

Whatcom Mobility 2040

Measures of Future Transportation

Roadway activities

For the 200,000-plus residents in the region, roadways serve as the primary facilitator for travel activities. Whatcom County contains nearly 2,000 miles of roads. For the Whatcom metropolitan planning region, 486 miles of those roads are considered regionally significant.

Whatcom Council of Governments uses a travel demand model to analyze and anticipate travel activities on regionally significant roads. The travel demand model provides regional-scale indicators of travel behavior, helps identify transportation system deficiencies, and estimates transportation activity relative to expected land-use and transportation system changes.

In order to assess planned projects impacts on the transportation system, three scenarios were created for the travel demand model: 2013 base year, 2040 no-build and 2040 build. The 2040 no-build and build scenarios are distinguished by the following:

- The **2040 no-build** scenario includes the expected future population growth and land-use changes, however it assumes that no additions or reductions in roadway capacity are built to serve increased demand (retaining the 2016 network).
- The **2040 build** scenario assumes the expected future population growth and land-use changes, along with all planned capacity-related transportation projects.

Inter- and Intra-area vehicular travel

The following table [Fig. and](#) shows daily trips made in 2013 and projected trips for 2040 from jurisdiction to jurisdiction, and within jurisdictions. Note that the travel demand model balances the overall trips between jurisdictions except for the external trips that begin or end outside of the region.

2013 Daily Jurisdiction to Jurisdiction Vehicular Trips

Jurisdiction	Bellingham	Blaine	Everson	Ferndale	Lynden	Nooksack	Sumas	Unincorp.	External	Total
Bellingham	169,487	3,124	1,068	10,810	6,242	446	482	53,745	17,292	262,696
Blaine	3,124	2,489	56	1,090	676	26	55	5,407	2,578	15,501
Everson	1,068	56	328	127	667	157	156	1,781	327	4,667
Ferndale	10,810	1,090	127	3,066	970	53	60	9,328	1,373	26,876
Lynden	6,242	676	667	970	6,423	297	451	9,299	1,941	26,965
Nooksack	446	26	157	53	297	16	98	815	182	2,088
Sumas	482	55	156	60	451	98	266	1,222	719	3,508
Unincorp.	53,745	5,407	1,781	9,328	9,299	815	1,222	44,789	11,505	137,890
External	19,646	2,903	283	1,366	1,899	108	893	7,557	3,270	37,923
Total	265,050	15,826	4,623	26,869	26,923	2,014	3,682	133,942	39,186	518,114



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2040 (No-build) Daily Origin to Destination Vehicular Trips

Jurisdiction	Bellingham	Blaine	Everson	Ferndale	Lynden	Nooksack	Sumas	Unincorp.	External	Total
Bellingham	276,751	5,525	1,897	19,167	9,536	777	812	55,710	27,598	397,773
Blaine	5,525	6,447	116	2,580	1,337	52	105	8,492	5,405	30,058
Everson	1,897	116	775	265	1,203	341	290	2,732	611	8,228
Ferndale	19,167	2,580	265	7,935	1,952	106	126	13,404	2,654	48,187
Lynden	9,536	1,337	1,203	1,952	11,635	548	758	12,308	3,607	42,884
Nooksack	777	52	341	106	548	40	193	1,248	371	3,676
Sumas	812	105	290	126	758	193	470	1,747	1,549	6,049
Unincorp.	55,710	8,492	2,732	13,404	12,308	1,248	1,747	46,990	14,442	157,073
External	29,911	4,983	607	2,585	3,343	227	1,775	9,037	5,399	57,868
Total	400,086	29,637	8,225	48,118	42,620	3,532	6,275	151,668	61,635	751,796

Overall, the region is expected to increase vehicular trips by 45 percent to 2040. Not surprisingly, the majority of trips impact the larger urban areas. Unincorporated, or rural, areas currently produce a substantial amount of trips, but the planned population and land-use growth is limited in these areas and thus is reflected in their growth in vehicular trips. Fig. illustrates the percentage growth in trips from 2013 to 2040 by jurisdiction and overall.

