

# 2040 Forecast Transportation Activity

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## Roads

For the 212,000-plus residents of the Whatcom region, roads serve as the primary facilitator of travel, both within and to points outside the region. Whatcom County contains nearly 2,000 miles of roads, of which 486 miles are classified as “regionally significant.” WCOG’s travel demand model is used to analyze and forecast travel activities on regionally significant roads. The 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 the impact of planned projects on the regional transportation system, three scenarios were created for the travel demand model: a 2013 base year, the 2040 “no-build” scenario, and the 2040 “build” scenario. The 2040 no-build and build scenarios are distinguished by the following:

- The **2040 no-build** scenario is based on expected future population growth and land-use changes, but assumes that no additional roadway capacity is built to serve the increased travel demand that those changes would generate.
- The **2040 build** scenario assumes the same future population growth and land-use changes as the no-build scenario, but includes the additional road capacity that would be added to the regional transportation network as a result of completing all currently-planned transportation projects.

## Regional vehicular travel patterns

Tables 3 and 4 describe daily vehicle trips made in base year 2013 and the projected trips under the 2040 no-build scenario, respectively. Note that the travel demand model balances the total number of trips between jurisdictions, but not for “external” trips, i.e., those that either begin or end outside of Whatcom County, including British Columbia.

***Table 3: 2013 Daily Vehicle Trips by Jurisdiction***

## Destination

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

**Table 4: 2040 (No-build) Projected Daily Vehicle Trips by Jurisdiction**

## Destination

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

Overall, the region is expected to see an increase of 45 percent in vehicle trips by 2040, and as would be expected, the majority of those trips will be made in the larger urban areas. Although unincorporated Whatcom County currently produces a substantial number of trips, its population growth and land-development rates are projected to be less than those of the urbanized areas, which will restrict the growth of vehicle trips in the county's rural areas. Table 5 illustrates the percentage growth in trips from 2013 to 2040.

**Table 5: Projected Change in Daily Vehicle Trips by Jurisdiction, 2013 to 2040 (No Build)**

## Destination

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

Note the substantial increase in intra-jurisdictional trips, i.e., starting and ending in the same jurisdiction, in each of the region's six smaller cities (Blaine, Everson, Ferndale, Lynden, Nooksack and Sumas). Emphasis on providing complete and accessible pedestrian and bicycle facilities in those communities will provide residents with alternatives to driving for short trips.

## VMT and VHT

Vehicle miles traveled (VMT) is a common measurement of cumulative distances driven by all vehicles on the region's roads throughout an average 24-hour day. Vehicle hours traveled (VHT), the cumulative time that vehicles are driven during the same time period, reflects the efficiency of vehicular movement on the road network. VHT is a product of factors such as travel speed, roadway capacity, and congestion.

**Table 6: Average Daily Miles Traveled, 2013-2040 (No Build)**

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

***Table 7: Average Daily Vehicle Hours Traveled, 2013-2040 (No Build)***

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

As indicated in the tables, both VMT and VHT increase substantially as a result of the projected growth in households and employment, which varies significantly by jurisdiction. Note how much smaller the projected increases in VMT and VHT are for unincorporated Whatcom County compared to those of the seven cities. That is primarily the result of more restrictive land-use policies in the unincorporated county prescribed by Washington's Growth Management Act.

