

B.1 Transportation Greenhouse Gas Emissions Appendix

Table B.1-1 GHG emissions summary

GHG Emissions	2015*	2035 Alt. 1	2035 Alt. 2	2035 Alt. 3	2035 Alt. 4	2035 Preferred Alt. 5	2035 Sensitivity Analysis
Cars & Light Duty Trucks							
2015 to 2035 VMT Annual Growth Rate		0.47%	0.44%	0.46%	0.47%	0.46%	0.55%
Interim GHG Emissions (no improved fuel economy)		1,970,000	1,956,000	1,965,000	1,970,000	1,965,000	2,003,000
2015 to 2035 Emissions Reduction Factor		30%	30%	30%	30%	30%	30%
2015 to 2035 Congestion Factor		1.12	1.12	1.12	1.12	1.12	1.12
<i>Final GHG Emissions Estimate</i>	<i>1,603,000</i>	<i>1,379,000</i>	<i>1,369,000</i>	<i>1,375,000</i>	<i>1,379,000</i>	<i>1,376,000</i>	<i>1,402,000</i>
Truck							
2015 to 2035 VMT Annual Growth Rate		1.28%	1.28%	1.28%	1.28%	1.28%	1.28%
Interim GHG Emissions (no improved fuel economy)		1,031,000	1,031,000	1,030,000	1,030,000	1,030,000	1,030,000
2015 to 2035 Emissions Reduction Factor		4%	4%	4%	4%	4%	4%
2015 to 2035 Congestion Factor		1.11	1.11	1.11	1.11	1.11	1.11
<i>Final GHG Emissions Estimate</i>	<i>720,000</i>	<i>990,000</i>	<i>990,000</i>	<i>989,000</i>	<i>989,000</i>	<i>989,000</i>	<i>989,000</i>
Bus							
2015 to 2035 VMT Annual Growth Rate		0.39%	0.39%	0.39%	0.39%	0.39%	0.39%
Interim GHG Emissions (no improved fuel economy)		70,000	70,000	70,000	70,000	70,000	70,000
2015 to 2035 Emissions Reduction Factor		35%	35%	35%	35%	35%	35%
2015 to 2035 Congestion Factor		1.02	1.02	1.02	1.02	1.02	1.02
<i>Final GHG Emissions Estimate</i>	<i>64,000</i>	<i>42,000</i>	<i>42,000</i>	<i>42,000</i>	<i>42,000</i>	<i>42,000</i>	<i>42,000</i>
Vanpool							
2015 to 2035 VMT Annual Growth Rate		0.47%	0.44%	0.46%	0.47%	0.46%	0.55%
Interim GHG Emissions (no improved fuel economy)		2,000	2,000	2,000	2,000	2,000	2,000
2015 to 2035 Emissions Reduction Factor		30%	30%	30%	30%	30%	30%
2015 to 2035 Congestion Factor		1.12	1.12	1.12	1.12	1.12	1.12
<i>Final GHG Emissions Estimate</i>	<i>2,000</i>	<i>2,000</i>	<i>2,000</i>	<i>2,000</i>	<i>2,000</i>	<i>2,000</i>	<i>2,000</i>
<i>Interim Total (no improved fuel economy)</i>		<i>3,073,000</i>	<i>3,059,000</i>	<i>3,067,000</i>	<i>3,072,000</i>	<i>3,067,000</i>	<i>3,105,000</i>
Final Total	2,389,000	2,413,000	2,403,000	2,408,000	2,412,000	2,409,000	2,435,000

1. 2015 data assumed to be equal to 2012 inventory from Seattle Community Greenhouse Gas Emissions Inventory
2. Congestion factor based on the US Environmental Protection Agency Motor Vehicle Emission Simulator (MOVES) Model

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Table B.1-2 Auto and light duty truck VMT

Trip Type	2015	2035 Alt. 1	2035 Alt. 2	2035 Alt. 3	2035 Alt. 4	2035 Preferred Alt. 5	2035 Sensitivity Analysis
II	932,108	1,032,308	1,009,709	1,027,709	1,024,805	1,023,873	1,060,952
IX/XI	3,481,841	3,809,819	3,812,472	3,801,808	3,822,751	3,811,754	3,849,130
XX	15,441,729	18,070,080	18,050,993	18,079,784	18,052,289	18,071,846	18,072,022
Total	19,855,678	22,912,208	22,873,174	22,909,301	22,899,845	22,907,474	22,982,104
Seattle VMT	2,673,029	2,937,218	2,915,945	2,928,613	2,936,181	2,929,750	2,985,517
External VMT	17,182,649	19,974,990	19,957,229	19,980,688	19,963,665	19,977,723	19,996,587
Seattle Annual Growth Rate		0.47%	0.44%	0.46%	0.47%	0.46%	0.55%

Table B.1-3 Medium and heavy truck VMT

Trip Type	2015	2035 Alt. 1	2035 Alt. 2	2035 Alt. 3	2035 Alt. 4	2035 Preferred Alt. 5	2035 Sensitivity Analysis
II	14,974	20,025	19,926	20,081	19,990	19,932	19,953
IX/XI	244,149	313,678	313,872	313,376	313,495	313,581	313,451
XX	624,124	877,338	878,742	877,203	877,959	878,292	878,581
Total	883,247	1,211,041	1,212,541	1,210,660	1,211,444	1,211,805	1,211,985
Seattle VMT	137,049	176,864	176,863	176,769	176,737	176,722	176,679
External VMT	746,199	1,034,177	1,035,678	1,033,891	1,034,707	1,035,082	1,035,306
Seattle Annual Growth Rate		1.28%	1.28%	1.28%	1.28%	1.28%	1.28%

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	2015	2035 Alt. 1	2035 Alt. 2	2035 Alt. 3	2035 Alt. 4	2035 Preferred Alt. 5	2035 Sensitivity Analysis
City of Seattle							
Households	302,220	368,464	368,473	368,480	368,475	368,494	396,992
Jobs	534,392	649,394	649,386	649,404	649,394	649,391	649,391
VMT	2,673,029	2,937,218	2,915,945	2,928,613	2,936,181	2,929,750	2,985,517
VMT per Pop+Job	2.3	2.1	2.1	2.1	2.1	2.1	2.0
<i>Notes</i>	<i>Includes 100% of trips with at least one end in Seattle Assumes 2.06 average household size</i>						
Outside Seattle							
Households	1,232,266	1,640,356	1,640,356	1,640,356	1,640,356	1,640,356	1,640,356
Jobs	1,410,406	2,034,792	2,034,792	2,034,792	2,034,792	2,034,792	2,034,792
VMT	17,182,649	19,974,990	19,957,229	19,980,688	19,963,665	19,977,723	19,996,587
VMT per Pop+Job	3.7	3.2	3.2	3.2	3.2	3.2	3.2
<i>Notes</i>	<i>Includes 100% of trips with at least one end outside Seattle Assumes 2.57 average household size</i>						

Table B.1-5 Road transportation pollutant emissions

Pollutant	Emissions in Tons per Year				
	2015	2035 Alt. 1	2035 Alt. 2	2035 Alt. 3	2035 Alt. 4
VOC	465.7	204.3	203.7	203.9	204.1
NO _x	4,945.6	1,688.4	1,685.5	1,685.9	1,687.1
CO	10,992.5	4,778.4	4,746.3	4,765.2	4,778.0
PM _{2.5}	58.5	43.7	43.6	43.6	43.7

Source: Fehr & Peers, 2016.

B.1 Transportation GHG Emissions

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