2013 to 2040 (No-build) Daily Origin to Destination Vehicular Trips Percentage Change

Jurisdiction	Bellingham	Blaine	Everson	Ferndale	Lynden	Nooksack	Sumas	Unincorp.	External	Total
Bellingham	63%	77%	78%	77%	53%	74%	68%	4%	60%	51%
Blaine	77%	159%	108%	137%	98%	103%	92%	57%	110%	94%
Everson	78%	108%	136%	108%	80%	118%	86%	53%	87%	76%
Ferndale	77%	137%	108%	159%	101%	101%	109%	44%	93%	79%
Lynden	53%	98%	80%	101%	81%	85%	68%	32%	86%	59%
Nooksack	74%	103%	118%	101%	85%	147%	97%	53%	104%	76%
Sumas	68%	92%	86%	109%	68%	97%	77%	43%	115%	72%
Unincorp.	4%	57%	53%	44%	32%	53%	43%	5%	26%	14%
External	52%	72%	115%	89%	76%	112%	99%	20%	65%	53%
Total	51%	87%	78%	79%	58%	75%	70%	13%	57%	45%

Note the substantial increases of trips within smaller populated jurisdictions. Emphasis on providing complete and accessible pedestrian and bicycle facilities will provide users a more convenient alternative to the automobile.

VMT and VHT

Vehicle miles traveled (VMT) is a common measurement of cumulative distances driven by all vehicles on the region’s roads through the 24-hour daily period. Vehicle hours traveled (VHT), the cumulative time that vehicles spend driving, reflects the efficiency of vehicular movement on the regional roads. VHT is a product of factors such as travel speed, roadway capacity, and congestion.

The following tables Fig. display daily VMT and VHT for current year with comparison of 2040 no-build and build scenarios.

24-hour daily Vehicle Miles Traveled

Jurisdiction	2013	2040 No Build	Percent Growth
Bellingham	1,513,470	2,389,710	58%
Blaine	92,201	164,952	79%
Everson	22,575	47,135	111%
Ferndale	419,205	605,718	45%
Lynden	102,983	159,728	55%
Nooksack	14,043	22,649	62%
Sumas	14,609	24,795	70%
Unincorporated	2,238,866	2,851,882	27%
Regional Total	4,551,270	6,445,650	42%

24-hour daily Vehicle Hours Traveled

Jurisdiction	2013	2040 No Build	Percent Growth
Bellingham	43,658	83,665	92%
Blaine	2,368	4,656	97%
Everson	589	1,256	113%
Ferndale	8,506	15,192	79%
Lynden	2,874	4,579	59%
Nooksack	363	594	64%
Sumas	390	664	70%
Unincorporated	52,972	71,789	36%
Regional Total	114,317	186,237	63%

Both the VMT and VHT reflects substantial increases through the 20-year period, understandably so because of the substantial growth in households and employment. The growth varies by jurisdiction. VMT grows more in smaller incorporated cities that will rely on the urbanized areas for employment. The VHT grows more in the urbanized areas that will experience more traffic congestion due to the overall growth in both population and employment. In comparison to the incorporated jurisdictions, unincorporated Whatcom County will generally experience more tempered vehicular growth in line with its land use policies.

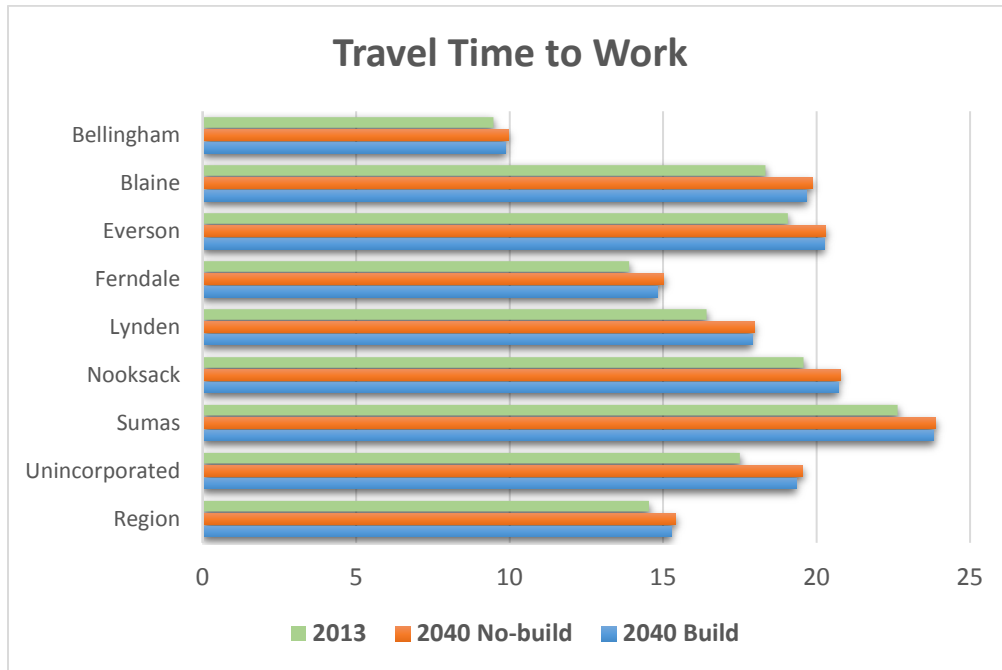
	2040 No-build	2040 Build
<i>Vehicle Miles Travelled</i>	6,445,650	6,447,625
<i>Vehicle Hours Travelled</i>	186,237	184,209

