Transportation Master Plan ........................................... 16

Multimodal Concurrency Program
and Impact Fee Update .................................................. 16

Resources and Timing ...................................................... 17

City Council Review of Scoping Process ......................... 17

Working Group Feedback .................................................. 17

Anticipated Policy Issues ................................................. 18

Appendices

Best Practices ................................................................. A-2

Washington State .......................................................... A-2

City of Bellingham .......................................................... A-2

City of Redmond ............................................................ A-6

City of Kenmore ............................................................. A-10

City of Kirkland .............................................................. A-11

City of Renton ............................................................... A-12

City of Seattle ............................................................... A-12

National Best Practices .................................................... A-15

Florida Concurrency ....................................................... A-15

Destin, Florida ............................................................... A-16

Ford Collins, Colorado .................................................... A-17

California ..................................................................... A-19

References ................................................................. A-20
Introduction

In 2014, the City of Olympia completed “Imagine Olympia,” a process that resulted in a major update to the Comprehensive Plan. The update emphasized Olympia’s vision of their future transportation network: complete streets that move people, not just cars. The Transportation Element of the Plan focuses on transportation choices for residents that support all aspects of mobility including cars, buses, trucks, bicycles, and walking. As Olympia grows, the City is beginning to use a range of tools that will help respond to growth and provide people with more choices.

One tool that could be used to support safe and inviting ways for residents and visitors to walk, bike, and use public transit is adoption of a multimodal concurrency system that recognizes that the transportation system includes options beyond driving. Concurrency is a concept defined in the Growth Management Act (GMA) requiring jurisdictions to ensure that the transportation system is implemented concurrent with new growth. As the thinking of the transportation planning community has evolved to consider a more holistic approach to the transportation system, applying concurrency in a multimodal fashion provides opportunities to better balance the priority investments among the modes.

This report summarizes the City’s exploration of potential multimodal concurrency frameworks that could be adopted in Olympia. The report provides background on the concept of concurrency, best practices from across Washington State and the nation, a proposed framework developed specifically for Olympia, and a summary of the feedback received from a Working Group comprised of local stakeholders. The report concludes with a work plan that outlines the next steps to move forward with a new concurrency program.

Olympia Comprehensive Plan Vision

In the next 20 years, 20,000 more people are expected to come to Olympia. With limited land to absorb this growth, existing land is expected to become more dense through infill and redevelopment. This compact development will work better if more trips are made by walking, biking and transit. These modes will absorb a significant portion of future trips.

Olympia’s Comprehensive Plan transportation goals describe streets that are safe for a wide range of people who want to walk and bike, and a convenient transit system.

Today Olympia’s streets are incomplete in serving people walking, biking and riding the bus. To achieve these Comprehensive Plan goals, the City must prioritize investments in walking, biking and transit.
Background

Growth Management in Washington State

The Washington State Legislature passed the Growth Management Act (GMA) in 1990. The GMA requires jurisdictions to periodically complete a Comprehensive Plan, which must address a range of topics including transportation. A Comprehensive Plan must include an inventory of facilities and a level of service (LOS) standard for “all locally owned arterials and transit routes to judge performance of the system.” A pedestrian and bicycle component is also required in the transportation element; however, no LOS standard is required for those modes. As an integral part of the transportation element, the Legislature included the concept of transportation concurrency, as stated below (RCW 36.70A.070):

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.

In essence, jurisdictions are required to identify a long-range transportation system plan that accommodates the future growth and devise a system to ensure that the transportation system is implemented to meet community-defined LOS targets. While nearly all Washington State communities have defined a multimodal long-range transportation system, relatively few communities have an LOS standard for non-auto modes. As a result, few communities have a concurrency program that balances auto and non-auto needs to support future growth.

Level of Service

The concept of level of service (LOS) dates back to the 1950s when the original Highway Capacity Manual (HCM) was published by the Transportation Research Board. In simple terms, LOS is intended to describe the quality of the transportation system from a user’s perspective. Thus, LOS is a qualitative description of mobility. The original LOS definition was focused on auto travel and is based on the idea that traffic congestion leads to driver delay and frustration. A free-flowing road is assigned an LOS of “A” because there is nothing impeding a driver and they can travel as
they please. A highly congested condition in which a driver is waiting through multiple signal cycles or crowded, slow-moving traffic is assigned a LOS of “F”.

In the 1960s, LOS was introduced for other modes of travel, including walking, bicycling, and transit. Initially, the LOS methods for the non-auto modes were similar to auto LOS in which congestion and delay defined the LOS scores. However, outside of very dense areas, a pedestrian or bicyclist rarely feels uncomfortably crowded on a sidewalk or bike lane. Transit LOS never caught on because transit agencies tended to rely on separate measures of performance for transit planning. Given the lack of applicability in practical use, non-auto LOS methods were largely ignored for some time.

Amid recent spikes in energy prices, demographic shifts, concerns over climate change, and technological advances, both the public and the planning/engineering community have realized that providing adequate infrastructure for non-auto modes is important for a balanced community. As a result, there has been more attention focused on multimodal LOS. Recent research has provided new insight into travel behavior and how to meaningfully measure LOS for different modes. With this background in mind, planners are recognizing the benefits of exploring how multimodal LOS could benefit transportation planning and concurrency management.

Concurrency

As described at the outset of this section, concurrency is one of the requirements of the GMA and refers to the balance of transportation facilities and services relative to the demand for them. The GMA requires multimodal transportation elements, but because LOS is only required to be defined for “locally owned arterials and transit routes,” the law does not explicitly require concurrency planning for other modes. In 2005, the GMA was amended to encourage a multimodal approach to transportation planning and concurrency (see text

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### 2005 Growth Management Act Amendments

1. The transportation element required by RCW 36.70A.070 may include, in addition to improvements or strategies to accommodate the impacts of development authorized under RCW 36.70A.070(6)(b), multimodal transportation improvements or strategies that are made concurrent with the development. These transportation improvements or strategies may include, but are not limited to, measures implementing or evaluating:
   - Multiple modes of transportation with peak and nonpeak hour capacity performance standards for locally owned transportation facilities; and
   - Modal performance standards meeting the peak and nonpeak hour capacity performance standards.

2. Nothing in this section of RCW 36.70A.070(6)(b) shall be construed as prohibiting a county or city planning under RCW 36.70A.040 from exercising existing authority to develop multimodal improvements or strategies to satisfy the concurrency requirements of this chapter.

