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Case Study

# Moving Beyond the Automobile

## Multi-modal Transportation Planning in Bellingham, Washington

By Chris Comeau, AICP

This case study examines Bellingham, Washington's evolution from auto-centric and roadway-based transportation planning to inclusive, flexible, and integrated multi-modal transportation planning and concurrency standards. Bellingham created a unique, multi-modal concurrency system to ensure that it would achieve the multi-modal transportation network that its citizens and planners envision for the future. The case study also discusses the shortfalls of employing conventional level of service (LOS) methods in urban settings and explains how Bellingham's transportation planners created innovative new LOS methods specifically designed to help achieve the infill and multi-modal goals and policies of the city's comprehensive plan.

Planners outside of Florida and Washington may view the topic of transportation concurrency implementation as remote from their everyday practice; however, planners in other jurisdictions want to ensure that their multi-modal transportation plans are implemented; hence almost all planners can learn from the methods advanced and applied in Bellingham, as described in this case study.

### BACKGROUND

#### Concurrency

Concurrency is a policy and regulatory requirement, first mandated in Florida, which requires local governments to ensure that adequate public facilities and services are available at the time the impacts of new land development occur, according to locally adopted level of service (LOS) standards. Once those LOS standards are developed and adopted, local governments must implement concurrency with regulations that disapprove of development if it fails to meet the adopted LOS standards. Local governments must continuously monitor the adequacy of facilities for which concurrency is required. That monitoring task often is referred to as a concurrency management system.

#### Washington's Growth Management Act

In 1990, the Washington State legislature passed the Growth Management Act (GMA) (RCW 36.70A), which mandated that most but not all cities and counties adopt comprehensive plans with 20-year planning horizons. Washington's GMA has transportation concurrency provisions that were modeled in part on Florida's statewide growth management legislation and was primarily a response to the public outcry arising from extensive urban sprawl that has threatened rural, agricultural, and environmentally sensitive lands. While Florida's growth management act mandated concurrency for several different facilities, Washington State mandated concurrency only for transportation facilities when it adopted its growth management act in 1990.

The GMA has specific requirements for land use and transportation elements of comprehensive plans (RCW 36.70A.070), including adoption and enforcement of concurrency (adequate public facilities) requirements for transportation (RCW 36.70A.070 and 365-195-510). Specifically, Washington's GMA requires that"After adoption of the comprehensive plan by jurisdictions required to plan or who choose to plan under RCW 36.70A.040, local jurisdictions must adopt and enforce ordinances which prohibit development approval if the development causes the level of service on a locally owned transportation facility to decline below the standards adopted in the transportation element of the comprehensive plan, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with the development."

Washington's GMA has 14 overarching goals (RCW 36.70A.020) addressing everything from urban land use and transportation to property rights and environmental preservation. While Washington's GMA provides a legal framework to follow, it leaves the details of how to achieve the 14 goals up to each local jurisdiction. The ultimate implementation goal for local jurisdictions is to achieve a reasonable level of balance among all of the 14 goals, despite the fact that some goals are clearly at odds with the achievement of other goals.

One example of Washington State's GMA goals being at odds with one another is the GMA goal for encouraging "compact urban centers" and urban "infill" development strategies in light of the GMA goal for adequate public facilities and services being maintained at current LOS standards. As noted above, Washington's GMA incorporates transportation concurrency requirements, similar to Florida's GMA, under which "adequate" transportation infrastructure must be provided "concurrent with new development" while maintaining LOS standards for arterial streets. If adequate transportation infrastructure cannot be maintained at current LOS standards, then new urban infill development cannot be approved, despite other benefits that the infill project may offer to the public.

**Conventional Methods of Determining Capacity**

The traditional engineering method of measuring transportation capacity to handle new development is to assume that a roadway or intersection has a theoretical design capacity to move vehicle traffic and then to measure traffic volumes or seconds of delay against the assigned design capacity of the arterial or intersection. The resulting ratio establishes the operating LOS typically during the highest demand period of the day, which is usually the p.m. peak, or evening rush hour (Figure 1). This is known as a volume-to-capacity LOS standard and it typically comes with a classification system ranging from LOS "A," describing free-flow traffic, to LOS "F," describing congestion, gridlock, and what engineers describe as "failure." The most common LOS methodology adopted for this purpose is from the national Transportation Research Board's Highway Capacity Manual (2000).

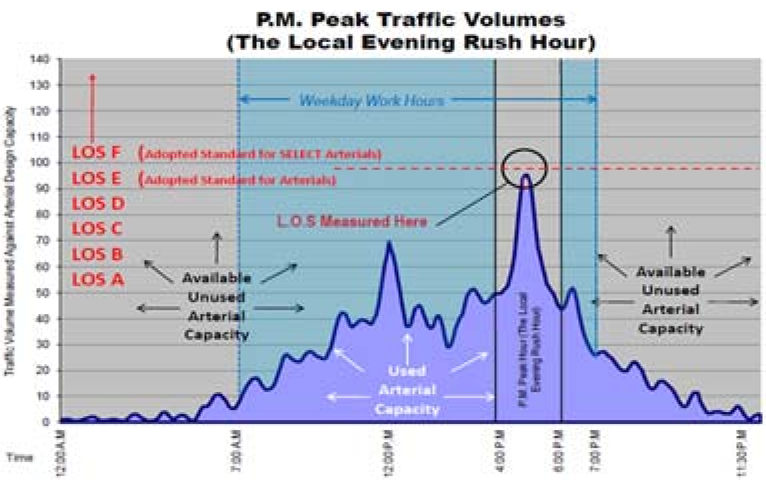


*Figure 1*

Illustration of typical weekday arterial traffic volumes with p.m. peak hour

Photo Kate Newell, GIS Specialist, City of Bellingham, Washington

Unfortunately, many people outside of transportation and engineering circles tend to confuse the Highway Capacity Manual's letter grade classification system with academic achievement grades, where an "A" grade indicates up to 100 percent achievement, a "C" grade indicates average (75 percent) achievement, and an "F" grade indicates failing achievement (below 50 percent). The Highway Capacity Manual letter grade classification system inverts the achievement grade scheme and assigns an "F" grade for transportation facilities at 100 percent capacity and an "A" grade for transportation facilities at only 50 percent capacity (See Table 1). A fundamental flaw exists in the public perception, and media portrayal, of how transportation facilities traditionally have been measured by engineers and, in this regard, some people mistakenly come to believe that public agencies should plan transportation facilities to achieve LOS "A," or at the very least LOS "C," but most certainly not LOS "F."