Fig. compares the **2040 no-build** with the **2040 build** scenario and shows overall slight improvements to the regional transportation system. This is so because the additional VMT on the system due to the 2040 build’s planned projects allows for more vehicular mobility while the reduced VHT improves the efficiency of driving throughout the regional road system. Note that the VMT and VHT reflects aggregate change on the entire regional road system.

Commute Time

Commute time refers to the average time it takes to travel from home to place of employment. Employment trips are the second largest share of daily trip purposes in the region (trips to home being largest).

The following table [Fig](#) illustrates the commute times for residents of the Whatcom region’s jurisdictions, comparing the current year 2013 with the 2040 no-build and build scenarios.



Note an overall increase for the 2040 scenarios considering the planned land-use growth. Similar to VMT and VHT, commute times reflect aggregate, or system-wide, impacts. The 2040 build scenario slightly improves commute times for all jurisdictions compared to the 2040 no-build scenario.

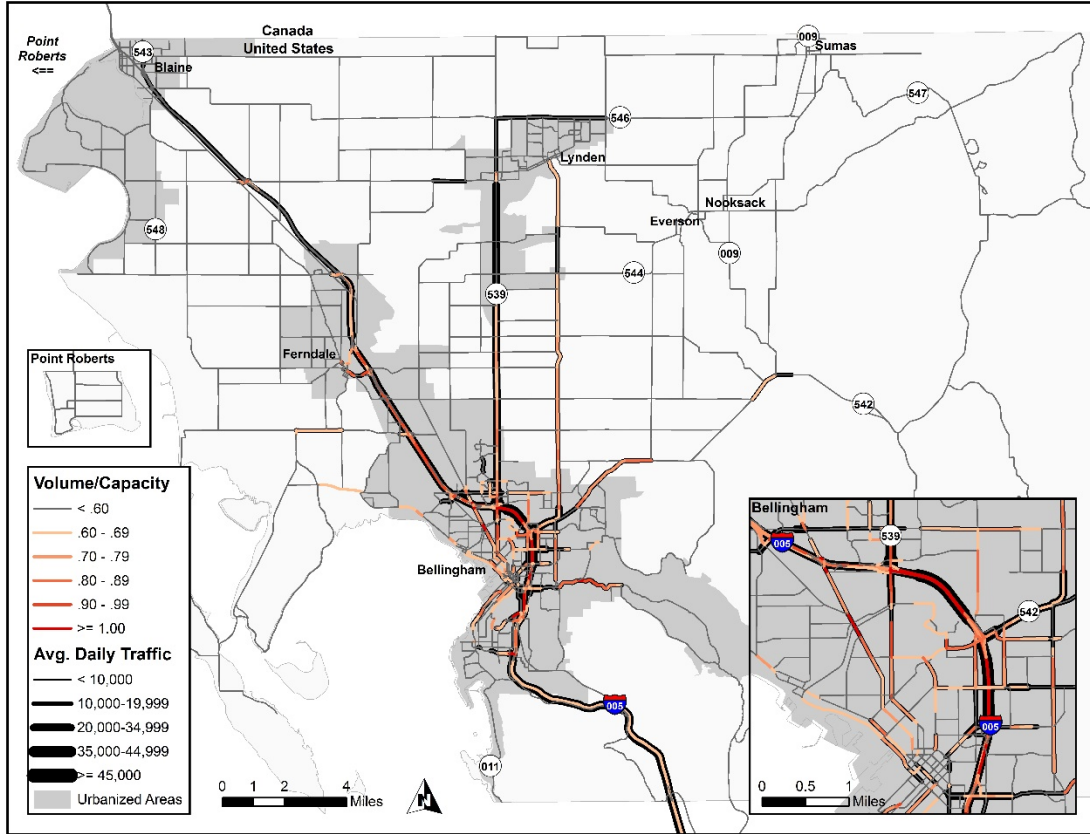
Volume over Capacity and Daily Travel

The volume of traffic on a particular roadway divided by the capacity of that roadway, is a common measure of network performance and the operating conditions a driver will experience when traveling at a specific time. This volume-over-capacity ratio (v/c) is often used to describe a roadway segment’s level of service (LOS) and expressed in general terms as a letter grade (A - F). If travelers experience little or no delay, the LOS estimate will be closer to zero. Conversely, a v/c ratio closer to one indicates the likelihood for congestion and delay.

