WASHINGTON COUNTY TRAVEL OPTIONS ASSESSMENT

Existing Conditions and Best Practices Report – Draft

June 2016
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1 INTRODUCTION

Washington County is conducting a Travel Options Assessment to identify and evaluate opportunities for expansion and diversification of travel options programming, partnerships, coordination, and funding.

The Washington County Travel Options Existing Conditions and Best Practices Report provides a snapshot of existing travel options programs and services and an overview of demographic and socioeconomic conditions that impact transportation. Data from the American Community Survey (ACS), Oregon Employment Department, and Employer Commute Options (ECO) survey was used for a series of maps to illustrate the existing and future travel patterns in Washington County. Finally, a series of best practices highlight travel options programs and strategies within the region across the country.

The key findings of this report will inform near and long-term actions for travel options programs and partners in Washington County.
2 EXISTING SERVICES AND PROGRAMS

Washington County is home to a variety of transportation services in the Portland metro region. Many of the more urban areas of the county are well connected by a variety of travel options, but the vast majority of commuters and residents drive alone to work. The county—particularly the urban areas—are rapidly growing with increasing numbers of employees and residents, heightening the need for transportation options. This section details the existing travel options—transit, biking, walking, and other services—available in Washington County.

EXISTING TRANSIT SERVICES

TriMet is the primary transit service provider in Washington County, offering local and regional bus, MAX light rail, and Westside Express Service (WES) commuter rail. Non-profit organizations (e.g. Ride Connection) and other regional transit service providers (e.g. Yamhill County Transit Area) also provide public transportation services, including last mile shuttles and intercity service. The following sections summarize the public transit services available within Washington County, which are also illustrated in Figure 2-1.

Connections between TriMet MAX, bus, and Washington County Community Bus are available at the Hillsboro Transit Center.

Source: Steve Morgan
Figure 2-1  Washington County Transit Service
TriMet Service

TriMet provides transit service to residents and employees throughout Washington County. Services include MAX light rail, WES commuter rail, and fixed-route bus, and LIFT/paratransit.

MAX

TriMet’s Red and Blue MAX lines serve Washington County. The Blue Line connects Hillsboro with Gresham via downtown Portland. The Red Line connects Beaverton and the Airport via downtown Portland. These lines share the same route between Beaverton and I-205 in East Portland and both make connections to other MAX lines, including the Yellow, Green, and Orange lines.

The Beaverton Transit Center is a key transfer point between MAX, WES, and bus lines.

Source: Nelson\Nygaard
WES

TriMet’s commuter rail line, known as the Westside Express Service (WES), provides weekday peak-only service between Wilsonville and the Beaverton Transit Center. The service began in 2009 with the purpose of connecting communities and employment sites along the corridor as well as to MAX. Major Washington County employment centers along the route include Central Beaverton, Washington Square, Tigard Triangle, and Tualatin Town Center. WES benefits both Washington County residents—who commute to and from work in other parts of the County or to Portland—and Washington County employees—who commute to and from work in Washington County.
Fixed-Route Bus Service

Thirty-one local and regional bus routes serve Washington County. Two of these routes—Lines 12 and 57—provide frequent service, which is identified by TriMet as service every 15 minutes or better most of the day, every day. Line 12 connects Tigard with Downtown and Northeast Portland, and Line 57 provides service between Forest Grove and Beaverton. Frequent service is also available between Raleigh Hills, Hillsdale, and Portland where Lines 54 and 56 combined provide frequent service.

Both MAX and WES provide Washington County with regional connections to Multnomah and Clackamas counties. The bus network acts as an extension of these regional services, providing important connections for people who do not live or work in close proximity to a MAX or WES station and provide access to key destinations.

Bus passengers can make connections between various fixed route bus lines at the Tigard Transit Center.

Source: Steve Morgan, Wikimedia Common
SMART Transit

South Metro Area Regional Transit (SMART) operates nine bus routes throughout Wilsonville and surrounding communities.