Table 1. Comparison of Letter-Grade Classifications for Academic Achievement Versus Transportation Capacity

| Academic Achievement | Value Assigned | Transportation Capacity |
|---|---|---|
| 90–100% | A | 50–60% |
| 80–90% | B | 60–70% |
| 70–80% | C | 70–80% |
| 60–70% | D | 80–90% |
| N/A | E | 90–100% |
| < 60% | F | >100% |

Source: Highway Capacity Manual 2000

In reality, there is no public agency in an urban area that would plan, fund, and construct an expensive new transportation facility with the expectation that it would function at LOS "A," or 50 percent to 60 percent of design capacity, during the highest demand periods of the day. An arterial maintained at LOS "A" would provide overbuilt and underutilized infrastructure, an incentive for increasing single-occupant vehicle trips, high public cost with little if any public benefit, and significant criticism for wasting public tax dollars.

When combined with Washington's GMA concurrency requirements to adopt and maintain LOS standards, the logical progression of maintaining a strict interpretation of traditional and theoretical volume-to-capacity (v/c) LOS standards is that arterial streets or intersections must become both wider and more congested or the urban area must remain at a lower density. Transportation demand management strategies also may be a legitimate response, but they typically have limited results. Because the measure of LOS is limited to automobile traffic congestion, the mitigating measures to maintain the adopted LOS are typically limited to adding capacity for the automobile, which is inconsistent with GMA goals for compact urban areas, multi-modal transportation systems, and reducing environmental impact.

Changing public perception about LOS "F" is not easy, but it is essential for jurisdictions choosing to promote infill development. The public perception is reinforced by the engineering industry in choosing to use a term like "failure" to describe LOS "F" conditions, which may include short-term congestion and possibly even temporary gridlock. In reality, the demand for physical space for vehicles has simply exceeded supply/capacity available. A traditional reaction has been to widen the congested street to add capacity. In human terms, this could be viewed as analogous to simply putting on a larger pair of pants to deal with temporary heartburn and discomfort from overeating, instead of dieting, exercising, or eating better.

> "Insanity: doing the same thing over and over again, but expecting different results."
> — attributed to Albert Einstein

It often is not physically possible, nor desirable, for streets or intersections in an urban core to become wider, so if additional infill development is desired in the urban core, then both the public expectation and adopted LOS must allow ever increasing traffic congestion during the heaviest demand period of the day.

## FACTS OF THE CASE

### About Bellingham

Bellingham, Washington, is located in the far northwestern corner of the state. The San Juan Islands rise out of the sea to the west, and the North Cascade Mountains rise to elevations of almost 11,000 feet to the east. Vancouver, B.C., Canada, host city to the 2010 Winter Olympic Games, lies 45 miles to the north, and Seattle is 55 miles to the south on Interstate 5 (see Figure 2).

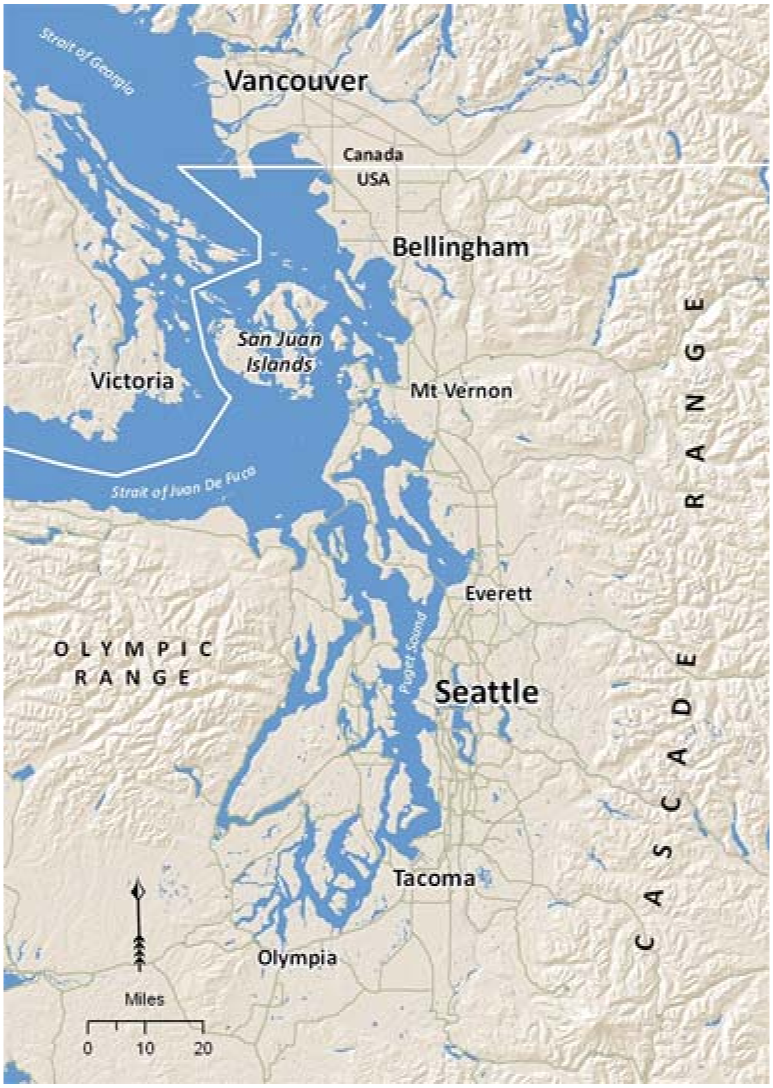


*Figure 2*
Bellingham's Location in the Pacific Northwest Region
Photo Chris Behee, GIS Analyst, City of Bellingham, Washington

The City of Bellingham was consolidated in 1903 with the incorporation and merger of four towns: Fairhaven (1853), Whatcom (1852), Sehome (1854), and Old Bellingham (1853). Bellingham is currently home to 75,750 residents and is the seat of government for Whatcom County.

Bellingham is the largest center for employment, shopping, entertainment, medical care, and secondary education in the Whatcom County region (see Figure 2). According to the housing element of the Bellingham Comprehensive Plan, 2002-2022 (2006), Bellingham offers 18 of the top 25 employers in the county. It also has several large retail shopping centers, many restaurant and dining options, several movie theaters and live performance venues, a state-of-the-art regional hospital, and three post-secondary education institutions (Western Washington University, Whatcom Community College, and Bellingham Technical College). With the presence of these activity centers and Interstate 5 bisecting the city, Bellingham draws a great amount of automobile traffic into and through the city. These activity centers also offer tremendous potential for alternative modes of transportation for those who live within close proximity or at least within the city limits.