***Table 8: Comparison of Region's Projected Daily VMT and VHT by 2040 Scenario***

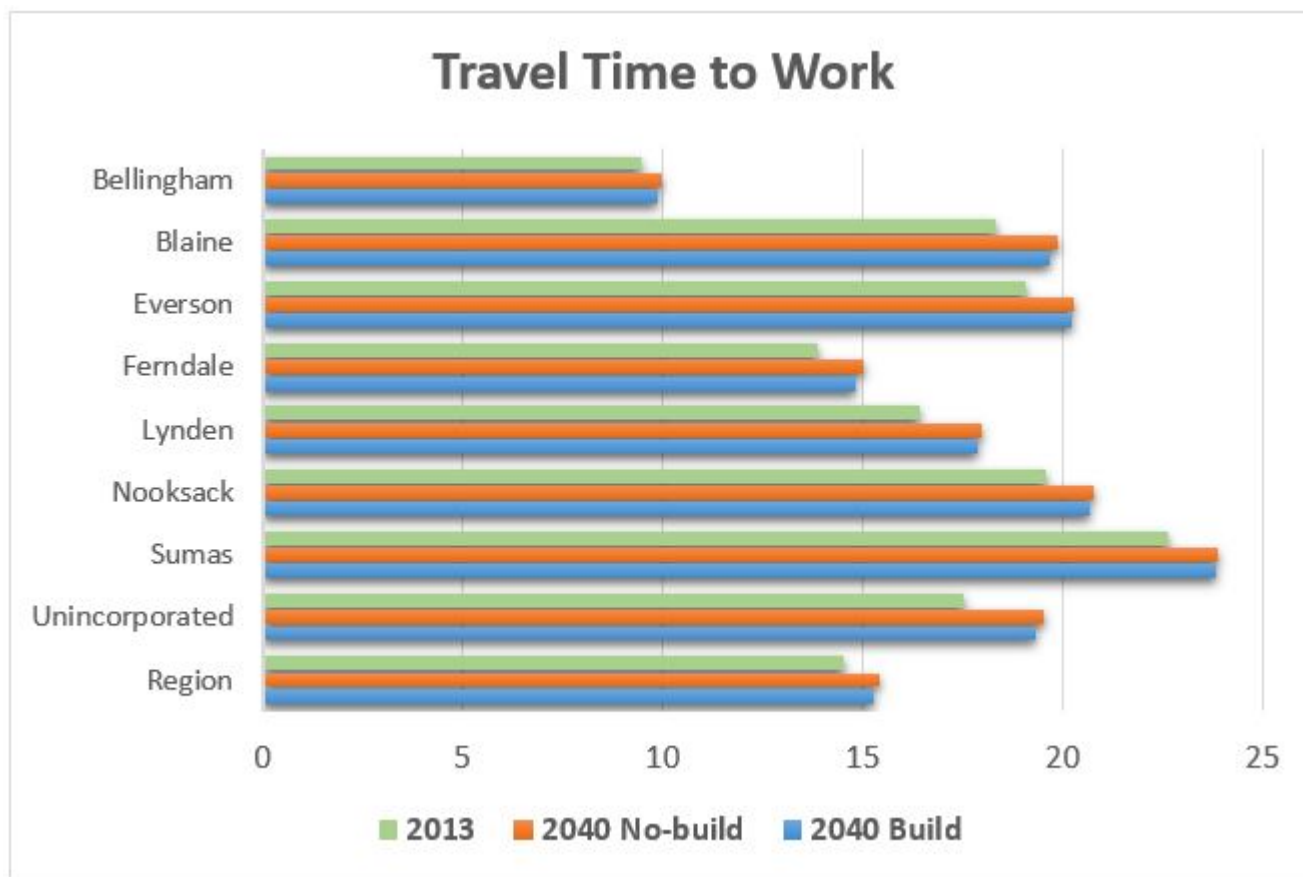
	<b>2040 No-build</b>	<b>2040 Build</b>
<b>Vehicle Miles Traveled</b>	6,445,650	6,447,625
<b>Vehicle Hours Traveled</b>	186,237	184,209

Table 8 illustrates the modest improvement in efficiency of the entire regional transportation system under the 2040 build scenario relative to the no-build scenario, which is the result of the extra capacity added at strategic locations by currently-planned projects factored into the former. In essence, drivers will be able to drive slightly longer distances in slightly less time with the currently-planned improvements than without them.

## Commute time

Commute time refers to the average amount of time it takes to travel from home to place of employment. Trips to work constitute the second-largest share of daily trips in the region (and nationwide), with trips to home being the largest. Table 9 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.

**Table 9: Travel Time to Work**



Commute times increase for all jurisdictions between 2013 and 2040 under both scenarios, although the increase is somewhat less in the build scenario as a result of the enhanced efficiency of the transportation network derived from the added capacity of currently-planned projects.