Most routes operate Monday through Friday from 5:30 a.m. to 8:30 p.m. Routes 4 and 2X also operate on Saturdays from 8:30 a.m. to 5:30 p.m. All routes pass through Wilsonville Station, also known as “SMART Central,” where transit users can connect to the WES Commuter Rail. Connections are also available to TriMet MAX, TriMet bus, Cherriots (Salem-Keizer Area Public Transit), and Canby Area Transit.

A Farmer’s Market Trolley operates on Thursdays, May through September, and the Villebois Circulator Shopping Shuttle—a 2016 pilot project—provides access to grocery stores from residential areas.

Intercity Services

Washington County employees depend on intercity transit service from outlying communities. Columbia County Transit, also known as CC Rider, Line 2 connects the St. Helens Transit Center in Columbia County with the Portland Community College Rock Creek Campus in Washington County and the Willow Creek Transit Center in Hillsboro. The service operates Monday through Friday between 6:30 a.m. and 7:00 p.m. with three AM routes and three PM routes in each direction.

The Tillamook County Transportation District, also known as The WAVE, Route 5 provides intercity transit service along Highway 6 between Downtown Portland, Sunset Transit Center, North Plains, Banks, and Tillamook. The service operates seven days a week with two trips in each direction.
Intercity service between Washington County and McMinnville is also provided by two Yamhill County Transit Area routes. Route 33 connects McMinnville, Forest Grove, and Hillsboro Transit Center. Buses operate Monday through Friday between 6:00 a.m. and 7:30 p.m. with a frequency ranging from two and four-and-a-half hours. Route 44 runs along Highway 99W, connecting McMinnville and the Tigard Transit Center. Buses operate Monday through Friday between 5:00 a.m. and 9:00 p.m., with a frequency of one to three hours. On Saturday, buses operate from 8:00 a.m. to 7:30 p.m., with four trips each way.

Columbia County Transit, CC Rider, stops at the Willow Creek Transit Center, connecting with other TriMet bus routes and the MAX Blue line.

Source: Steve Morgan, Wikimedia Commons

**OTHER TRANSPORTATION SERVICES**

While local bus networks, such as TriMet and SMART, serve as an extension of regional services, many transit users need a first or last mile connection to complete their trip. Transportation services such as shuttles, ridesourcing companies, or car sharing can serve as a solution and are available in Washington County.

**Publicly Operated Shuttle Service**

There are several publicly operated shuttles in Washington County that provide local service within the community as well as important last mile connections between MAX and WES stations and major employment areas.

**GroveLink**

GroveLink is a shuttle service that operates three routes within Forest Grove, Monday through Friday. The East and West loop routes provide critical connections for employees and students, connecting central Forest Grove and Pacific University with other parts of the city, including
Forest Grove High School. These two loops operate every 30 minutes during the peak hours (6:30 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.) and every 60 minutes between 9:00 a.m. and 4:00 p.m. The Employment Service route offers only AM service between 6:00 a.m. and 6:40 a.m. and PM service between 2:45 p.m. and 3:10 p.m. It provides access to an industrial area along 24th Ave and to the Via Systems building on Poplar Lane. Connections to TriMet’s Line 57 are available along all three routes. In addition to the designated bus stops, flag stops are also permitted on residential streets on the route as well as route deviations, which must be requested at least one day in advance. GroveLink is funded equally through the FTA’s Urban Job Access and Reverse Commute (JARC) program and TriMet Discretionary Funds.

GroveLink provides service throughout Forest Grove and connects to TriMet’s Line 57.
Source: Ride Connection

**Tualatin Shuttle**

The Tualatin Shuttle is a deviated-fixed route service that provides access to Tualatin WES station and industrial/employment zones in the surrounding area. This free service operates two routes—Red Line and Blue Line—Monday through Friday in coordination with the WES schedule. Between 5:00 a.m. and 10:00 a.m., shuttles arrive at the station shortly after the arrival of the southbound WES train. Between 3:00 p.m. and 7:00 p.m., shuttles arrive at the station a few minutes before the arrival of the northbound WES. Route deviations are available up to a half mile off the route to pick up or drop off passengers, though only one scheduled deviation is allowed per trip. Flag stops are also available along the route.

