b>96</b>	<b>94</b>	<b>282</b>	<b>99</b>	<b>106</b>	<b>1406</b>

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



Appendix D Transportation LOS

Road	Municipality	Location	Existing ADT	ADT Year	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	6,100	2016	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	4.20%	10.60%	1.50%	6,192	C	6,314	C	6,421	C	6,316	C
SR 525	Island County	East of Humphrey Rd	7,300	2016	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	4.20%	10.60%	1.50%	7,410	C	7,532	C	7,639	C	7,534	C
SR 525	Island County	West of Humphrey Rd	8,700	2016	Exhibit 16-14	0.09	0.55	Urban	2	30	n/a	C	4.20%	10.60%	1.50%	8,831	C	8,953	C	9,060	C	8,955	C
SR 525	Island County	East of Cedar Vista Dr	9,400	2016	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	4.20%	10.60%	1.50%	9,541	C	9,663	C	9,770	C	9,666	C
SR 525	Island County	West of Campbell Rd	9,500	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	4.20%	10.60%	1.50%	9,643	C	9,765	C	9,872	C	9,767	C
SR 525	Island County	East of Maxwellton Rd	11,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	4.20%	10.60%	1.50%	11,165	C	11,287	C	11,394	C	11,290	C
SR 525	Island County	West of Maxwellton Rd	12,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	4.20%	10.60%	1.50%	12,180	C	12,302	C	12,409	C	12,305	C
SR 525	Island County	West of Bayview Rd	13,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	4.20%	10.60%	1.50%	13,195	C	13,317	C	13,424	C	13,320	C
SR 525	Freeland	West of Fish Rd	14,000	2016	Exhibit 16-14	0.09	0.55	Urban	2	45	n/a	C	4.20%	10.60%	1.50%	14,210	C	14,332	C	14,439	C	14,335	C
SR 525	Freeland	East of Honeymoon Bay Rd	12,000	2016	Exhibit 16-14	0.09	0.55	Urban	2	45	n/a	C	4.20%	10.60%	1.50%	12,180	C	12,302	C	12,409	C	12,305	C
SR 525	Freeland	West of Honeymoon Bay Rd	7,200	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	4.20%	10.60%	1.50%	7,308	B	7,430	B	7,537	B	7,433	B
SR 525	Island County	North of Ellwood Dr	7,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	4.20%	10.60%	1.50%	7,105	B	7,227	B	7,334	B	7,230	B
SR 525	Island County	South of SR 20	7,600	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	4.20%	10.60%	1.50%	7,714	B	7,836	B	7,943	B	7,839	B
SR 20	Island County	West of SR 525 and Race Rd	1,100	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	4.20%	10.60%	1.50%	1,117	B	1,239	B	1,346	B	1,241	B
SR 20	Island County	North of SR 525 and Race Rd	7,100	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	4.20%	10.60%	1.50%	7,207	B	7,329	B	7,436	B	7,331	B
SR 20	Island County	East of Quail Trail Lane	8,800	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	4.20%	10.60%	1.50%	8,932	C	9,054	C	9,161	C	9,057	C
SR 20	Coupeville	East of Main St	8,500	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	B	8.80%	5.90%	1.50%	8,628	B	8,783	C	8,920	C	8,786	C
SR 20	Coupeville	West of Main St	11,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	8.80%	5.90%	1.50%	11,165	C	11,321	C	11,457	C	11,324	C
SR 20	Island County	South of Libbey Rd	12,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	8.80%	10.60%	1.50%	12,180	C	12,333	C	12,467	C	12,336	C
SR 20	Island County	North of Sidney St	13,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	8.80%	10.60%	1.50%	13,195	C	13,348	C	13,482	C	13,351	C
SR 20	Oak Harbor	South of Swantown Rd	16,000	2016	Exhibit 16-14	0.09	0.55	Urban	2	30	n/a	C	100.00%	70.80%	1.50%	16,240	D	18,291	D	20,085	E	18,328	D
SR 20	Oak Harbor	North of Swantown Rd	20,000	2016	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	100.00%	70.80%	1.50%	20,300	C	22,351	C	24,145	C	22,388	C
SR 20	Oak Harbor	West of Beekma Dr	18,000	2016	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	100.00%	70.80%	1.50%	18,270	C	20,321	C	22,115	C	20,358	C
SR 20	Oak Harbor	North of SE Pioneer Way	15,000	2016	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	100.00%	70.80%	1.50%	15,225	C	17,276	C	19,070	C	17,313	C
SR 20	Oak Harbor	North of SE Barrington Ave	19,000	2016	Exhibit 16-14	0.09	0.55	Urban	4	30	n/a	C	100.00%	70.80%	1.50%	19,285	C	21,336	C	23,130	C	21,373	C
SR 20	Oak Harbor	South of SE Sixth Ave	21,000	2016	Exhibit 16-14	0.09	0.55	Urban	4	40	n/a	C	100.00%	70.80%	1.50%	21,315	C	23,366	C	25,160	C	23,403	C
SR 20	Oak Harbor	North of SE Sixth Ave	21,000	2016	Exhibit 16-14	0.09	0.55	Urban	4	40	n/a	C	100.00%	70.80%	1.50%	21,315	C	23,366	C	25,160	C	23,403	C
SR 20	Oak Harbor	South of SE Midway Blvd	18,000	2016	Exhibit 16-14	0.09	0.55	Urban	4	40	n/a	C	100.00%	70.80%	1.50%	18,270	C	20,321	C	22,115	C	20,358	C
SR 20	Oak Harbor	North of Goldie St	15,000	2016	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	100.00%	70.80%	1.50%	15,225	C	17,276	C	19,070	D	17,313	C
SR 20	Oak Harbor	North of Case Rd	13,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	C	100.00%	70.80%	1.50%	13,195	C	15,246	D	17,040	D	15,283	D