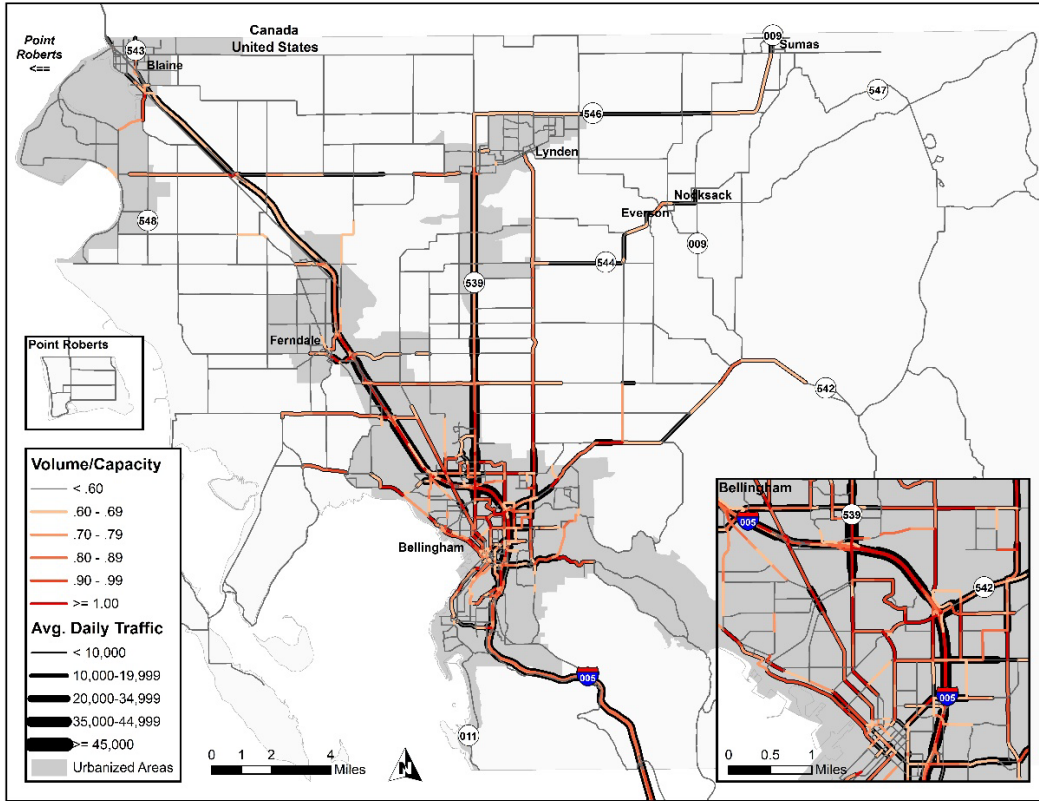
By analyzing roadway segments during peak hour traffic conditions, including approaches to problematic intersections, planners and engineers can determine which locations require additional analysis that may lead to improvements. The following maps, [Fig](#) displays v/c ratio and average daily traffic in the Whatcom region during p.m. peak hour travel for 2013,

2040 no-build scenario, and 2040 build scenario. The 2040 build scenario illustrates improvements to the 2040 no-build scenario in areas where capacity projects are planned.