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December 2016
box). Since then, several jurisdictions within Washington State have begun to set multimodal levels of service and consider multimodal concurrency requirements.

**Concurrency in Olympia**

In 1995, the City of Olympia adopted its Transportation Concurrency Ordinance (No. 5540) in compliance with the GMA. Olympia’s concurrency program focuses exclusively on automobile performance. This measure requires reporting afternoon (PM) peak hour traffic growth for the previous year, comparing this traffic growth with the forecast for the same year, and providing detailed LOS analysis for key intersections and corridors. If it is determined that transportation facilities will fall below the LOS thresholds adopted in Olympia’s Comprehensive Plan, development will not be allowed unless transportation improvements or strategies are in place at the time of development or within six years of the time the project is developed. The City of Olympia reviews their concurrency management system annually, along with the annual review and update of the Capital Facilities Plan (CFP). Olympia’s Level of Service (LOS) standards are as shown below:

<table>
<thead>
<tr>
<th>AREA</th>
<th>LEVEL OF SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown</td>
<td>LOS E</td>
</tr>
<tr>
<td>Urban Corridors</td>
<td>LOS E</td>
</tr>
<tr>
<td>Other City Streets</td>
<td>LOS D</td>
</tr>
<tr>
<td>Streets in the Urban Growth Area</td>
<td>LOS D</td>
</tr>
<tr>
<td>Strategy Corridors</td>
<td>LOS may fall below adopted standards</td>
</tr>
</tbody>
</table>

**Impact Fees**

Olympia also has a transportation impact fee program, which is a mechanism to collect new developments’ fair share contribution to the infrastructure projects needed to support growth. The projects identified through the annual concurrency management evaluation forms the basis of the impact fee project list. If a proposed development meets the concurrency test, then their impact fee is determined based on the type and size of land use. In conjunction with other funding sources, the impact fee program provides funding for the infrastructure needed to accommodate the travel demand generated by new growth.
Concurrency within Thurston County

Treatment of concurrency among Thurston County jurisdictions is typical of other counties in Western Washington. The following section provides a brief overview of concurrency provisions within the county in order to put Olympia’s program into context.

Thurston County’s concurrency guidelines for the unincorporated areas focus on automobile performance. If a development is proposed that generates twenty-five or more vehicle trips in or out of the development in the PM peak hour, a concurrency determination is required.

Thurston County does have multimodal language within their code that states concurrency ordinances should be reviewed and updated as appropriate to implement multimodal strategies identified for “Strategy Corridors.”

Strategy Corridors

Strategy Corridors provide an exception to the LOS standards on a select number of regionally-identified streets. These corridors, located primarily in Olympia, Lacey and Tumwater, have been identified because they are already at the maximum five-lane width, the surrounding land is fully built out, or there are environmental constraints. On these Strategy Corridors, LOS standards do not apply. Instead, the County suggests a targeted mix of land use policy, access management, travel demand management, investment in travel alternatives, and system efficiency measures to improve mobility.
Best Practices Review

The project team conducted a review of concurrency best practices to inform Olympia’s consideration of a new multimodal approach. There are a wide range of multimodal concurrency program structures used within Washington State and nationally. Five options were identified through the best practices review as possibilities for Olympia to consider. These options are summarized in the following table and described below. More detailed descriptions of each jurisdiction’s practices are included in the appendix.

<table>
<thead>
<tr>
<th>Optional Multimodal Measures</th>
<th>Option</th>
<th>Who Measures This?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mode Share</td>
<td>Seattle</td>
</tr>
<tr>
<td></td>
<td>Average Travel Time/Distance</td>
<td>Renton</td>
</tr>
<tr>
<td></td>
<td>Evaluate Conditions for Each Mode</td>
<td>Some Florida cities; Ft. Collins, Colorado; and, Tukwila</td>
</tr>
<tr>
<td></td>
<td>Vehicle Miles of Travel</td>
<td>California cities</td>
</tr>
<tr>
<td></td>
<td>System Completeness</td>
<td>Bellingham, Redmond, Kirkland, Kenmore</td>
</tr>
</tbody>
</table>

Mode Share

Mode share evaluates the proportion of travel completed by each mode: single occupant vehicle (SOV), high occupancy vehicle (HOV), transit, bicycle, and walking. The City of Seattle has adopted this approach that measures the proportion of non-SOV mode share for a proposed project and compares it to the non-SOV mode share for the area. The benefits of the mode share measure is that it is easily understood by the public, can be applied to each mode, and provides a clear nexus to transportation demand management mitigation measures. However, it is less relatable to impact fees and is most suited for built-out cities that cannot expand roadway capacity and therefore have to maximize the person throughput of the existing streets.

Average Travel Time/Distance

The City of Renton uses an uncommon measurement approach: estimating the distance that can be traveled from the center of the City within 30 minutes. The assessment is completed for SOV, HOV and transit. An index combining the modes is calculated, which serves as the standard used for future year evaluations to determine if a new development would impact mobility within the city. This approach is best suited for auto and transit, but does not address walking and cycling as non-motorized improvements do not directly affect the index. It also requires substantial data collection.
Evaluate Conditions for Each Mode

A variety of jurisdictions have developed approaches that evaluate conditions using specific criteria for each mode. This is similar to a traditional traffic LOS analysis in that it explicitly evaluates performance for all modes. However, it is generally a time-intensive process that can be a burden for developers and city staff. It requires case-by-case negotiation on mitigation which can result in unpredictable outcomes.

Vehicle Miles of Travel

Vehicle miles of travel (VMT) is being used by jurisdictions in California in response to a recently-passed state law that eliminates the use of auto delay to measure traffic congestion for California Environmental Quality Act (CEQA) impact analyses. It is a system-wide measure that relates to state goals including reducing emissions and energy use, and improving health. It also provides a clear nexus to transportation demand management mitigation measures. However, it is not easily grasped by the public and is difficult to measure directly because it relies on a travel demand model and travel surveys. It is only implicitly tied to non-motorized modes; in other words, lower VMT likely includes mode shift from autos to alternative modes.