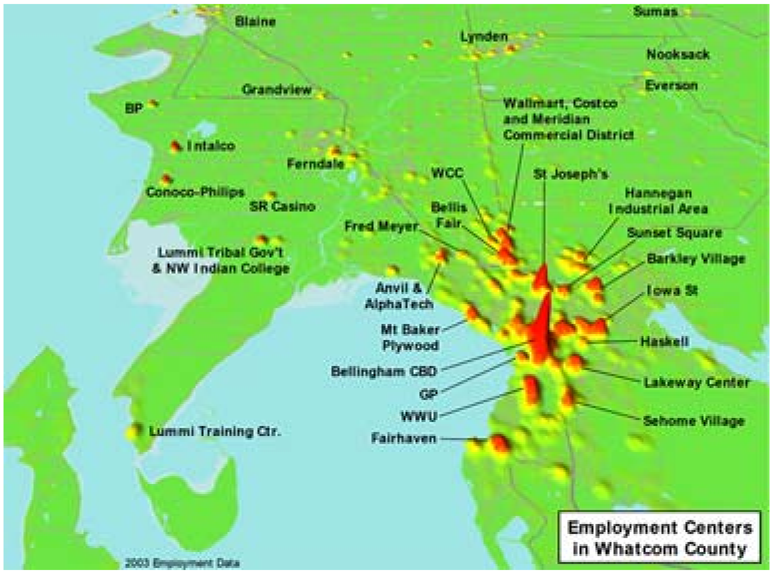


*Figure 3*
Employment Centers in Whatcom County
Photo Chris Behee, GIS Analyst, City of Bellingham, Washington

**Multi-modal Transportation Policies**

The transportation element of the Bellingham Comprehensive Plan (2006) contains multi-modal transportation goals and policies designed to support compact urban infill development, as prescribed by the land-use element, and alternative forms of transportation while discouraging low-density sprawl and auto-oriented development. The transportation element contains a list of about 120 multi-modal transportation projects identified as needed to serve new growth within the 20-year planning horizon. Most of these projects are bicycle and pedestrian projects recommended by the city's Bicycle and Pedestrian Advisory Committee in collaboration with transportation planning staff.

Multi-modal goals and policies in the transportation element also support public transit, which is not a city service. City transportation planners work hand in hand with the regional transit agency, Whatcom Transportation Authority (WTA), to incorporate transit infrastructure and service investments into the transportation network. City and WTA transportation planners have developed long-term mode shift goals (see Table 2), adopted in the transportation element, and continuously work together to reduce the overall percentage of trips made by single-occupant vehicles while increasing the percentage of trips made by pedestrians, bicyclists, and transit riders. City staff also incorporates WTA high-frequency (15-minute headway) service routes into citywide planning efforts for mixed-use Urban Villages (see Figure 4).

Table 2. Bellingham's Mode Shift Goals, 2002-2022

| Mode | 2004 | 2010 | 2015 | 2022 |
|---|---|---|---|---|
| Automobile | 87% | 84% | 80% | 75% |
| Transit Bus | 2% | 3% | 4% | 6% |
| Bicycle | 3% | 4% | 5% | 6% |
| Pedestrian | 8% | 9% | 11% | 13% |

Source: City of Bellingham, Washington (2006). Bellingham Comprehensive Plan, 2002-2022, Transportation Element. 2004 data from FTA/Social Data Study for Bellingham.

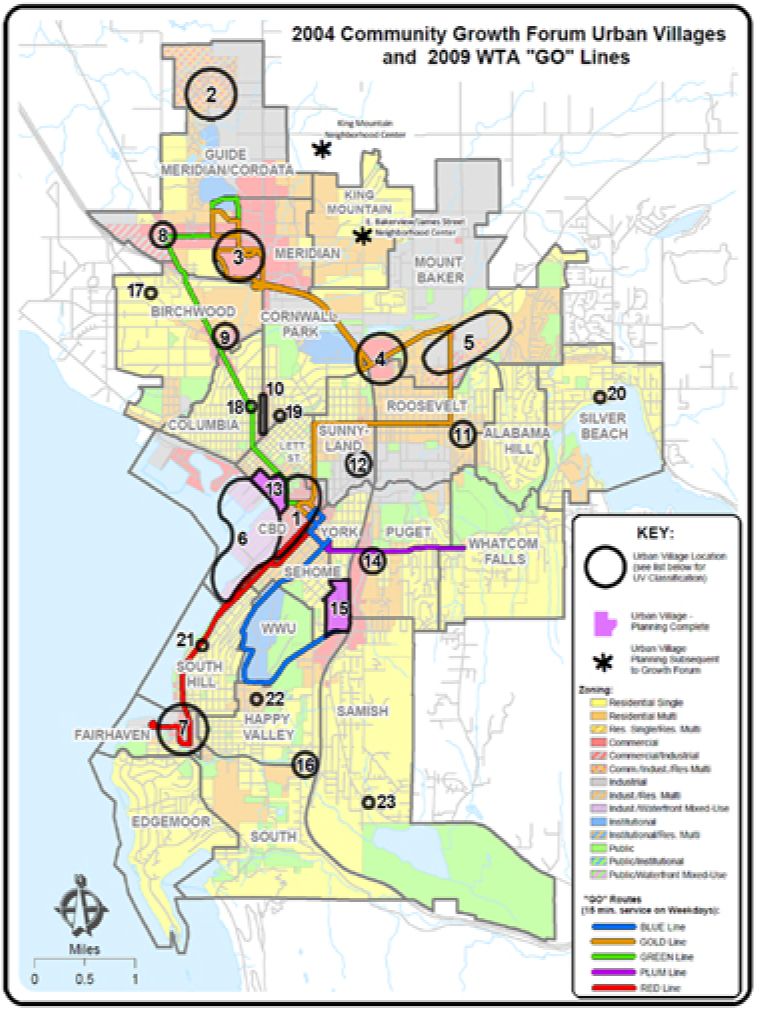


*Figure 4*
Bellingham's Urban Villages Connected by WTA High-frequency Transit Routes
Photo Kate Newell, GIS Specialist, City of Bellingham, Washington

**Capital Investments in Bicycle and Pedestrian Infrastructure**

According to its "Six-Year Strategic Service Plan, 2005-2011" (WTA 2004), WTA has focused the highest percentage of transit service hours in the portions of the Bellingham urban area with the greatest ridership potential. The city has adopted multi-modal policies that require bicycle and pedestrian facilities on all new or reconstructed arterial streets, solicited multi-modal improvement requests from neighborhoods and bicycle and pedestrian advocates, and made significant investments in capital improvements to bicycle and pedestrian infrastructure.

Each year, transportation planners solicit priority project requests, as listed in the transportation element, from both the Bicycle and Pedestrian Advisory Committee and the city's 24 appointed representatives on the mayor's Neighborhood Advisory Commission. During the past decade, Bellingham has made significant financial investments to build the multi-modal transportation network identified in the transportation element (see Figure 5). Since 2001, about half of the transportation projects on Bellingham's annual six-year Transportation Improvement Program (TIP) have been specific bicycle and pedestrian infrastructure projects (See Figure 5) and in 2009, all capital projects on the 2010-2015 TIP include bicycle and pedestrian facilities.