## Volume-over-capacity and daily travel

The volume of traffic (i.e., the number of vehicles) on a particular roadway segment, divided by the

maximum number of vehicles that the segment can accommodate without congestion (its *capacity*), is a common measure of system performance known as the volume-over-capacity (V/C) ratio. A low V/C ratio (close to zero) means that there are few vehicles operating on a certain segment of roadway; a V/C ratio greater than 1.0 means that that segment is operating beyond its capacity, and is experiencing significant congestion. The V/C ratio is used to determine a roadway segment's *level of service* (LOS), which describes the operating conditions a driver will experience when traveling at a specific time of day. Level of service is expressed as a letter grade, with "LOS A" being the highest grade, representing free-flow driving conditions, down to LOS F, which is the failure of that segment to facilitate the movement of traffic, resulting in gridlock.

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 interactive map in Figure 5 illustrates V/C ratios and average daily traffic for road segments on the regional transportation network during afternoon (p.m.) peak hour for 2013 and the 2040 no-build and build scenarios.

**Figure 5: Future Traffic Scenarios**

## Bicycle and walking

Local jurisdictions within the Whatcom region are continuing to provide more "complete streets," i.e., rights-of-way that are designed to serve pedestrians and cyclists as well as motor vehicles. Although the vast majority of bike and walk trips occur in the region's cities – most notably, Bellingham – they are vital to the regional transportation system's performance by providing connections to other modes, such as transit and ridesharing, and reducing traffic congestion. Bicycle and walk trips support environmental quality by not contributing to air and water pollution, and they also play an important role in improving community health. The travel demand model forecasts substantial increases in pedestrian and bicycle activities under both the 2040 no-build and build scenarios relative to 2013 (Table 10). Note that under both scenarios the increase for bike and walk trips is exactly the same, which is a reflection of the highly-localized nature of those trip types, which are generally not influenced by increased road capacity derived from the transportation projects factored into the 2040 build scenario.

**Table 10: Percentage Change in Bike and Walk Trips, 2013-2040**

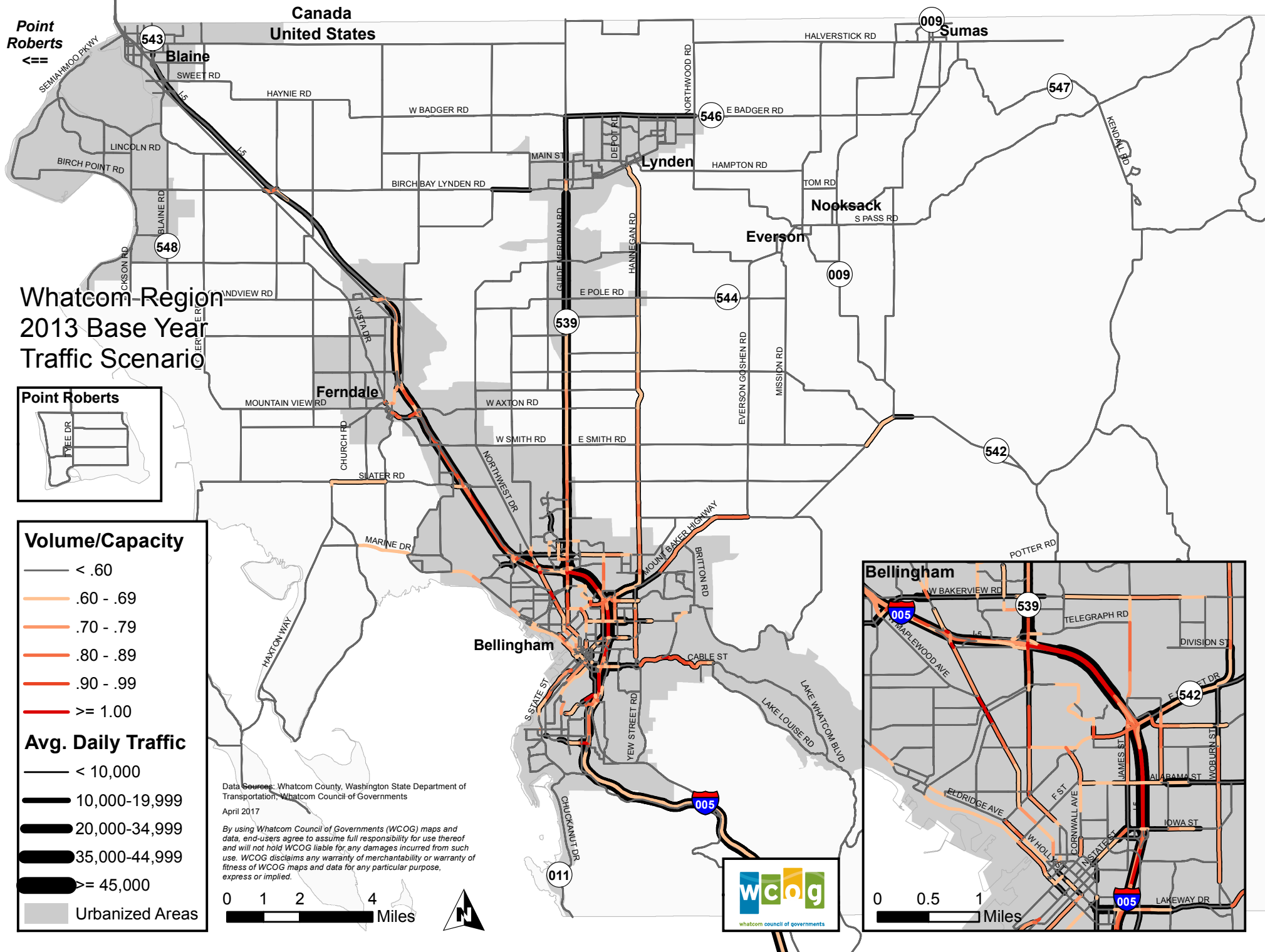
	2013 Base vs 2040 No-build	2040 No-build vs 2040 Build
<b>Bike</b>	+49%	Same
<b>Pedestrian</b>	+46%	Same