**Community Bus**

The Community Bus (also referred to as the Washington County Bus Service) is a fare-free rural transit service, connecting the Hillsboro Transit Center, North Plains, Banks, and Forest Grove along Glencoe Road, Sunset Highway, and Nehalem Highway. The service operates two trips in each direction on Monday through Friday from 7:00 am to 9:00 am and 4:30 p.m. to 7:00 p.m.
There are five designated stops: one in Forest Grove, North Plains, and Hillsboro, and two in Banks.

The Tualatin Shuttle route (left) connects WES to employers in the surrounding areas. The Community Bus route (right) connects Banks and North Plains to Forest Grove and Hillsboro.

**North Hillsboro Link**

The North Hillsboro Link is a deviated fixed-route service launched in 2015 that connects the Orenco MAX Station with suburban employment destinations throughout the North Hillsboro area. The shuttle was motivated by the business community who identified last mile needs for their employees traveling from Orenco Station. Many major employers are served by this route including Intel, Radisys, and FEI and Reser’s Fine Foods. This free service is available Monday through Friday in the morning between 5:30 a.m. and 9:30 a.m. and in the afternoon/evening between 1:30 p.m. and 7:00 p.m. Route deviations are available (see the shaded areas of the service area map), although only one scheduled deviation is allowed per trip. Flag stops are also available along the route.

**King City RideAbout**

The King City RideAbout shuttle provides fareless service between residential areas and grocery stores. Operated by RideConnection, the service primarily targets older adult communities but is open to the general public. Each of the three routes operates as a flag stop system—allowing riders to hop on North Hillsboro Link provides connections between employment areas and the TriMet MAX and bus routes at the Orenoco Max Station.

Source: Ride Connection
the shuttle anywhere along the route by waving down the driver—Wednesday through Friday from 9:00 a.m. to 3:00 p.m. with a frequency of every two hours.

**Privately Operated Shuttle Service**

In addition to publicly-operated transit service, several Washington County employers provide shuttle service for their employees. Although the shuttles require significant operations and capital investment, employers see them as an important strategy to encouraging their employees to take transit to work, and attracting and retaining quality employees.

**Intel Shuttle**

Intel provides shuttles between MAX and its three main campuses during peak commute hours (7:00 a.m. to 10:00 a.m. and 4:00 p.m. to 7:00 p.m.). Shuttles operate every 10–20 minutes carrying 133,520 passengers in 2014, or approximately 532 people per day. Intel also operates a shuttle from their campuses to the Hillsboro Airport for employees to connect to Intel’s headquarters in Santa Clara, California.

**Nike Shuttle**

Nike operates five shuttle routes that connect employees internally between campus buildings and externally to nearby MAX stations, such as the Beaverton Creek and Merlo/SW 158th Street stations. Shuttle service is available every 20 minutes between 6:00 a.m. and 7:00 p.m. Nike supplements the shuttles with a taxi program which provides on-demand transportation service.

Nike also launched its corporate bike share program in 2014 with over 350 bikes available for employees at MAX stations and on campus.

**SureID, Inc. Shuttle**

Formally known as EID Passport, SureID, Inc. in Hillsboro provides a shuttle service for their employees twice a day between the Fair Complex/Hillsboro Airport MAX Station and the employment site. The 14-passenger shuttle is operated by SureID, Inc. facilities team and requires 16 hours of labor each week.