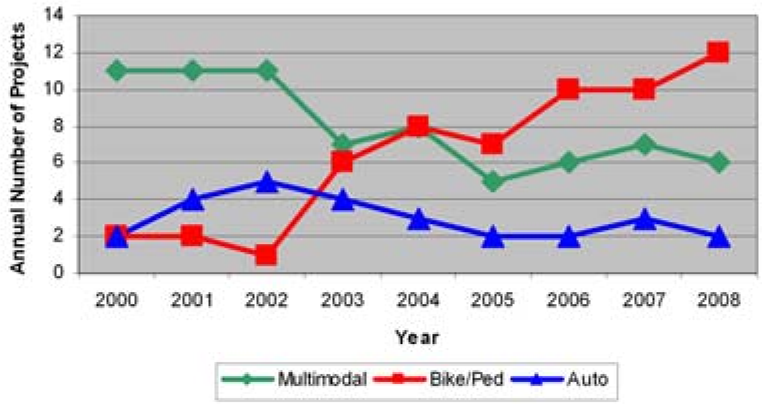


*Figure 5*
Number of Transportation Capital Projects Per Year by Mode Type, City of Bellingham, 2000-2008
Photo Chris Comeau, Transportation Planner, City of Bellingham, Washington

New multi-modal transportation facilities also are provided through private investment. City transportation policy, development regulations, street standards, and design guidelines require new development to fund and construct public street frontage improvements that include bicycle lanes and sidewalks for arterials and sidewalks for residential streets, wherever possible.

**Impact Fees and Transportation Concurrency Requirements**

In 1994, Bellingham adopted an ordinance imposing transportation impact fees on all new development (Bellingham Municipal Code, Chapter 19.06). In 2008, the city adopted multi-modal transportation concurrency requirements (Bellingham Municipal Code Chapter 13.70) that employ measurements for pedestrian, bicycle, transit, and automobile modes and can require mitigation through the construction of sidewalks and bicycle lanes or contributions to transit service.

**Dissatisfaction with Conventional LOS Standards**

After years of working with conventional volume-to-capacity LOS standards based on the Highway Capacity Manual, Bellingham's transportation planners concluded that it was not possible to promote significant urban infill development while maintaining traditional auto-centric volume-to-capacity LOS standards that do not allow traffic congestion beyond a theoretical threshold. The enhancement of the pedestrian environment is paramount to successful infill strategies and creating vibrant urban environments, but continually widening roads to add vehicle capacity compromises the quality of the urban pedestrian environment, degrades urban aesthetics, and ultimately leads to expansive urban sprawl.

Unfortunately, when city staff began updating the Bellingham Comprehensive Plan in 2004, it became clear that the Public Works Department would be stuck with the traditional LOS system until enough time and resources could be found to develop an entirely new measurement methodology. This also meant that Bellingham's transportation planners had to develop a specific transportation element policy (TP-12) that would allow the city council to adopt a lower LOS "F" standard during the p.m. peak hour for specific arterials that serve Urban Villages, as entry/exit points to the city, or that are physically, economically, or politically undesirable for widening. This was essentially a way to meet the letter of state law requirements for transportation concurrency, while also attempting to support high-density mixed use Urban Villages called for in the land use element of the Comprehensive Plan.

The counterintuitive logic behind this policy is that if more people live on less land in closer proximity to work, shopping, entertainment, educational, and medical facilities, then there should be less dependency on automobiles for shorter trips. While this will not necessarily reduce traffic congestion during peak demand hours, it will perhaps slow the rate of growth of traffic congestion and has the potential to reduce the overall number of individual trips made by automobile over time.

Despite the unpopularity of the message, Bellingham transportation planners chose to openly communicate that evening rush hour traffic congestion is a normal condition in urban environments and that no city in the United States has successfully built its way out of p.m. peak hour traffic congestion. This policy became the focus of political controversy and organized efforts by anti-growth organizations to promote agendas to restrict population growth and new development in Bellingham and, more generally, Whatcom County. The mantra of one local anti-growth group became "Planning to Fail is Failing to Plan" in reference to the public perception that LOS "F" conditions at the p.m. peak hour is equivalent to grade school failure. Several editorial opinion pieces in the local newspaper decried the horror of the city's LOS "E" and "F" standards and transportation policies, and simply implied that the city "just needed to do a better job with infill development without letting traffic get worse." Editorial page headlines included:

> "City policy would lead to severe traffic congestion"
> — Sunday, June 5, 2005, *Bellingham Herald Opinion*
>
> "City wrong to allow traffic woes to fester"
> — Sunday, May 7, 2006, *Bellingham Herald Opinion*
>
> "Bellingham maddeningly illogical on growth, traffic"
> — Sunday, June 10, 2007, *Bellingham Herald Opinion*

**Evolution from Auto-Centric LOS to Multi-modal LOS**

In December 2007, Bellingham Public Works issued a request for proposals (RFP #130B-2007 Transportation Concurrency Methodology Revision Project ET-16), and in January 2008 the city hired Kirkland-based Transpo Group to explore alternative LOS measurements and develop a new method for calculating transportation concurrency from a multi-modal perspective. From February through June 2008, Transpo Group helped Bellingham transportation planners analyze pros and cons of 15 different LOS measurements along a spectrum ranging from traditional to progressive and untested methods. The evaluation was contained in a "Multi-modal Transportation Concurrency Program Development Document" (2009). Staff and consultants kept the city council, the public, and the development community informed throughout the process with one work session per month. (All city council meetings are recorded and broadcast on BTV Channel 10.) Ultimately, staff and consultants recommended a plan-based preferred alternative titled "Person Trips Available by Concurrency Service Area" that is a fundamental shift away from traditional engineering LOS measurements.

In August and September 2008, two public hearings were held before the planning commission and in November 2008, two public hearings were held before the city council with final adoption occurring in December 2008. Throughout the public hearings, the same local anti-growth advocates who rallied around the mantra "Planning to Fail is Failing to Plan" made accusations and misinformed claims of wrongdoing on the part of both city and consultant staff. Pro-growth land supply advocates claimed it was the city's responsibility to build infrastructure to serve new development in the Bellingham Urban Growth Area, not the responsibility of private developers. Bicycle, pedestrian, transit, and highway planners all supported the new multi-modal transportation concurrency methodology.

The remainder of this case discusses the details of Bellingham's multi-modal transportation concurrency regulations ("Outcomes") and the lessons learned in adopting and implementing them.

**OUTCOMES: HOW MULTI-MODAL TRANSPORTATION CONCURRENCY WORKS**

Bellingham's new systematic approach to multi-modal transportation concurrency regulations integrates land-use and transportation goals, policies, development regulations, and funding mechanisms to ensure that adequate facilities are available for pedestrians, bicyclists, transit riders, and vehicle users. The new multi-modal transportation concurrency regulations are consistent land-use and transportation goals and policies of the comprehensive plan and the long list of multi-modal transportation projects needed to accommodate projected population growth. This innovative approach is aimed toward achieving Bellingham's long-term mode shift goals to reduce the percentage of trips made by single-occupant vehicles while increasing the percentage of trips made by pedestrians, bicyclists, and transit riders.