System Completeness

System completeness is an approach that measures the proportion of each mode’s system that has been implemented compared to the planned system for that mode. Typically, the planned system is developed to support the demand of travel for each mode. In other words, the foundation of the system completeness approach is a supply versus demand calculation. This method is easy to implement and relates directly to the pace of system implementation in association with new growth. It also can be easily tied to development impact fees to implement the system. System completeness requires well-grounded modal plans that clearly define the future system and its components into a project list.
Stakeholder Working Group

A working group of key community stakeholders was convened to provide feedback on the City’s multimodal concurrency development process. The working group included the following participants:

- Dennis Bloom – Intercity Transit
- Keith Stahley – City of Olympia Community Planning & Development
- Veena Tabbutt – Thurston Regional Planning Council
- Joshua Deal – Olympia Master Builders
- Kim Andresen – Commercial development community
- Jerry Parker – Olympia Planning Commission
- Christina Lock – Olympia Bicycle & Pedestrian Advisory Committee
- Karen Messmer – Olympia Safe Streets Campaign

Working Group Feedback

The first working group meeting was held on March 21, 2016 and focused on providing the context and purpose for the City’s effort. This included a discussion of the background of concurrency from the perspective of the GMA and how Olympia currently evaluates concurrency.

The working group reconvened on April 25, 2016 to learn about concurrency best practices within Washington State and nationwide. The content presented was a condensed version of the material summarized in the Best Practices appendix of this report. After hearing about the wide variety of approaches used to evaluate multimodal performance, the group provided feedback about what’s important for Olympia’s program as well as what should be avoided. These comments are summarized below:

What is important for Olympia’s concurrency program?

- Some type of distinction in land use or areas like downtown or the strategy corridors
- Simple to implement on ongoing basis
- Efficient to administer
- Includes transit-supportive infrastructure
- Allows use of impact fees for stand-alone pedestrian/bike/transit projects
- Links impact fees to growth

What do you LIKE?

- Distinction between Downtown and the rest of the city
- Inclusion of transit
- Redmond’s program in general
- Incentive toward density
- System completeness and connectivity for pedestrian and bicycle elements
- Clear nexus to impact fees
- Clearly defined system components
- VMT measures

What do you want to AVOID?

- Too much geographic complexity
- Data complexity
- Mode share program modeled after a large city, e.g. Seattle
Proposed Approach to Multimodal Concurrency

The central question in a concurrency program is whether or not there is adequate transportation infrastructure to meet the travel demand of new growth.

Adequate transportation infrastructure is determined by measuring the performance of the transportation system. There are many options for measuring performance, as described in the Best Practices section of this report. When choosing a metric, it is important to consider whether the data is available and if a multimodal concurrency program based on this metric will be easy to administer.

Assuming there is adequate transportation infrastructure, a given development can be permitted and their impact fee assessed. Using those impact fees, in addition to other funding sources, the transportation infrastructure required to support growth can then be constructed.

System Completeness

Based on feedback from the working group, as well as discussions with City staff, the consultant team recommended pursuing system completeness as the metric to use to evaluate the transportation system for multimodal concurrency. System completeness tracks the rate of completion of transportation infrastructure for each mode against the rate of growth to ensure supply keeps pace with demand. There were three main reasons for selecting system completeness:

- **Direct tie to City’s implementation of modal plans:** The City has developed modal plans that reflect the vision, goals, and policies outlined in the Comprehensive Plan. This provides a solid reference point for concurrency and ensures consistency in implementing the City’s vision.

- **Simplicity of administration:** System completeness is based on a simple supply and demand calculation. With appropriate preparation, system completeness as a concurrency tool can be easily applied and monitored by City staff and understood by the development community.

- **Impact fee consistency:** The City’s impact fee program can be updated based on the project list identified as part of the concurrency program. This provides consistency between the programs and a clear link to raise the funds to complete the required infrastructure.
Supply and Demand

The foundation of the proposed multimodal concurrency framework is the concept of supply and demand. The demand for travel mobility is based on the number of new person trips generated by new development. The supply is based on the progress of constructing new infrastructure for each mode to serve the new person trips. Because this program is multimodal, that supply will consider sidewalks, pedestrian crossings, bike lanes and other facilities, bus infrastructure and amenities, as well as the traditional auto capacity.

Figure 1 is a schematic of how a multimodal concurrency program based on system completeness would work.

Demand

Demand is the new trips on city streets that come with new growth – new homes, offices, commercial development, etc. Demand would be quantified using projected travel data that is readily available from Thurston Regional Planning Council (TRPC) and the concept of Person Miles Travelled (PMT). PMT is calculated as the product of the number of new person trips and the expected trip length of those trips. The number of person trips generated by a given type of land use can be estimated based on the TRPC’s regional household travel survey data. Similarly, data from the TRPC travel survey can be used to estimate the average trip length. If desired, both person trip rates and trip length could be scaled by geographic area within the city.

Once the trip generation rates are determined, a simple spreadsheet tool can be developed to calculate PMT in a straightforward manner.

Supply

The supply side of the equation is determined by the percentage of the system that is complete for each mode. In determining what supply is needed, prioritized project lists for each mode are established. To develop prioritized lists, standards will need to be set.

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**Figure 1. How System Completeness Works**
Source: City of Olympia, 2016
Figure 2 shows examples of possible standards. For auto capacity, the same LOS methodology related to congestion can be used. For walking and biking, standards would likely reflect the presence of infrastructure, rather than how well the infrastructure is working. These modes need a more basic measure related to whether the infrastructure is in place for people to use those modes. For walking and biking, the standard may be sidewalks and bike lanes on all arterials and collectors. With transit, there may be a standard that says buses stay on schedule.

These standards should reflect the Comprehensive Plan vision, guide the development of prioritized lists, and help gauge progress in building a multimodal system. These standards define the projects that make up the supply. This is the supply that will be built in response to the new trips - the demand - on the system. These standards and project lists are captured in long-term planning documents.

Comparison of Supply to Demand

The Comprehensive Plan sets the 20-year vision of the amount of growth expected as well as the transportation infrastructure needed to serve that growth. These two components can be quantified into PMT and dollars, respectively. For example, assume the Comprehensive Plan forecasts growth equivalent to 10,000 PMT and transportation projects costing $100M over 20 years.

Concurrency considers a shorter timeframe of six years. Therefore, the Comprehensive Plan PMT and cost estimates can be scaled down. If 30 percent of growth is expected to happen in the next six years, this equates to 3,000 PMT, and the expenditure needed to accommodate that growth would be $30M.

This approach would result in progress for each mode’s system rather than just autos. As long as the supply side (the infrastructure) stays ahead of the demand side (the new trips), concurrency is maintained. Figure 3 shows an example of what the concurrency evaluation may look like over a six-year period.