SR 20	Oak Harbor	North of Regatta Dr	17,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	100.00%	70.80%	1.50%	17,255	D	19,306	D	21,100	D	19,343	D
SR 20	Island County	South of Frostad Rd	18,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	21.40%	10.60%	1.50%	18,270	D	18,508	D	18,715	D	18,512	D
SR 20	Island County	North of Frostad Rd	17,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	21.40%	10.60%	1.50%	17,255	D	17,493	D	17,700	D	17,497	D
SR 20	Island County	North of Banta Rd	17,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	21.40%	10.60%	1.50%	17,255	D	17,493	D	17,700	D	17,497	D
SR 20	Skagit County	South of Rosario Dr	18,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I Rolling	D	21.40%	10.60%	5.30%	18,954	D	19,190	D	19,397	D	19,194	D
SR 20	Skagit County	North of Rosario Dr	15,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I Rolling	D	21.40%	10.60%	5.30%	15,795	D	16,031	D	16,238	D	16,035	D
SR 20	Anacortes	South of SR 20 Spur	19,000	2016	Exhibit 15-30	0.09	0.55	Rural	2	55	Class I	D	21.40%	7.60%	5.30%	20,007	D	20,427	D	20,794	D	20,434	D
SR 20	Anacortes	East of SR 20 Spur	33,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	21.40%	7.60%	5.30%	34,749	B	35,169	B	35,536	B	35,176	B
SR 20	Skagit County	West of March Point Rd	33,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	34,749	B	34,903	B	35,039	B	34,906	B
SR 20	Skagit County	East of March Point Rd	33,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	34,749	B	34,903	B	35,039	B	34,906	B
SR 20	Skagit County	West of LaConner Whitney Rd	34,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	35,802	B	35,956	B	36,092	B	35,959	B
SR 20	Skagit County	East of LaConner Whitney Rd	34,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	35,802	B	35,956	B	36,092	B	35,959	B
SR 20	Skagit County	West of SR 536	32,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	33,696	B	33,850	B	33,986	B	33,853	B
SR 20	Skagit County	East of SR 536	25,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	26,325	B	26,479	B	26,615	B	26,482	B
SR 20	Skagit County	West of Avon Allen Rd	27,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	28,431	B	28,585	B	28,721	B	28,588	B
SR 20	Skagit County	East of Avon Allen Rd	29,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	30,537	B	30,691	B	30,827	B	30,694	B
SR 20	Skagit County	East of Pulver Rd	28,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	55	n/a	B	9.20%	10.60%	5.30%	29,484	B	29,638	B	29,774	B	29,641	B
SR 20	Burlington	Under I-5	27,000	2016	Exhibit 14-19	0.09	0.55	Urban	4	35	n/a	B	9.20%	5.10%	5.30%	28,431	B	28,597	B	28,742	B	28,600	B
I-5	Burlington	North of SR 20	57,000	2016	Exhibit 10-8	0.09	0.55	Urban	4	55	n/a	B	9.20%	5.10%	5.30%	60,021	B	60,187	B	60,332	B	60,190	B
I-5	Burlington	South of SR 20	73,000	2016	Exhibit 10-8	0.09	0.55	Urban	4	55	n/a	C	9.20%	5.10%	5.30%	76,869	D	77,035	D	77,180	D	77,038	D
Banta Rd	Island County	West of SR 20 Spur	1,470	2016	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	5.00%	0%	1.50%	1,492	C	1,620	C	1,732	C	1,622	C
Clover Valley Rd	Island County	West of Heller Road	2,864	2016	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	10.00%	0%	1.50%	2,907	C	3,068	C	3,209	C	3,071	C
Heller Rd	Island County	South of Ault Field Road	6,995	2014	Exhibit 16-14	0.09	0.55	Urban	2	45	n/a	C	20.00%	0%	4.30%	7,296	C	7,524	C	7,724	C	7,528	C
Ault Field Rd	Island County	West of Langley Blvd	8,171	2014	Exhibit 16-14	0.09	0.55	Urban	2	35	n/a	C	10.00%	0%	4.30%	8,522	C	8,684	C	8,825	C	8,686	C
Ault Field Rd	Island County	East of Langley Blvd	10,073	2014	Exhibit 16-14	0.09	0.55	Urban	2	35	n/a	C	50.00%	0%	4.30%	10,506	C	10,935	C	11,311	C	10,943	C
Oak Harbor Rd	Island County	South of Ault Field Road	5,174	2014	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	25.00%	0%	4.30%	5,396	C	5,658	C	5,887	C	5,663	C
Ault Field Rd	Island County	East of Oak Harbor Rd	10,506	2014	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	30.00%	0%	4.30%	10,958	C	11,253	C	11,511	C	11,258	C
Goldie Rd	Island County	North of Ault Field Rd	8,864	2010	Exhibit 16-14	0.09	0.55	Urban	4	35	n/a	C	28.00%	0%	7.10%	9,493	C	9,775	C	10,022	C	9,780	C
Goldie Rd	Island County	South of Ault Field Road	7,561	2011	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	20.00%	0%									

**Appendix D Transportation LOS**

Road	Municipality	Location	Existing ADT	ADT Year	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
Ault Field Rd	Island County	East of Goldie Road	8,876	2014	Exhibit 16-14	0.09	0.55	Urban	2	40	n/a	C	35.00%	0%	4.30%	9,258	C	9,586	C	9,874	C	9,592	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:Coury, 2018

\* Source: Washington State Office of Financial Management, 2017 (Growthrate between 2010-2020 used for ADT from 2010 and 2011; Growthrate from 2015-2020 used for ADT from 2014; Growth rate from 2017-2020 used for ADT from 2016)

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.