**LOS Measures and Standards**

Bellingham's adopted LOS standard is "person trips available by concurrency service area" based on arterial and transit capacity for motorized modes and on the degree of network completeness for pedestrian and bicycle modes, as listed below. The individual level of service measures for each transportation mode available in each concurrency service area are listed in Bellingham Municipal Code, Section 13.70, "Multi-modal Transportation Concurrency Requirements" (2008) (see Table 3).

Table 3. Bellingham's Level of Service Measures for Individual Transportation Modes

| Motorized Transportation Modes | |
|---|---|
| Arterial Streets | Peak hour LOS person trips available during weekday p.m. peak hour based on data collected at designated concurrency measurement points for each concurrency service area |
| Transit | Determine seated capacity, measure ridership, and equate to person trips available via public transit service during weekday p.m. peak hour based on data collected at designated concurrency measurement points for each concurrency service area |
| Non-motorized Transportation Modes | |
| Bicycle | Credit person trips according to degree of bicycle network completeness for designated system facilities/routes for each concurrency service area |
| Pedestrian | Credit person trips according to degree of pedestrian network completeness for designated system facilities/routes for each concurrency service area |
| Trails | Credit person trips according to degree of bicycle and pedestrian network completeness, where trails serve a clear transportation function for a concurrency service area |

**Concurrency Service Areas**

Transportation planners divided the city into 15 concurrency service areas (CSA), each of which has unique land-use patterns and transportation facilities and services available, which influence travel behavior and the transportation choices people make. Each CSA is classified as Type 1, 2, or 3, as listed below and weighted with "policy dials" (see description in later section) to reflect the relative importance of different transportation modes in the three different CSA types (Figure 6 and Table 4).

- Type 1 CSA *(Green)* are Urban Villages with adopted master plans. Type 1 CSAs are characterized by a high percentage of pedestrian and bicycle facilities, high frequency transit service, and higher density land uses with a good mix of services. Western Washington University (WWU) is an exception and is classified as Type 1 CSA #10 due to the extremely high transit service and ridership, campus parking limitations, and the adopted WWU Institutional Master Plan.
- Type 2 CSA *(Yellow)* are essentially transition areas between Urban Villages and outlying areas. Type 2 CSAs are characterized by a moderate percentage of pedestrian and bicycle facilities, high frequency transit service, and moderate density land uses that are primarily residential with a small degree of mixed uses.
- Type 3 CSAs *(Red)* are primarily east of Interstate 5 and at the edges of the city. Type 3 CSA are characterized by a low percentage of pedestrian and bicycle facilities, moderate to low transit service availability, moderate to low density land use with a small degree of mixed uses, and a high degree of automobile dependency.

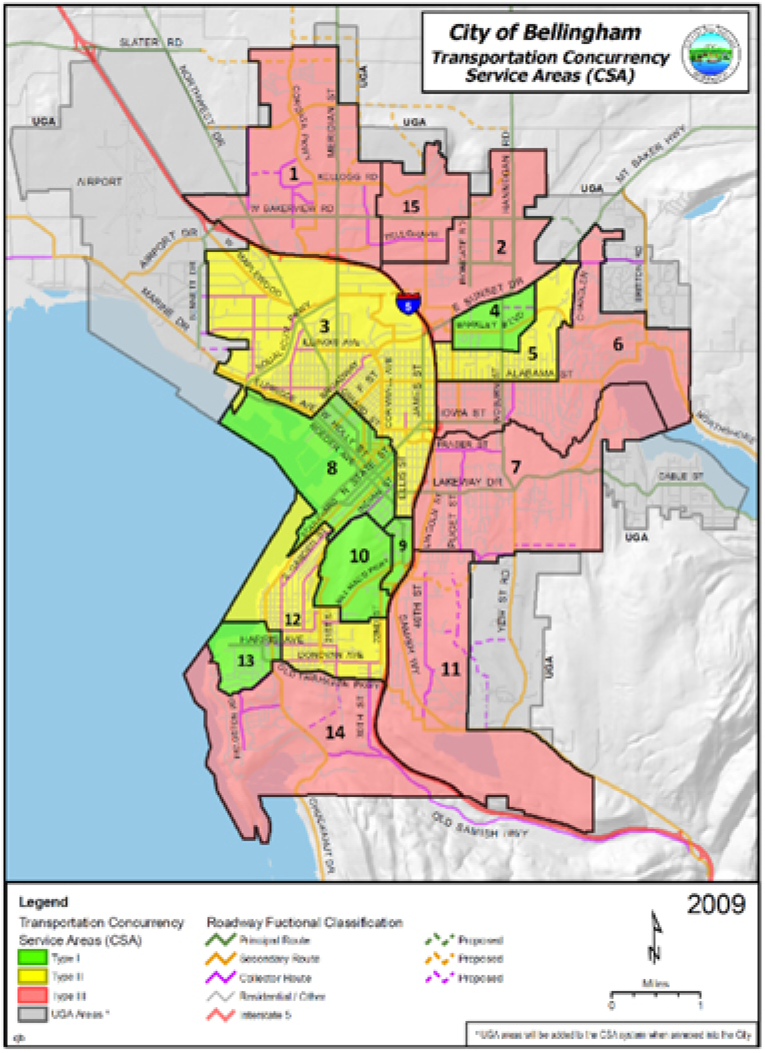


Figure 6
Bellingham's Multi-modal Transportation Concurrency Service Areas
Photo Chris Behee, GIS Analyst, City of Bellingham, Washington

Table 4. Multi-modal Transportation Concurrency Policy Dials

| | Transportation Concurrency Service Areas | | |
|---|---|---|---|
| Mode | Type 1[1] | Type 2[2] | Type 3[3] |
| **Motorized** | | | |
| *Auto* | | | |
| Mode weight factor[4] | 0.70 | 0.80 | 0.90 |
| *Transit* | | | |
| Mode weight factor[5] | 1.00 | 1.00 | 0.80 |
| **Non-Motorized** | | | |
| *Pedestrian* | | | |
| Percent threshold for minimum system complete[8] | 50% | 50% | 50% |
| Person trip credit for 1% greater than minimum threshold[9] | 20 | 20 | 20 |
| Mode weight factor[6] | 0.60 | 0.60 | 0.60 |
| *Bicycle* | | | |
| Percent threshold for minimum system complete[8] | 50% | 50% | 50% |
| Percent credit for 1% greater than threshold[9] | 20 | 20 | 20 |

| | | | |
|---|---|---|---|
| Mode weight factor[7] | 0.40 | 0.40 | 0.40 |

1. Type 1 = Urban Village areas with adopted master plans, high-density mixed use zoning, or an active master plan process.
2. Type 2 = Medium-density areas adjacent to and influenced by Urban Villages.
3. Type 3 = Lower density and auto-oriented areas outside of Urban Villages.
4. Auto mode weight factor considers the importance of roadways to a service area, relative to the availability of other mode alternatives.
5. Transit mode weight factor considers the availability/viability of the transit mode to a service area.
6. Pedestrian mode weight factor considers the importance of pedestrian facilities to a service area, relative to land use and travel patterns.
7. Bicycle mode weight factor considers the importance of bicycle facilities to a service area, relative to land use and travel patterns.
8. This is the minimum level of the planned system completed for it to be considered a viable mode alternative.
9. Person trips credited to service area based on the amount of the system completed minus the minimum threshold.