In practice, the City would periodically identify a set of projects for the next six years, which would then translate to a set amount of PMT that could be consumed by new development. Each new development would draw down the number of PMT available. New development
could be permitted so long as the requisite PMT remain available. The City can add to the PMT available by identifying new projects to be constructed.

**Figure 3. Comparison of Supply and Demand**

**Impact Fees**

The project list identified for concurrency can form the basis for the City’s impact fee project list. If a proposed development meets the concurrency test, then their impact fee would represent their fair share of the projects required to accommodate growth. Together with other available funding sources, impact fees keep the supply of infrastructure in balance with the demand by new trips.
Next Steps

Transportation Master Plan

In order for system completeness to be an effective measure for concurrency, a solid definition of the future transportation system is needed. A Transportation Master Plan would set a strong foundation for a new multimodal concurrency program. A master plan would show the public how projects and programs achieve the City’s vision and goals. The plan would include long-term prioritized project lists that describe the future transportation system.

Creating a Transportation Master Plan will allow the new concurrency program to be predictable and defensible. Citizens and those investing in development in Olympia will benefit from the clarity and predictability of a multimodal concurrency program that is grounded in a master plan.

The master plan would reflect the transportation policy in the Comprehensive Plan. The plan would update and combine different modal plans and programs into one complete document. From this plan, six-year project lists used for the concurrency program would be developed.

The plan would also define a comprehensive funding strategy for transportation, and show how impact fees play a role in building the system. This would provide predictability as any changes to impact fees are presented to the public.

Multimodal Concurrency Program and Impact Fee Update

With the completion of a Transportation Master Plan, a new multimodal concurrency program can be built. Drawing from the master plan, the new program would describe the projects needed in the six-year timeframe to accommodate expected growth. Based on the growth and needed projects, impact fees would be updated, and the necessary administrative and regulatory changes to implement the new concurrency program and revised impact fees would be made.
Resources and Timing

The process to develop a master plan, build a new multimodal concurrency program and establish new impact fees will take approximately three years and is estimated to be $300,000 for consultant work. Funding is proposed to be derived from Transportation Impact Fees and Capital Improvement Program funds.

City Council Review of Scoping Process

The City Council’s Land Use and Environment and Finance Committees were briefed on the multimodal concurrency scoping process in July and August, and the full City Council was briefed on October 11, 2016. While no formal decision was posed to the Council, there was support for proceeding with a Transportation Master Plan, further development of a multimodal concurrency program, and establish transportation impact fees. Several Councilmembers made the comment that for several years, the public has indicated there is a need to invest in other modes and that this is an important step in that direction.

Working Group Feedback

The proposed multimodal concurrency framework was presented to the Working Group on June 29, 2016.

Participants were supportive of pursuing the system completeness method to broaden the program to all modes. Some comments and concerns raised are summarized below:

- **Project Prioritization:** Working Group members stressed the need for a comprehensive look at the transportation system to prioritize needs throughout the city and among modes. The City has completed individual modal plans, but needs to bring them up to date and coordinate priorities between them.

- **Predictability:** The development community wants predictability in the concurrency and impact fee programs.

- **Timing of Implementation:** Some members of the group felt the City should move forward with an interim program before completing a Transportation Master Plan, while others felt it best to wait until a TMP is completed.
Anticipated Policy Issues

A multimodal concurrency program based on system completeness leads to several policy issues which will be addressed as the new concurrency program is built. Among those issues are:

**Set standards and prioritize needs for each mode:** In order to prioritize projects, standards for improving walking, biking and transit will be developed. Community and policy maker buy-in will be needed for those standards (see Figure 2).

**How to prioritize different types of projects:** A new concurrency program will include a range of improvement projects for all modes. Projects from the prioritized lists for each mode will need to be meshed. These parallel priorities will need to be prioritized as a whole and in a balanced manner.

**Potentially different auto-performance expectations:** Because the concurrency program will be multimodal, a wider range of projects will be built. This means that in any given period, fewer auto-capacity improvement projects will be built. Policy makers will need to decide to what degree funding for car-capacity improvements will be reduced. The community will likely be asked to accept greater congestion in some areas.

**Potentially different impact fee:** While a Transportation Master Plan will define Olympia’s transportation system in 20 years, the pace of improvements will be somewhat subjective. Determining the impact fee will depend on the pace the City Council chooses to set to complete planned projects. The balance between completing the system defined in the plan and having a reasonable impact fee will be a policy decision. Regular recalibration of the fee will be important and will be based on construction costs and availability of other funding sources, among other factors.
Best Practices

There are a range of multimodal concurrency program structures used in Washington State and nationally. These programs are described in detail in this appendix.

Washington State

Several Washington State jurisdictions have implemented multimodal concurrency programs. Prior to 2010, only two cities had established programs: Bellingham and Redmond. Since 2010, the cities of Kenmore, Kirkland, Burien and Tacoma have also implemented or considered multimodal concurrency programs. These programs go beyond auto-centric measures so that the cities have a means to achieve their multimodal visions. A brief discussion is also provided on the City of Seattle’s impending update to their LOS standards and concurrency program.

City of Bellingham

The City of Bellingham implemented a multimodal transportation concurrency program in 2008. The fundamental concept underlying the program is quantifying the number of person trips available (PTA). PTA is defined as the ability of Bellingham’s transportation system to accommodate the transportation impacts of new development and is expressed in terms of weekday PM peak hour person trips available.

Multimodal LOS in Bellingham’s Comprehensive Plan

In 2006, the Comprehensive Plan was revised to include LOS standards based on the PTA platform, as follows:

- Arterial Streets: LOS E, which corresponds to no more than a 1.0 volume-to-capacity ratio.
- Transit: LOS F which corresponds to 1.0-1.25 riders per seat (e.g. up to 50 riders on a 40-seat bus).
- Degree of network completeness for pedestrian and bicycle modes as defined in the Primary Pedestrian Network and Primary Bicycle Network.

Metrics for each mode can be seen in Figure 4.
Figure 4. Multimodal Transportation Concurrency Measurements by Mode

Based on the existing and planned transportation facilities, the City can estimate the total PTA in the planning horizon year. Land use forecasts can then be tested against this transportation system to determine if the land use plans and transportation system are in line with one another. Other than determining whether future roadway and transit infrastructure meet the LOS standards, there are no explicit quantitative metrics guiding the long-range planning for the other modes. The bicycle and pedestrian plans were developed using traditional planning approaches.