**Forest Heights Homeowners Association Shuttle**

The Forest Heights Homeowners Association, located in the Northwest Heights area north of Beaverton, provides a shuttle to connect residents, domestic workers, and immediate family of residents to the Sunset Transit Center in Beaverton. Most developments depend on a public transit agency to serve the community and provide local and regional connections. However, this service is unique because it is was established directly by the residential development. The service is free to residents who present a shuttle ID or valid state-issued IDs with a Forest Heights...
address to board the vehicle. The shuttle operates seven trips in the morning between 6:15 a.m. and 9:30 a.m. every 30 minutes. Afternoon and evening, service begins at 2:30 p.m. and operates until 7:45 p.m. every 30 minutes.

Ridesourcing Companies

Ridesourcing refers to on-demand, point-to-point transportation services that are scheduled and paid for using an online-enabled application or platform, such as smart phone apps. Two ridesourcing companies—Uber and Lyft—operate in Washington County, providing local and regional connections.

As of May 2016, Lyft’s service area (left) and Uber’s service area (right) of the Portland metro region includes major Washington County cities, such as Beaverton, Hillsboro, and Tigard.

Source: Lyft and Uber

The Portland metro area has seen significant growth in the use of this travel option since the ridesourcing companies came to Portland in early 2015. From May through August of 2015 during the Transportation Network Company Pilot Program, Uber and Lyft saw a 125% increase in ridership. Monthly ridership increased from 2,300 in May to over 8,000 in August.1 As of May 2016, Uber’s service area in the Portland metro region includes major Washington County cities, such as Beaverton, Hillsboro, and Tigard.

The emergence of ridesourcing companies provides another alternative travel option that can be particularly useful for first and last mile connections. According to Uber, one-quarter of Uber trips made during the first six months of operation (February to September 2015) started or ended within a quarter mile of a MAX or WES station outside of Portland. As shown in the photo on page 2-12, many of these trips originated or ended in Washington County.2 Lyft and Uber have also developed carpool services—known as “Lyft Line” and “Uber Pool”—that offer users the option to share their ride with other users traveling in the same the direction at a much lower cost than using the service individually. Although these services are not yet available in the Portland

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metro region, they may be available as a future option for Washington County residents and commuters.

Car Sharing

Car sharing allows for on-demand access to a shared fleet of vehicles on an as-needed basis. Two car sharing services are available in Washington County: Zipcar and Turo. Other services, such as Car2go and Getaround, are only available for trips originating and ending in Portland, but users can travel outside of Portland (e.g. to Washington County) while using the service.

Zipcar

Zipcar—available in Washington County—is a standard car share model that allows users to access a shared vehicle that is picked up and dropped off at a single location. To use the service, users must be Zipcar members, which requires a valid driver's license and an annual member fee. Usage fees are at an hourly or daily rate. An additional mileage rate is also included for long distance trips. Users can reserve vehicles ahead of time on line or through a smart phone.
application. Zipcars are available at the following locations in Beaverton, Forest Grove, and Hillsboro:

- **Beaverton**: Beaverton Transit Center (3 vehicles) and SW 141st Pl/Millikan Way (2 vehicles)
- **Forest Grove**: Pacific University (2 vehicles)
- **Hillsboro**: Quatama/NW 205th Ave Park & Ride (2 vehicles), Willow Creek/SW 185th Ave Transit Center Park & Ride (1 vehicle), and Tessera/NW 231st and Cherry Drive (2 vehicles)

Locating Zipcars at transit stations offers a last mile solution that is most cost effective for a shorter duration trip such as a shopping trip or medical appointment rather than a full work day.

**Turo**

Turo is another car sharing service in Washington County that allows users to share their personal vehicle with others. Unlike Zipcar where vehicles are made available by the car share company, Turo serves as the platform for car sharing but relies on people to offer their own vehicles. To use the service, users must be Turo members, be at least 21 years of age, and possess a valid driver's license. Hosts (people sharing their vehicle with others) must also have their vehicle insured. In most cases, renters must schedule a meeting time with the car owner for vehicle pick-up and drop-off while other car owners offer delivery and will bring the car directly to the renter. Usage fees are at an hourly or daily rate and car owners receive up to 85% of the total trip price. Renters can reserve vehicles ahead of time online or through a smart phone application. Turo is available in the following Washington County cities: Beaverton, Hillsboro, Cornelius, North Plains, Sherwood, Tualatin, and Wilsonville.