Source: Bellingham Municipal Code, Section 13.70, Table 1.

**Policy Dials**

The overarching goal of Bellingham's multi-modal transportation concurrency methodology is to support the city's infill land-use strategy. To that end, "policy dials" are used in an attempt to direct new development into the portions of the city deemed most appropriate for accommodating new development and population growth. The land use environment for each CSA plays a key role in the policy dial influence on each mode. The availability, completeness, and relative importance of transportation infrastructure for pedestrian, bicycle, transit, and automobile modes within each of the 15 CSAs determines the number of person trips available in each CSA. The net effect is to ensure more person trips available in the areas deemed most appropriate for growth and where multi-modal transportation infrastructure is most complete.

The presence and availability of pedestrian, bicycle, transit, and automobile facilities within each of the 15 CSAs determines the number of person trips available in each CSA. For example, under the new system the downtown CSA, with many small block grid-oriented streets and ample pedestrian, bicycle, and transit facilities, would have more person trips available than an outlying suburban area with long blocks, few pedestrian or bicycle facilities, and little to no transit facilities and services.

**Example of Policy Dial Influence**

The following helps to explain the influence that the auto and transit policy dial weighting factors have on CSAs. Downtown Bellingham is a Type 1 (Urban Village) CSA (see No. 8 in Figure 5). The downtown area has many small blocks, grid-oriented streets, ample and complete pedestrian and bicycle facilities, and more public transit service than anywhere else in the city. The weighting factors for the downtown CSA No. 8 de-emphasize the relative importance of the plentiful automobile capacity and emphasize the relative importance of the robust transit capacity.

In contrast, CSA No. 15 is a newly annexed outlying suburban area (a Type 3 CSA) with very long blocks, few pedestrian or bicycle facilities on arterial streets, and little if any transit facilities and services. The weighting factors for this outlying area emphasize the relative importance of available automobile capacity to serve the low-density land-use environment and de-emphasize the relative importance of the almost nonexistent transit capacity.

The calculations in Table 5 reveal that there are more person trips available in downtown Bellingham CSA No. 8 than in any other part of the city, and that there are fewer person trips available in CSA No. 15 than in any other part of the city. From a concurrency standpoint, this means that the available infrastructure in downtown can, and should, support more infill development than the outlying suburban area that is lacking in infrastructure. The limited number of person trips available means that new development in CSA No. 15 may not pass the concurrency evaluation test and would then be required to construct new pedestrian and bicycle infrastructure that is needed to serve the level of development that the zoning allows.

Table 5. 2009 Multi-modal Transportation Concurrency Person Trips Available For New Development in Bellingham by Concurrency Service Area

| Concurrency Service Area[1] | Sidewalk Percent Complete | Ped. Credit PTA | Bike Lane Percent Complete | Bike Credit PTA | WTA Transit PTA | Vehicle Capacity PTA | Gross CSA PTA | Pending Pipeline Trips[2] | Net CSA PTA[3] |
|---|---|---|---|---|---|---|---|---|---|
| CSA 1 | 90.1% | 480 | 76.5% | 208 | 607 | 7,570 | 8,865 | 2,674 | 5,691 |
| CSA 2 | 46.0% | 0 | 66.3% | 128 | 88 | 2,780 | 2,996 | 900 | 1,596 |
| CSA 3 | 91.3% | 492 | 70.3% | 160 | 1,245 | 4,809 | 6,706 | 497 | 5,709 |
| CSA 4 | 100.0% | 600 | 100.0% | 400 | 317 | 3,916 | 5,232 | 1,115 | 3,617 |
| CSA 5 | 96.2% | 552 | 91.3% | 328 | 548 | 2,042 | 3,470 | 0 | 2,970 |
| CSA 6 | 95.0% | 540 | 96.7% | 376 | 250 | 3,598 | 4,765 | 43 | 4,222 |
| CSA 7 | 83.3% | 396 | 93.6% | 352 | 170 | 3,804 | 4,722 | 0 | 4,222 |
| CSA 8 | 99.6% | 600 | 87.3% | 296 | 1,536 | 6,581 | 9,014 | 530 | 7,984 |
| CSA 9 | 100.0% | 600 | 67.0% | 136 | 122 | 1,480 | 2,338 | 0 | 1,838 |
| CSA 10 | 82.3% | 384 | 94.9% | 360 | 1,074 | 307 | 2,124 | 0 | 1,624 |
| CSA 11 | 53.6% | 48 | 62.6% | 104 | 102 | 4,126 | 4,381 | 0 | 3,881 |
| CSA 12 | 83.1% | 396 | 89.4% | 312 | 280 | 2,093 | 3,081 | 1 | 2,580 |
| CSA 13 | 69.1% | 228 | 93.9% | 352 | 305 | 1,476 | 2,361 | 0 | 1,861 |
| CSA 14 | 51.1% | 12 | 84.7% | 280 | 98 | 683 | 1,073 | 0 | 573 |
| CSA 15 | 25.6% | 0 | 7.3% | 0 | 0 | 1,099 | 1,099 | 0 | 599 |
| Citywide | | | | | Total | PTA | 62,227 | 5,760 | 48,967 |

1. See Concurrency Service Area (CSA) map. (Figure 6 in this case)
2. Pending pipeline trips represent developments that have been issued a Concurrency Certificate but have not been constructed and therefore are not represented in the field data.
3. 500 PTA have been withheld from each CSA to maintain a minimum buffer of 500 PTA in each CSA.

**Multi-modal Data Collection**

Bellingham continues to measure arterial capacity by conducting annual traffic counts on arterial streets. Transportation planners also work directly with Whatcom Transportation Authority (WTA), the regional transit agency, to measure seated transit capacity and actual transit ridership. Bellingham is fortunate to have an excellent and collaborative relationship with WTA, and both agencies have had tremendous influence on each other's long-term strategic transportation plans. Earlier this year, WTA was recognized as having the greatest transit ridership increase (20.7 percent) within the 150 largest transit service areas of the United States from June 2007 to June 2008.

While measuring road and transit capacity is relatively straightforward, it is much more difficult to measure the capacity of bike paths and sidewalks. Rather than measuring capacity, Bellingham measures the degree of completeness of the bicycle and pedestrian facilities in each CSA and awards credit for person trips available, accordingly. Bicycle or pedestrian facilities must be a minimum of 50 percent complete in a CSA to be credited with person trips available. For every 1 percent complete over 50 percent, the city will deposit 20 person trip credits into a CSA account. The city keeps a citywide inventory of bicycle and pedestrian facilities in a GIS database and annually measures the existing inventory against the total adopted planned bicycle and pedestrian network of facilities needed to serve new growth. Bellingham's transportation element includes more than 120 bicycle and pedestrian projects recommended by the city Bicycle and Pedestrian Advisory Committee for the 20-year planning period.