Concurrency

The PTA concept can also be applied in for concurrency. Bellingham and the UGA are divided into 16 Concurrency Service Areas (CSAs) based on varying land use and urban form characteristics, and multimodal LOS is calculated for each CSA using Bellingham’s adopted LOS standards. The CSA can be seen in Figure 2. Each CSA is categorized into three types. Type 1 areas are urban villages with adopted master plans and generally have the highest level of pedestrian, bicycle, and transit service. Type 3 areas are less dense with few pedestrian, bicycle, and transit options and high dependence on auto travel, while the Type 2 designation is used for those transition areas that fall in the middle of the spectrum. Different weights—called “policy dials”—are applied to each mode as shown in Figure 5, to help direct development into the areas that the City has identified as being most appropriate for growth.

The following examples illustrate how PTA are calculated by mode:

- A roadway with a 1,400 vehicle hourly capacity and a volume of 1,000 vehicles would have 600 PTA assuming an average occupancy rate of 1.5 people per vehicle.

- A location with four 40-seat buses per peak hour (160 person trip total capacity) and 100 riders would have 60 PTA.

- An area with 90% of its sidewalk or bicycle network complete would be credited with 800 PTA.
An area with 40% of its sidewalk or bicycle network complete would not be credited with any PTA. To gain PTA via sidewalk or bicycle improvements, a minimum of 50% of the area’s sidewalk and bicycle network must be completed.

Figure 5. Transportation Concurrency Service Areas (CSA)
Source: City of Bellingham
### Bellingham Transportation Concurrency Program Policy Dials

<table>
<thead>
<tr>
<th>MODE</th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motorized</strong></td>
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<tr>
<td>Auto</td>
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<td>Pedestrian</td>
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<td>Percent threshold for minimum system complete</td>
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<td>Mode weight factor</td>
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<td>1.00</td>
<td>0.90</td>
<td>0.80</td>
</tr>
<tr>
<td>Multi-Use Trails</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person trip credit for each 1% of bicycle</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Mode weight factor</td>
<td>1.00</td>
<td>0.90</td>
<td>0.80</td>
</tr>
</tbody>
</table>

1. Type 1 = Urban village areas with adopted master plan; 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. This is the minimum level of the planned system completed for it to be considered a viable mode alternative.
7. Person trips credited to service area based on the amount of the system completed minus the minimum threshold.
8. Pedestrian mode weight factor considers the importance of pedestrian facilities to a service area, relative to land use and travel patterns.
9. Bicycle mode weight factor considers the importance of bicycle facilities to a service area, relative to land use and travel patterns.
10. Multi-use trails = relatively level, multi-use trails connecting activity centers, destinations, and biking facilities.
11. Person trips credited to service area based on each comparative 1% of the total planned bike system adopted in comprehensive plan. Ten rather than 20 person trip credits are awarded for each 1% in recognition that not all bicyclists will be able to make use of off-street gravel trails.
12. Multi-use trail mode weight factor considers the importance of bike-friendly trails to a service area, relative to land use and travel patterns.

**Figure 6. Bellingham Transportation Concurrency Program Policy Dials**

Each year, the City of Bellingham calculates the PTA for each CSA, taking into account projects with approved permits. Each new development application draws upon the PTA in the relevant area. If the development would generate more person trips than are available, the developer must contribute sufficient PTA through construction of new multimodal facilities or implement transportation demand management strategies to allow the project to go forward (these strategies reduce the PTA demanded by the development). This process requires substantial data collection. Bellingham uses a Concurrency Evaluation Tracking Tool (CETT) to determine whether enough person trips are available, or can be provided concurrent with, the development proposed within the CSA.

The pool of PTA can be increased by improving any modal facility, thereby offering flexibility to the City and developers. Another benefit of this approach is that it is based on recent observed data, providing a reliable check of current conditions. However, this also means the approach is somewhat data-intensive. In addition, there is no direct link to SEPA standards, which generally rely on traditional auto LOS thresholds to make determinations of significance.

**City of Redmond**

The City of Redmond implemented a multimodal transportation concurrency program in 2009. The system defines LOS based on citywide person miles traveled, which are called “mobility units” by the City. The City uses supply and demand language to describe the program—completed infrastructure projects create mobility units of supply and new developments create mobility units of demand.

The City developed a Transportation Master Plan (TMP) that lists multimodal capital projects intended to achieve the envisioned land use/transportation balance. The fundamental assumption underlying the concurrency system is that the list of projects to be constructed by the TMP’s horizon year is expected to meet the demand of new development. In other words, the number of mobility units supplied by the TMP is equal to the number of mobility units that would be consumed by the planned development. Concurrency is quantified as the ratio between the mobility units of supply and the mobility units of demand so a ratio of more than 1.0 indicates that the City is achieving its envisioned transportation/land use balance.

Mobility units are calculated using land use data from the City’s travel demand model, household travel survey, and a spreadsheet trip generation method. Person trips are estimated using factors applied to ITE vehicle trip generation rates. The travel demand model is used to estimate trip lengths which are applied to the total person trips to arrive at the person miles of travel. The resulting number of person miles traveled—or mobility units—is then allocated proportionately to each capital project in the TMP based on cost. Balance between the supply and demand of mobility units can be tracked by summing the mobility units that are supplied by completed projects and comparing that to the total mobility units that are consumed by new development.

While Redmond ultimately translates its TMP into mobility units, these units are not the basis for developing the plan itself. In terms of long-range planning, Redmond recently completed an update of
the TMP with the projects in the multimodal plan being selected on the basis of how well they help to advance nine “dashboard” measures. These measures are summarized in Figure 7.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connectivity</strong></td>
<td>Percentage of Downtown and Overlake Village development square footage with connectivity levels of “medium” or better. Connectivity is measured using route directness—the ratio of the actual pedestrian travel distance to the straight line distance between set points on the transportation network. 2030 targets are 81% of development in Downtown and 31% of development in Overlake Village.</td>
</tr>
<tr>
<td><strong>Network Completion</strong></td>
<td>Proportion of the multimodal transportation system that is complete to the city’s defined ultimate buildout plan. Tracked separately for auto, bicycle, pedestrian, transit, and truck networks. 2030 targets are 68% auto, 51% bicycle, 53% pedestrian, 100% transit, 76% truck.</td>
</tr>
<tr>
<td><strong>Mode Share</strong></td>
<td>Non-SOV mode share. 2030 target is 53%.</td>
</tr>
<tr>
<td><strong>Vehicular Congestion</strong></td>
<td>Average PM peak hour vehicle delay per mile on principal arterials. 2030 target is 46 seconds per mile.</td>
</tr>
<tr>
<td><strong>Transit Ridership</strong></td>
<td>Average boardings per weekday citywide. 2030 target 26,700 (based on mode share target).</td>
</tr>
<tr>
<td><strong>Concurrency</strong></td>
<td>Ratio of mobility units of supply to mobility units of demand. 2030 target is 1.0.</td>
</tr>
<tr>
<td><strong>Safety</strong></td>
<td>Number of injuries per 1,000 persons (based on daytime population). 2030 target is 1.3 injuries per 1,000 persons or less. Note that future performance for this target cannot be forecasted. The city uses this target to prioritize short-term safety projects.</td>
</tr>
<tr>
<td><strong>Air and Water Quality</strong></td>
<td>Air quality measure based on federal “attainment” status for PM 2.5. Water quality measure is based on the proportion of right of way that is equipped “basic” treatment infrastructure. 2030 air quality target is for attainment status and 2030 water quality target is for 36% of right of way to feature basic water quality treatment.</td>
</tr>
<tr>
<td><strong>Street Preservation</strong></td>
<td>Pavement condition index. 2030 target is 73.</td>
</tr>
</tbody>
</table>