**ACTIVE TRANSPORTATION**

Both county and local efforts are underway to improve active transportation (biking and walking) conditions and encourage the use of active transportation. Recent Washington County efforts to promote walking and biking include:

- **Washington County Bicycle Facility Design Toolkit (2012)**. This document supplements County Road Design Standards and provides engineers and planners with a toolkit of options for addressing safety concerns and accommodating a wider range of bicyclists.
- **Washington County Bicycle and Pedestrian Improvement Project (2013)**. A list of 30 future bicycle and pedestrian projects was developed and will be prioritized for future project development as funding becomes available.
- **Washington County Neighborhood Bikeway Plan (2014)**. This Plan serves as a toolkit for identifying, implementing, and marketing neighborhood bikeways.
- **Washington County Safe Route to School Program (Ongoing)**. The Washington County Safe Routes to School (SRTS) program works with elementary schools to encourage children to walk and bike safely to school as part of a healthy daily routine.

Baseline Road and Jenkins Road serves as a regional bikeway connection for cyclists traveling across the county. Tualatin Valley Highway is also a major cycling route in Washington County. This roadway connects Beaverton, Aloha-Reedville, Hillsboro, Cornelius, and Forest Grove. Bike
lanes are available along some portions of the highway but many roadway users still feel unsafe biking along this corridor.

More recreational opportunities for cycling include the Westside Trail—a six-mile trail extending from Tigard to Tualatin Hills Nature Park and the Merlo Rd/SW 158th Ave MAX station in Beaverton—and the Fanno Creek Trail—an eight mile trail through Beaverton and Tigard. Metro has plans to extend both of these trails in the future to connect the Tualatin River in Tualatin to the Willamette River in Portland.

To develop a complete bicycle and pedestrian network, these regional efforts are complemented by local infrastructure. Beaverton has developed a Green Travel Map (see Figure 2-2) which highlights the bicycle connections to TriMet bus routes, MAX, WES, park-and-ride lots, and Zipcars. A variety of short-term and long-term bike parking is also available at the transit center, further supporting biking as a viable travel option to connect to transit.

The Hillsboro bike map (see Figure 2-3) illustrates bike infrastructure by suitability and also shows connections to the MAX Blue Line. Most stations are accommodated by low traffic streets or streets with a bike lane. Tigard’s bike map (see Figure 2-4) designates cycling suitability for roadways and trails. Connections to the city’s major transit centers primarily include shared roadways along with a multi-use path that runs along the west side of the WES.

TriMet has also installed Bike & Rides at the Beaverton Transit Center and Sunset Transit Center, encouraging Washington County residents to bike to the station and leave their bike behind to transfer to transit. Future Bike & Ride locations at Beaverton Creek and Goose Hollow will further support multimodal trips for Washington County residents and employees. The installment of these new locations was funded by Connect Oregon and Washington County’s Major Streets Transportation Improvement Program Opportunity Fund.

A TriMet Bike & Rides is available at the Beaverton Transit Center, allowing Washington County residents to bike to the station and leave their bike behind to hop on MAX or WES.

Source: TriMet
Figure 2-2  City of Beaverton Green Travel Map

Many Options to Get Around

Enjoy the path less traveled

Source: City of Beaverton
Figure 2-3 City of Hillsboro Bike Map

Legend

Most suitable
- Bike and pedestrian trail
- Widened road with bicycle lanes, motorized road
- Bike and pedestrian trail
- Widened road with bicycle lanes, motorized road
- Local traffic streets
- Residential and local streets with speed limits below 25 miles per hour

Moderately suitable *
- Bike lane
- Bike path
- Moderate traffic streets
- Twoway lane, speed greater than 25 miles per hour

Less suitable *
- High traffic street
- Speed greater than 35 miles per hour
- Caution area
- Intersecting one-way streets, high conflict and low volume streets

Map features
- Bike shop
- Farm store
- Parks or other green space

Source: Washington County Visitor’s Association

ORGEON'S WASHINGTON COUNTY
Come play the way you want.