It should also be noted that the significant growth in bicycle and pedestrian trips forecast by WCOG's travel demand model did not factor in emerging technology, evolving life-style trends, or socio-economic factors which seem to point to a future in which there will be greater support for walking and biking. Car-sharing, automated vehicles, the growing popularity of urban living and smaller dwelling units, and demand-responsive transportation services like Lyft and Uber are some of the factors that could potentially lead to and/or support more walk and bicycle trips.

# Transit

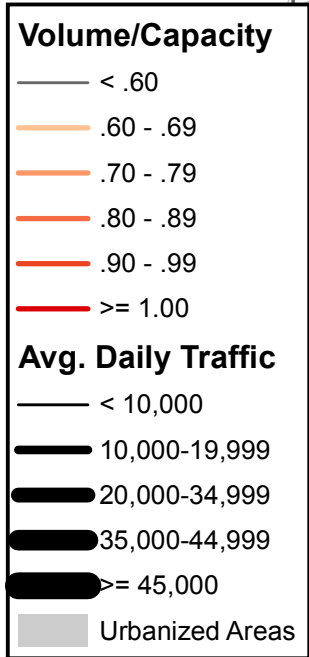
As the primary transit service provider in the region, the Whatcom Transportation Authority grows and adapts its services as a response to population growth and land development in coordination with local jurisdictions. Although WTA does not currently plan beyond a six-year horizon, WCOG, in consultation with WTA, employed its travel demand model to develop a transit scenario to forecast region-wide transit boardings for 2040 (Figure 6). The 2040 scenario includes a new fixed-route service in the Bakerview Road/James Street area in northeast Bellingham. Anticipated growth in daily WTA bus boardings shows a ridership increase of 35 percent between 2016 and 2040, going from 20,000 to 27,000 a day.

Like automobile, bicycle and walk trips, the majority of transit trips take place in the region's urbanized areas, especially Bellingham. It should be noted that the travel demand model forecast does not take into account the strong likelihood that WTA will implement new transit routes to meet travel demand generated by the region's projected growth in population and employment. Also, when combined with the fact that the local jurisdictions continue to promote transit and, in some cases, plan for infrastructure to support it, it is very possible that transit ridership will surpass the travel demand model's 35 percent growth forecast.





### Point Roberts



Data Sources: Whatcom County, Washington State Department of Transportation, Whatcom Council of Governments  
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