Figure 7. Redmond Transportation Master Plan Dashboard Performance Measures  
Source: “Transportation Master Plan, pages 40-56” City of Redmond, August 2013.

**Concurrency**

The concurrency process requires that Redmond determine the number of mobility units that would be available in the six-year timeframe that the GMA requires for transportation infrastructure to be implemented following development. To measure the available mobility units, the City calculates “system completeness” to match available capacity to demand (see text box). The city employs a system completion dashboard measure in conjunction with the funding status of each project in the TMP. The City has specific guidelines to help determine which projects should be assumed to be completed within six years. For example, a fully funded project included in the CIP or the annual expenditure for a programmatic project would be included.

Each development application is evaluated to estimate the number of mobility units that would be generated using a spreadsheet tool that mirrors the more involved travel demand modeling process used for long-term planning. Redmond uses a look-up table that provides the mobility unit rates for each type of land use development, similar to an impact fee table. This demand is then compared to the level of six-year mobility unit supply to determine if the development is permissible. If insufficient mobility units are available, the development would be rejected or the developer could pay to
implement a project that would supply the required amount of mobility units to maintain concurrency. The mobility unit calculation and allocation methodology is currently being updated to ensure that projects which generate higher rates of pedestrian or bicycle travel (which have lower person miles of travel than auto trips) would use proportionately fewer mobility units and because mobility units also form the basis for Redmond’s transportation impact fee program, would pay lower impact fees.

As with Bellingham, this approach provides flexibility to build a project that addresses any mode. Redmond’s method requires that the total mobility units be recalculated when the Comprehensive Plan is being updated rather than every year (although the six-year projection must be done more frequently). One potential challenge with this approach is that more expensive projects could be prioritized higher because they provide more mobility units; in turn, smaller projects could be ignored.
What is System Completeness?

There are three main approaches to evaluating system completeness:

- System completion approach, based on dollars spent
- System completion approach, based on percent of network built out (emphasizing completion of underserved modes first)
- Policy-driven approach that interprets guidance from adopted policies

A brief description of each approach is provided below:

1. **Dollar-based method**: This is perhaps the most straightforward approach to tracking concurrency. Since a city’s transportation plan will yield a project list that includes overall cost, and the City’s target for new households and employees is known, concurrency could be tracked by assessing how expenditures towards projects on the project list is keeping pace with residential and employment growth. Concurrency would be measured by calculating whether the percent of the project list completed (as measured in dollars) equals or exceeds the percent of planned development that has occurred.
   - **Advantages**: Straightforward tracking and administration
   - **Disadvantages**: May favor large dollar value projects, does not provide guidance on priorities amongst modes

2. **Catch-up method**: Start with the dollar-based method, but weight the value of projects based on the relative gap between the current network and what is envisioned in the future with the completion of the transportation plan. This “catch-up” method likely weights pedestrian, bicycle, and transit infrastructure more heavily. This occurs since a city’s road network more complete, yet the City has a long way to go to completing the bike, pedestrian, and transit networks. The weight is based on how much of a gap each mode has to close to meet the objectives of the plan. Using hypothetical numbers, the auto/freight system may already be at 95 percent of its TMP envisioned network (since very few roadway projects are recommended), but the bicycle system may only be 60 percent complete. This would translate into the need for the bicycle network to be built at eight times the rate of the auto/freight system from the perspective of closing the gap in ultimate system completion (e.g., closing a 40% bicycle network gap vs. a 5% auto/freight network gap). The relative weights for each mode would be based on the gap between what is on the ground today and the ultimate network as identified in the TMP.
   - **Advantages**: Provides guidance on modal priorities, weights can be updated over time to reflect the uneven pace of modal network completion
   - **Disadvantages**: Not as straightforward to implement and weights may be subject to debate

3. **Policy-based method**: An alternative to the quantitative basis of the two prior methods is a policy-based approach that weights projects on how well they align with key City policies. This is an approach that has recently been considered in Redmond and to a certain extent in Bellingham. Projects may be prioritized by the mode they serve with “policy points” developed to mirror the catch-up method’s modal weights (in that system, pedestrian and transit projects are given the highest points and auto/freight projects are given the lowest points). Then, individual projects within modal networks are rated based on how well a project advances the key transportation goals.
   - **Advantages**: Provides guidance on modal priorities and provides a clear nexus between the adopted goals and projects that move forward
   - **Disadvantages**: Not as straightforward to implement; “policy points” may appear arbitrary and will be subject to debate
City of Kenmore

The City of Kenmore uses an approach similar to the City of Redmond. This approach compares system completion (the system is defined by the layered network and the projects identified in the plan) to the amount of development that has occurred. The measurement tool is called a ‘mobility unit,’ which is an indicator of the number of person trips using the transportation system. While this approach requires that the value of mobility units be established upfront for different types of projects, it greatly simplifies implementation down the road by reducing administration of the concurrency management program to a spreadsheet-based exercise (an example of the spreadsheet calculation is provided in Figure 8).

Put simply, the mobility unit approach streamlines development review and is tied in with the impact fee program. The City’s six year TIP serves as the bank of mobility units (supply). On the demand side, new development uses a look-up table process to calculate their mobility unit demand based on trip generation. So long as the City’s mobility unit supply exceeds new development’s demand, the project would be considered concurrent. Mobility units also provide a common denominator to use in calculating impact fees.