**Annual Monitoring and Demonstration of Concurrence**

Bellingham publishes a Transportation Report on Annual Concurrency, which is a status report on the citywide surface transportation network. The report now also includes the number of "person trips available by concurrency service area" for developers to draw upon in the coming year. The Public Works Department presents the report to the planning commission and the city council at the beginning of each year. This allows staff to make recommendations for changes when necessary, alert decision makers about concurrency issues, and to seek direction from the city council. If and when amendments or adjustments to the multi-modal methodology are necessary, they must be approved by both the planning commission and city council through an open public process.

**Annual Transportation Concurrency System Works Like a Checking Account**

Bellingham's new multi-modal transportation concurrency system works something like a checking account for each CSA (Figure 7). The account balance for each of the 15 CSAs is established in the Transportation Report on Annual Concurrency each year (Table 5) and developers withdraw person trips from the account with each new development application. The city, transit agency, or private sector can deposit person trips into accounts through capital projects and transportation mitigation. The city will not allow new development to overdraw the account, and if there are not enough person trips available to serve a new development, then mitigation will be required to earn person trip credits through construction of new multi-modal facilities on the Bicycle and Pedestrian Advisory Committee's priority list of sidewalk and bicycle lane projects identified for each CSA from the transportation element of the comprehensive plan.

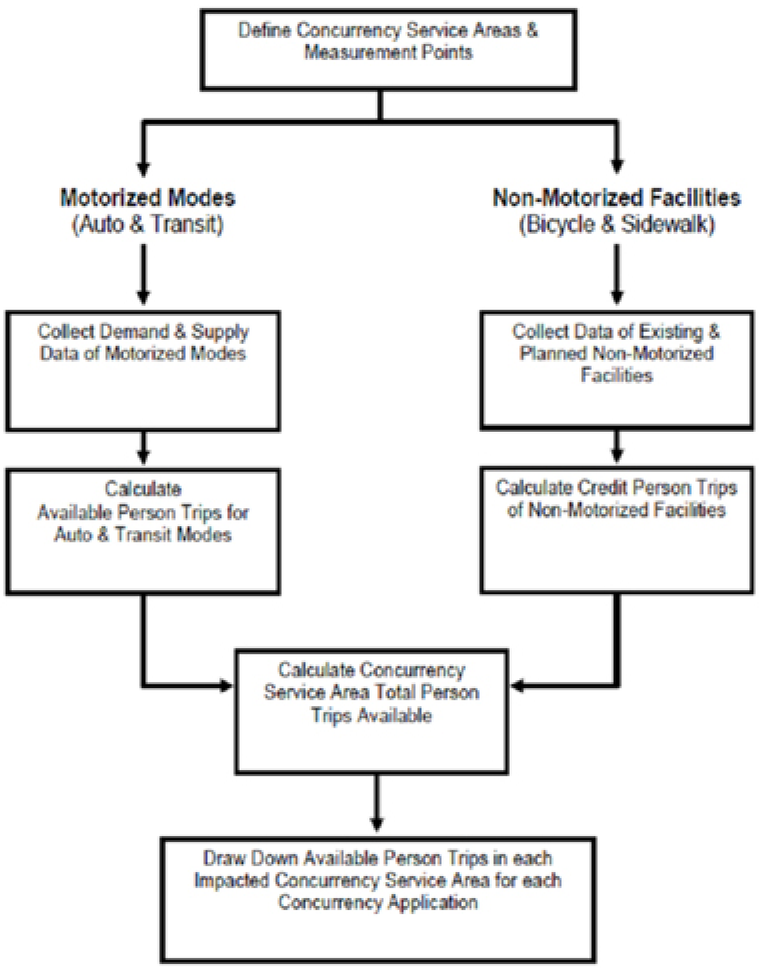


*Figure 7*
How Multi-modal Transportation Concurrency Works
Photo Transpo Group, Inc., Kirkland, Washington

Any new development that requires more person trips than are available in a particular CSA must fund or construct an appropriate amount of additional transportation infrastructure, or institute measurable transportation demand management strategies, to ensure that there are enough person trips available on the multi-modal transportation network to serve the new development. Consistent with state law for concurrency, if the developer cannot ensure that enough person trips will be available, then the city cannot accept the application for the proposed development. The new multi-modal transportation concurrency requirements were approved at the end of 2008 and became effective on January 1, 2009.

**LESSONS LEARNED**

***Perceived transportation problems need to be reframed in the context of goals to be achieved.***

In 2004, Bellingham transportation planners decided it was necessary to step back from perceived transportation problems and objectively consider whether the problem was being accurately characterized to begin with. Traditionally, transportation arterials that have been measured at 100 percent of the traffic capacity that they were designed to accommodate have been described by engineers as "failing." This term is used quite frequently, but perhaps not very accurately, in many traffic impact analyses and transportation planning studies. When used in this regard, the implication of the term "failure" is that the problem is with the transportation facility itself rather than the variables that affect it. While the facility may not have been designed to function beyond a particular threshold of traffic, the reality is that public demand for transportation capacity for a particular mode has exceeded the available supply during a particular, and usually short, time period. The traditional solution to this capacity-failure problem has been to increase the capacity-supply by adding automobile travel lanes through street widening, or increasing automobile storage ability at intersections by adding or lengthening turn lanes.

***Urban areas cannot build their way out of traffic congestion.***

Transportation policies implemented in many communities, including Bellingham, during the post–WWII era led to expansive suburban-oriented land use that required the construction of multi-lane roads to accommodate increasing use of the private automobile. Today, Bellingham is striving to increase land use and transportation efficiency by creating a more compact urban footprint served by multiple modes of transportation. Bellingham's perceived transportation problems are being restated and reframed in light of that goal. Compact urban areas cannot build their way out of rush hour traffic congestion simply by widening streets and intersections to add automobile capacity. Bellingham transportation planners have chosen to reconsider transportation infrastructure capacity problems as transportation mobility and demand management problems with solutions focused on maximizing the total capacity from all modes using the transportation system and minimizing, shifting, or spreading demand across the system.

***Transportation impact mitigation will only address what is measured in the impact analysis.***

Bellingham transportation planners concluded that if arterial or intersection capacity is measured only for automobiles, then mitigation required to address "deficiencies" will only add automobile capacity in the form of vehicle travel or turn lanes, which may compromise the viability and safety of pedestrian, bicycle, and transit modes. Also, widening a street may not be feasible from a physical or economic standpoint, and it might not be desirable from an urban design standpoint, either. If the community's goals are to ensure adequate multi-modal transportation facilities and actually have new development contribute to the completion of the multi-modal transportation network, then all facilities serving all modes of the network must be measured for adequacy in order for mitigation to have meaningful benefit to the community and the multi-modal users served by the transportation network. In Bellingham, even if an arterial is congested with automobile traffic at rush hour, there may be incomplete sidewalks and bicycle lanes that can be constructed as mitigation for a project's impact within a concurrency service area. Alternatively, a developer can work with the public transit agency to enhance transit facilities and service.