Nelson\Nygaard Consulting Associates, Inc. | 2-16
Figure 2-4  City of Tigard Bike Map

Source: City of Tigard
3 MARKET FOR TRAVEL OPTIONS

With knowledge of the existing travel options in Washington County, this section provides a market analysis for travel options in Washington County. An analysis of the population and employment densities highlights some of the major origin and destination centers within the county. Additionally, a travel options propensity for both employees and residents determines where the market demand for travel options is highest in Washington County based on certain demographic characteristics.

POPULATION AND EMPLOYMENT DENSITY

This section highlights the population and employment densities throughout the county. Knowing where the highest population densities are in Washington County is relevant to determine accessibility to transportation services and infrastructure and inform program priorities and partners.

- **Figure 3-1 Population Density:** The highest population densities are in areas that are directly adjacent to transit service and in the cities of Beaverton, Hillsboro, and Tigard. While areas with higher population densities are located within the TriMet service boundary, rural areas outside of the TriMet service area have a lower population density of four people or less per acre.

- **Figure 3-2 Employment Density:** High employment density is concentrated along the Sunset and Highway 217 corridors within Beaverton, Hillsboro, and Tigard. The two largest employers are Nike and Intel.

- **Figure 3-3 Employers in Washington County:** Coinciding with the employment density trends, Beaverton and Hillsboro have the highest number of employees. Although Hillsboro has more large employers, Beaverton has the most employees. A total of 22% of Washington County employees work in Beaverton and 17% in Hillsboro. Thirty-six percent work in parts of the county outside Beaverton, Hillsboro, Tigard, and Tualatin.
Figure 3-1  Washington County Population Density
Figure 3-2  Washington County Employment Density
Figure 3-3  Number of Employers in Washington County by Location and Size

<table>
<thead>
<tr>
<th>Employer Size</th>
<th>All of Washington County</th>
<th>Beaverton</th>
<th>Hillsboro</th>
<th>Tigard</th>
<th>Tualatin</th>
<th>All Other Parts of Washington County</th>
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<tr>
<td>2,000 employees or more</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
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<td>1,000 – 1,999 employees</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
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<tr>
<td>500 – 999 employees</td>
<td>25</td>
<td>3</td>
<td>10</td>
<td>3</td>
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<td>9</td>
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<td>100 – 499 employees</td>
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<td>93</td>
<td>96</td>
<td>66</td>
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<td>Less than 100 employees</td>
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<td>2,505</td>
<td>1185</td>
<td>5,623</td>
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<td>Total # of Employers</td>
<td><strong>15,743</strong></td>
<td><strong>3,536</strong></td>
<td><strong>2,711</strong></td>
<td><strong>2,575</strong></td>
<td><strong>1,220</strong></td>
<td><strong>5,701</strong></td>
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Source: Oregon Employment Department 2013 Quarterly Census of Employment and Wages
TRAVEL OPTIONS PROPENSITY

Travel Options Propensity is a composite indicator adding the densities of target populations within a given geography to determine which areas are most likely to respond to travel options. For the purposes of this analysis, two travel options propensities were developed: one for Washington County employees and one for Washington County residents. Examining the trends of these two groups separately is critical as the program development—particularly outreach methods and program partners—for these two audiences may differ. The selected target populations include four primary characteristics that influence travel options propensity:

- **Income.** Individuals who are identified as low-income (a person whose income totals less than 150% of the poverty level) may be more likely to use travel options rather than driving alone.

- **Access to a vehicle.** People who do not have access to a vehicle are more likely to utilize travel options. Note that this data is only available by household and is therefore not included in the employee transit propensity.