![Figure 8. City of Kenmore Concurrency Calculator](source: Fehr & Peers)
City of Kirkland

In 2015, the City of Kirkland implemented a plan-based multimodal transportation concurrency program. Prior to 2015, vehicular level of service at signalized intersections was the basis of the City’s concurrency system. The City cited several drawbacks of the previous concurrency program including:

- Volume-to-capacity ratio is not an easily understood measure for intersection performance
- It is difficult to understand how much capacity is left for new development at any given time
- An auto focused program does not support the multimodal nature of the 2015 Transportation Master Plan

The updated 2015 Transportation Master Plan establishes LOS standards for each mode that address completeness of various aspects of the transportation network in order to complement the concurrency system and to directly measure something for which the City has control. This approach measures the number of trips that are added from new growth and compares that to the fraction of the transportation network that is completed. New growth “uses” trips and new projects “supply” trips in the form of capacity. The new concurrency program has several advantages that address previous drawbacks including:

- Performance measurements are easily understood and can be interpreted by all participants
- Once the program is set up, it is fairly easy to implement and monitor
- The program has a multimodal focus that supports the goals and polices of the Transportation Plan

Rather than refer to level of service, the City uses the term level of completeness, which they report on annually. Level of completion measures the rate of project completion over the course of the 20 year period. For example, after 5 years (one quarter or 25% of the 20 year period), the target is for at least one quarter or 25% of each type of project to be completed. The City reports annually on ten level of completion areas as seen in table below.
City of Renton

The City of Renton uses an uncommon measure for their concurrency evaluation. Using the Renton travel demand model, the City estimates the distance that can be traveled in 30 minutes from the center of the City. This is done for a single occupant vehicle, a high occupancy vehicle, and a transit vehicle. Then, an index is determined by calculating the sum of the HOV and SOV distances and twice the transit distance. This analysis is updated periodically to set the standard for future evaluation. For instance, the 2002 index was determined to be 42 (16.6 miles for SOV plus 18.7 miles for HOV plus 2 x 3.4 miles for transit), which then serves as the standard for the 2022 horizon year.

This citywide standard is applied as part of a plan-based concurrency program to determine whether future development may impact mobility in Renton. This approach is inherently multimodal because projects that generate fewer auto trips will have less of an impact on the travel distance index. One downside compared to Redmond or Bellingham’s concurrency program is that non-auto improvements do not directly improve the index. However, transit speed improvements are given more weight than auto improvements, providing incentive to increase the mobility of transit, with particularly high value to transit operating in dedicated right-of-way.

City of Seattle

The City of Seattle currently evaluates LOS on arterials using a volume-to-capacity (v/c) ratio that compares PM peak hour traffic volumes on arterials to available hourly capacity. Higher v/c ratios indicate more traffic congestion—the City’s standard for transportation concurrency is a PM peak hour v/c ratio of 1.0-1.2. This measure is applied to evaluate both auto and transit travel since both modes tend to travel in the same lanes.
The City periodically collects traffic counts on each of the 27 screenlines, which are then compared to the capacities defined by the Department of Construction and Inspections. To measure v/c ratios in future years, traffic volumes are forecasted using a travel model or some other means to estimate the number of new vehicle trips that would cross the screenline.

The existing LOS method is simple to calculate and administer. However, there is little policy nexus between the v/c ratios and other City goals. For example, evaluating v/c ratios has little to do with the City’s goal to reduce single occupant vehicle (SOV) travel. However, the v/c thresholds allow for considerable PM peak hour traffic congestion in recognition that the City seeks to concentrate development into dense, transit-rich areas. Seattle is willing to allow for congestion to accommodate additional density.

The City of Seattle is currently updating their LOS standards to utilize a mode share approach, which measures development based on the estimated mode choice of its residents and/or employees. This approach will measure the proportion of non-SOV mode share for a proposed project and compare it to the non-SOV mode share for the area. Similar to VMT per capita, which evaluates the VMT per resident and/or employee in an area, this measure could be applied at many geographic levels (citywide, traffic analysis zone, district, or other geography). The key difference between the two measures is the simplicity of mode share. Only one data point needs to be collected: percent of trips occurring by non-SOV modes.

Implementing a mode share approach will require Seattle to determine whether current mode share values represent an acceptable threshold for assessing the concurrency development projects or if the city will need to set a goal mode share target to determine whether a project passes concurrency. Seattle is currently considering a mode share target to reduce SOV trips by 5% compared to a “business as usual” scenario.

To evaluate if a potential development is concurrent, that development’s mode share would be estimated from the proposed land uses and the surrounding neighborhood characteristics. That mode share estimate would then be compared the area’s established mode share threshold. A proposed project meets the concurrency standard if the calculated non-SOV mode share exceeds the threshold for the defined area.
Mode share could be estimated in two ways:

- **Travel Survey.** The ideal way to estimate mode share would be to conduct a citywide household and employment travel survey to establish a baseline estimate of mode share by area (city, TAZ, district, etc.). This travel survey would need to be conducted regularly (every five years or so) to capture the latest travel patterns.

- **Travel Model.** Recognizing that a travel survey may not be feasible in the near term, the PSRC model can produce estimates of mode share in the city. The same limitations described earlier apply to using the mode share estimates from the PSRC travel model.
National Best Practices

This section summarizes the best multimodal planning practices from around the country.

Florida Concurrency

Florida and Washington are the only states with a concurrency requirement. One of the main cornerstones of Florida’s growth management legislation is the concept of concurrency, requiring that development not proceed unless necessary infrastructure and urban services are in place to serve it. In practice, Florida’s transportation concurrency program has promoted development in areas that the state least desires it—the suburbs and exurbs. Over the years, many refinements have been made to Florida’s transportation concurrency system, especially within urbanized areas (see text box below).

REFINEMENT TO FLORIDA’S GROWTH MANAGEMENT ACT

Among the most important of refinements to transportation concurrency in Florida as cited in Rethinking the Florida Transportation Concurrency Mandate are:

- **Transportation Concurrency Management Areas (TCMAs)** - created in 1992, which allow for the development of area-wide LOS standards to address concurrency issues in urban centers;
- **Transportation Concurrency Exception Areas (TCEAs)** - created in 1993, which allow local governments to establish a boundary within which transportation concurrency is effectively waived;
- **Long Term Concurrency Management Systems (LTCMS)** - also created in 1993, allow local governments to establish a longer-term strategy (with up to a 15 year time horizon) for addressing concurrency within established urban areas;
- **Multi-Modal Transportation Districts (MMTDs)** - created in 1999, in which local governments can pursue alternative modes of transportation when permitting development, while still satisfying established LOS standards.