***One-size-fits-all automobile-oriented LOS standards do not work well in urban areas.***

Even in places with mandated statewide growth management legislation and requirements for concurrency or adequate public facilities ordinances, there is not a one-size-fits-all solution to ensuring that adequate multi-modal transportation infrastructure is available concurrent with new development. Traditional Level of Service (LOS) standards, which may be appropriate for low-density rural areas, are not appropriate for high-density urban areas. Urban transportation planning and concurrency regulations must be specifically designed to carry out a city's vision, goals, and policies within the context of its own unique circumstances. Bellingham had to create unique and progressive multi-modal goals, policies, and development regulations to ensure completion of the multi-modal transportation network that its citizens and planners envision for the future.

***The public doesn't relate well to LOS but can relate to automobile traffic counts.***

The traditional volume-to-capacity (v/c) method of calculating level of service and capacity for arterials has been convention throughout the transportation industry for decades. Collecting data for the v/c method is easy, straightforward, and provides an understandable measure of quantity. All that is required to derive the v/c measurement is a measurement of existing traffic volume from a traffic counting device and an assigned design capacity for the arterial, such as 750 cars per lane. If 700 cars were counted in a westbound lane that had a design capacity of 750 cars per hour, then the peak hour v/c ratio would be 0.93, or LOS "E." However, the only aspect of transportation being measured is automobile use. For the predominantly automobile-driving public, LOS classifications are confusing, but it's relatively easy to understand what is meant when told that traffic counts indicate that the arterial is 93 percent full at the busiest time of day.

***It's hard to teach an old dog a new trick.***

Bellingham's multi-modal transportation concurrency methodology de-emphasizes traffic counts as the primary determinant of the LOS measurement and adds three non-automotive measurements to reflect total multi-modal capacity available to new development. Bellingham's transportation planners learned that it is difficult to supplant an existing and accepted methodology with an unconventional and new methodology that is not well-understood by the public. Outreach efforts were made within the development community, and multiple public work sessions were held with the city council to help provide transparency and understanding of the new methodology for elected officials, the public, and even the media. A lot of information goes into the new multi-modal transportation concurrency system, and it is difficult to explain to a public that is used to the look and feel of automobile traffic congestion as the measure of the transportation system. Multi-modal measures of mobility and system completeness provide good information for planners, but the public still sees, hears, and feels the inconvenience of traffic congestion in certain places at certain times of the day.

***Cities change; resident expectations must change with them.***

Achieving a balanced and integrated approach to land use and transportation planning requires constant compromise and willingness to adjust commonly held beliefs and ideals. Traffic congestion is not a condition desired by anyone, but it is a necessary evil, at least during work commute hours, in vibrant and densely built urban environments that favor pedestrian-oriented design. Some people do not agree with this philosophy, but local residents who decry "urban sprawl" must also become willing to accept a different set of expectations and attitudes toward both infill development and traffic congestion. The opportunity for urban infill development includes an opportunity cost of increased traffic congestion, although much less than there would be from suburban development at the edge of the city. The city's transportation policy openly acknowledges that there will be arterials and intersections that will experience significant traffic congestion during the evening rush hour, but that is to be expected given the infill land-use goals the city is working to achieve. Bellingham's aim is not to eliminate private automobiles, but to encourage the use of other transportation modes while reducing the costly transportation capacity demand made by automobiles, and especially single-occupant vehicles, on city arterial streets.

***Transportation concurrency must be flexible and adaptable.***

Washington's GMA requires cities to adopt LOS standards for transportation facilities in their comprehensive plans and transportation concurrency ordinances to enforce and maintain those LOS standards. Once these LOS standards are adopted, however, comprehensive plans only may be amended once per year (RCW 36.70A.130) and only through a lengthy public process. When using only the traditional volume-to-capacity ratio method of calculating capacity for arterial segments and the Highway Capacity Manual LOS standard classifications of "A" through "F," Bellingham literally ran out of capacity on one major arterial corridor in 2007. While significant development potential remained along this corridor, due to GMA concurrency requirements, the city had to impose a building moratorium along the corridor that lasted for nine months.

Before the moratorium could be lifted, the adopted LOS for that arterial had to be amended from LOS "E" to LOS "F." Staff had to hold televised public hearings with 30-day public notice requirements before both the planning commission and the city council with an unpopular recommendation to change the adopted LOS from "E" to "F" during the peak hour. This long process fueled controversy and misinformation from the media and anti-growth groups, and politically charged the issue. Even after the city council begrudgingly voted to allow the lower LOS on this corridor, the once-per-year amendment requirement of GMA forced the city to wait until the end of 2007 to lift the building moratorium because all comprehensive plan amendments have to be made at one time.

Bellingham's nontraditional solution to this rigid and inflexible procedural problem was to fundamentally change the methodology and unbundle the adopted LOS from the concurrency calculation. Bellingham meets the GMA requirement to adopt the LOS standard in the comprehensive plan, but has codified the methodology for calculating and evaluating the LOS as part of the development regulations within the Bellingham Municipal Code under a multi-modal transportation concurrency ordinance (Bellingham Municipal Code Section 13.70). If amendments are needed to that ordinance, then public hearings are still required before both the planning commission and the city council, but they do not require amendments to the adopted LOS in the Bellingham comprehensive plan. Code amendments can be made more than once per year, and they become effective two weeks after adoption. This makes for a much more nimble, flexible, and adaptable system that can respond to changes, as needed, in a more timely fashion, without compromising public process requirements.

***New approaches require monitoring and adjustment.***

Bellingham's multi-modal approach is designed to specifically address the unique local land-use and transportation policies of Bellingham, and it remains to be seen how effective this new system will be over time. Annual performance measures, monitoring, and reporting will help transportation planners make adjustments to the system, where needed. The flexibility built into this new system will help transportation planners respond to changing city conditions more efficiently and effectively. There are some critics and skeptics of Bellingham's multi-modal transportation concurrency system, but there also have been a great number of inquiries made by transportation professionals from other urban areas interested in adopting similar multi-modal approaches. This may not be the preferred approach for some jurisdictions, but Bellingham transportation planners encourage other jurisdictions to take a look, use what you can, and leave the rest.

*Chris Comeau is the City of Bellingham's transportation planner and served as the project manager for the development of the Multi-modal Transportation Concurrency Program. He has 16 years of professional land-use and transportation planning experience and has worked in Alaska, Arizona, and several jurisdictions in Washington. Comeau has been involved in the development of several comprehensive plans and specializes in long-range planning with an emphasis on integrating transportation and capital facility needs with land-use planning goals and policies. He holds a B.S. in Applied Geography and Land Use Planning from Northern Arizona University.* ccomeau@cob.org