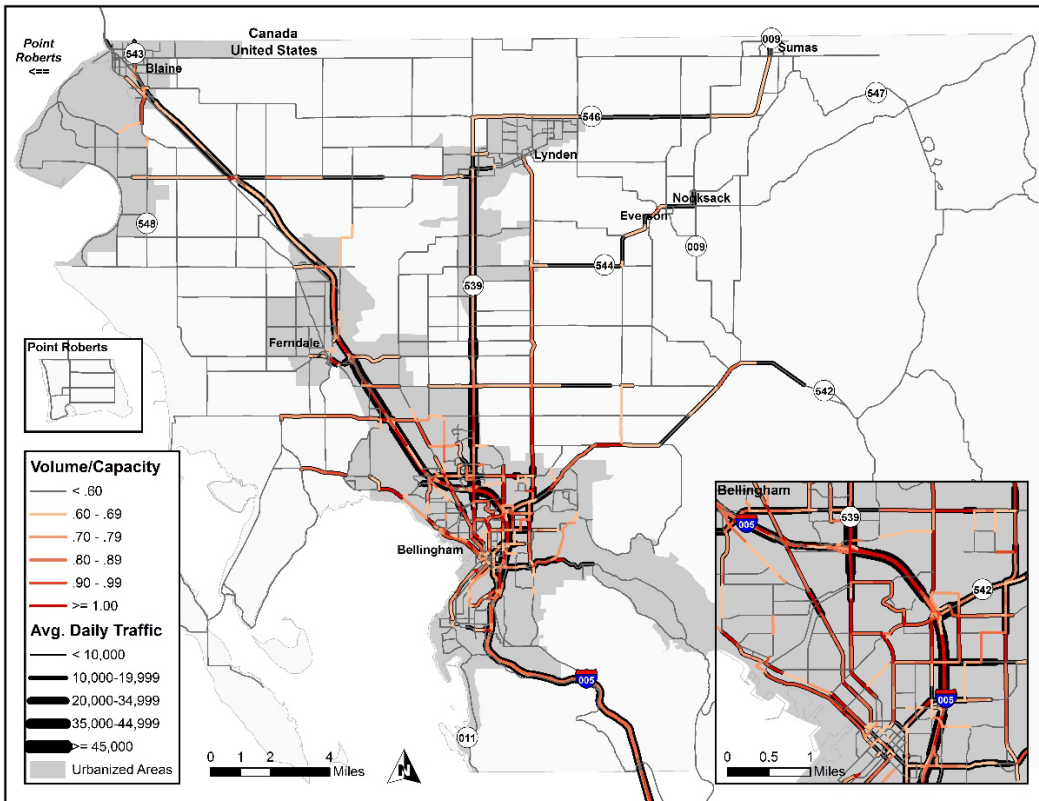
Map_ 2013 Volume-over-Capacity and Average Daily Traffic



Map_ 2040 No-build Volume-over-Capacity and Average Daily Traffic



Map_ 2040 Build Volume-over-Capacity and Average Daily Traffic



Bicycle and Pedestrian

Local jurisdictions within the Whatcom region are continuing to provide more complete sidewalk infrastructure to better serve non-automobile trips. Although bicycle and pedestrian activities mostly occurs within jurisdictions, they are vital to region-wide system performance by serving as modal connections. Non-automobile trips help to reduce vehicular congestion, improve air quality, and are beneficial for overall community health. The travel demand model projects substantial increases to both pedestrian and bicycle activities as shown in Fig. The 2040 no-build vs build scenarios show marginal change because roadway capacity projects that affect regional transport doesn't really influence these more localized trips.

Fig.: Trip Increases for Pedestrian and Bicycle Activities

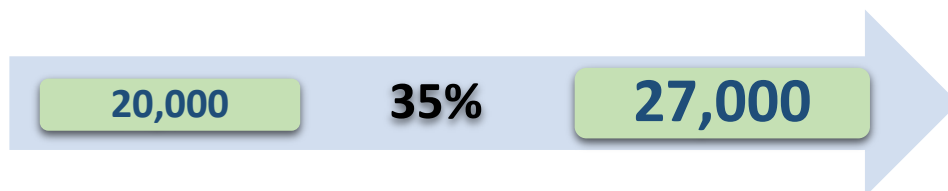
	2013 Base vs 2040 No-build	2040 No-build vs 2040 Build
Bike	+49%	Same
Pedestrian	+46%	Same

Over the long-term, trip habits may substantially change with the advent of new technologies, evolving life-style trends, and other socio-economic factors.

Transit Travel

As the primary transit service provider in the region, Whatcom Transportation Authority (WTA) grows and adapts services as a response to land-use growth in coordination with local jurisdictions. WTA does not currently plan beyond a six-year horizon. The WCOG utilized the travel demand model, with WTA consultation, to provide a forecast estimate of region-wide transit boardings for 2040 shown in Fig. The 2040 growth scenario for transit includes an added fixed route service in the Bakerview Rd and James St area in northeast Bellingham.

Daily WTA transit boardings growth from 2016 to 2040



Like automobile, the majority of trips take place within the urbanized areas. The travel demand model forecast doesn't take into account the full probability of additional transit routes and time-of-day frequencies that will serve the growing areas through the 20-year growth period. Also, as local jurisdictions' strategies continue to promote and accommodate for transit, it's probable that transit ridership will surpass the travel demand model forecast.