Under Florida’s concurrency mandate, cities are required to ensure that level of service (LOS) does not fall below a minimum threshold. At the time that concurrency began to be implemented in 1989, local governments were subject to existing FDOT LOS standards for roads. Today, Florida statues require jurisdictions to adopt the state’s minimum standards for the Florida Intrastate Highway System (FIHS). However, local governments can adopt their own LOS standards for non-FIHS roadways. The Florida Department of Transportation (FDOT) developed a detailed handbook for determining level of service.
In addition to auto LOS, the handbook addresses transit, pedestrian, and bicycle LOS. FDOT has also developed a software program to streamline the LOS calculation.

Pedestrian and bicycle LOS are calculated using a regression model. Pedestrian LOS is based on four variables: existence of a sidewalk, lateral separation of pedestrians from motorized vehicles, motorized vehicle volumes, and motorized vehicle speeds. Bicycle LOS is based on the following five variables: average effective width of the outside through lane, motorized vehicle volumes, motorized vehicle speeds, heavy vehicle volumes, and pavement condition. Note that while the bicycle LOS is not applicable to off-street facilities, the pedestrian model may be applied to shared use paths within 100 feet of the roadway.

These models were originally designed for operational purposes, but FDOT has made some assumptions to simplify the methodology for planning level evaluation by giving a discrete number of choices with default values for some variables. For example, the software includes three choices for outside lane width (wide, typical, or narrow) with default values. For pedestrian and bicycle analysis, FDOT weights segments based on their length and the severity of their scores, which significantly penalizes poorly operating segments.

For transit, FDOT relies on the concept that frequency of service is the most relevant performance measure. FDOT uses the service frequency standards cited in the Transportation Research Board’s Transit Capacity and Quality of Service Manual, as shown in Figure 11. FDOT also created “Generalized Tables” that may be used for generalized planning of facilities, rather than focusing on the segment level.

**Destin, Florida**

The City of Destin uses FDOT’s ARTPLAN software to evaluate multimodal LOS within a designated Multimodal Transportation District (MMTD). In 2006, Destin was the first jurisdiction in Florida to adopt a MMTD and several other cities have since followed suit. Destin codified both short-term and long-term multimodal LOS standards within their Comprehensive Plan. Figure 12 below summarizes the ARTPLAN LOS standards for major collector roads.
Within the MMTD, the City requires proposed developments to meet two conditions to be considered in compliance with the concurrency standard. First, the development must follow certain urban form and multimodal facility design standards. Second, the development must offset its traffic impact through multimodal improvements. The traffic impact of a project is determined by entering project vehicle trip generation into a spreadsheet. Multimodal improvements to offset the impact can be selected from a checklist. The number of impact mitigation points must equal or exceed the calculated impact. Mitigation projects include on-site, frontage improvements, and off-site improvements. Examples include development of pedestrian oriented buildings (adjacent to the sidewalk), constructing on-site sidewalks to connect uses, constructing off-site sidewalks/bicycle facilities, or providing less than the maximum allowed parking.

**Fort Collins, Colorado**

The City of Fort Collins has developed a multimodal LOS system that essentially functions as a concurrency management system. These standards are used for long-term planning as well as part of the development review process (which is similar to concurrency).

Transit LOS is based on four factors: hours of weekday service, weekday frequency of service, travel time factor (the ratio of transit travel time to auto travel time), and peak load factor (the ratio of passengers to seats). The City establishes two sets of thresholds depending on the area in question. Mixed use centers and commercial corridors have more stringent thresholds (e.g., more hours of weekday service and higher frequency) than outlying areas. The number of conditions met and the distance to the transit route determine which LOS grade is achieved as shown in **Figure 13**.
Fort Collins sets thresholds for five distinct typologies for pedestrian LOS. Each measure has a different standard, rather than aggregating the measures into a single standard. Pedestrian LOS is based on five standards as described below and summarized in Figure 14.

- **Directness** – defined as the ratio of actual walking distance via sidewalks or pathways to minimum walking district as measured on the street grid. Continuous sidewalks along the grid system represents the ideal condition; LOS A is defined as having a ratio less than 1.2 while LOS F is defined as having a ratio greater than 2.

- **Continuity** – qualitative measure. For example, LOS C is defined as “continuous stretches of sidewalks which may have variable widths, with and without landscaped parkways.”

- **Street Crossings** – Four types of crossings are defined (signals, unsignalized crossing the major street, unsignalized crossing the minor street, and mid-block major street crossing), each with a defined LOS threshold. For example, LOS A on a signalized crossing is defined as “three or fewer lanes to cross; signal has clear vehicular and pedestrian indications; well-marked crosswalks; good lighting levels; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; and drivers and pedestrians have unobstructed views of each other.”

- **Visual Interest and Amenity** – qualitative measure. For example, LOS B is defined as “generous sidewalks, visual clarity, some street furniture and landscaping, and no blank street walls.”

- **Security** – qualitative measure. For example, LOS A is defined as “sense of security enhanced by presence of other people using sidewalks and overlooking them from adjacent buildings. Good lighting and clear sight lines.”

Bicycle LOS is based on the concept of connectivity to bike facilities, as shown in Figure 15. Again, areas have different LOS standards based on their character.

Auto LOS is defined using volume-to-capacity ratios with standards varying based on the functional classification of the roadway and the type of neighborhood. Figure 16 summarizes the auto LOS methodology.
California

In 2013, SB 743 was signed into California law. SB 743 fundamentally changes the way in which transportation impact analysis is completed for the California Environmental Quality Act (CEQA) by eliminating auto delay and level of service as measures of traffic congestion. These changes were made to balance the needs of congestion management with statewide goals including infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions. The specifics of how to apply SB 743 are still being defined, but in short, only projects that are either VMT neutral or beneficial, as measured on a per-capita basis, are to be approved unless mitigation measures are developed and implemented.

The VMT application is most similar to the mode share concurrency measure since both approaches aim to drive down the amount of vehicle travel and support other more environmentally sustainable modes. However, a potential drawback of both VMT and mode share approaches is that they are not specifically aligned with transportation projects and therefore can be more difficult to integrate with a transportation impact fee program.

Best Practices
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