- **Millennials.** Recent trends have shown that millennials (a person born between 1981 and 1997) are less likely to own vehicles and more likely to use travel options, such as taking transit, walking, or biking.3,4 Millennials make up a large portion of the Washington County population—approximately 24%—making the trends of this age cohort influential on the travel demands of county.5

- **Older Adults.** Older Adults, people ages 65 and older, make up a significant portion of the population—approximately 11% of the Washington County.6 Studies show that Baby Boomers (a person born between 1946 and 1964) are wanting to age in place, which will enhance their need for travel options as driving becomes less viable with age.7,8

The following sections discuss the existing trends of these characteristics for Washington County employees and residents. This analysis highlights where populations in the County are most likely to use travel options and where further outreach and education may be most impactful.

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3 A study conducted by the American Public Transportation Association (APTA) found that Millennials are multimodal, choosing the best transportation mode based on the trip they’re planning to take. Taking transit and riding a bike were the most preferred modes of transportation, while driving a car was the least preferred mode. This study was conducted in 2013 and retrieved from http://www.apta.com/resources/reportsandpublications/Documents/APTA-Millennials-and-Mobility.pdf


5 American Community Survey, 2014.

6 Ibid.


8 AARP recently reported that 87% of adults ages 65 and older want to stay in their current home and community as they age. Similarly, 71% of the preceding age cohort—people ages 50 to 64—want to age in place. This study was conducted in April 2014 and retrieved from http://www.aarp.org/livable-communities/info-2014/aarp-ppi-survey-what-makes-a-community-livable.html
Employees

Three factors were considered for the employee travel options propensity: income, millennials, and older adults. Examining where these groups work helps to determine the most suitable locations for travel options programs and outreach as well as the program partners, such as local chambers of commerce, transportation management associations, or employers. Data for these maps was taken from the Census Transportation Planning Products (CTPP), a data source for transportation compiled by American Association of State Highway and Transportation Officials (AASHTO). The following maps show the work location of Washington County employees, by density, who are considered low-income, a millennial, and an older adult followed by the employee travel options propensity map.

- **Figure 3-4 Low-Income Employees:** Low-income employees are concentrated in the cities with the most employees, Beaverton, Hillsboro, Tigard, and Tualatin. Beaverton has the most low-income employees, primarily in the north western portion of the city.

- **Figure 3-5 Millennial Employees:** Washington County employees who are considered millennials are most highly concentrated in Beaverton and Tigard. In addition, some areas of Hillsboro also have a high concentration of millennial employees.

- **Figure 3-6 Older Adult Employees:** Older adult employees are most heavily concentrated in Beaverton and Tigard while some areas of Beaverton and Hillsboro have no older adult employees. This map shows lower densities as fewer older adults (ages 65 and older) are still working.

- **Figure 3-7 Employee Travel Options Propensity:** Travel options propensity for employees is concentrated along existing transit routes, including WES, MAX, and frequent and local bus service. The cities of Beaverton, Hillsboro, and Tigard have the highest propensity for travel options.

- **Figure 3-8 Employment Access to Transit:** With a variety of frequent transit options available in Washington County, many employment sites are within one mile of frequent transit service. The highest number of employment sites within one mile of frequent transit service are located in Hillsboro near the MAX Blue Line. As such, this area could be targeted for travel options outreach and programming.
Figure 3-4  Low-Income Individuals in Washington County – Employees
Figure 3-5  Millennials in Washington County – Employees

Note: The data used for this map, Census Transportation Planning Products (CTTP) does not break up the data by age cohorts that exactly match the definition of Millennials (a person born between 1981 and 1997). As such, this map displays employees born between 1975 and 1994.
Figure 3-6  Older Adults in Washington County – Employees
Figure 3-7  Travel Options Propensity Index – Employees
Figure 3-8  Employment Access to Transit
Residents

Four factors were considered for the residential travel options propensity: access to a vehicle, income, millennials, and older adults. Examining where these groups live will help determine the most suitable locations for travel options programming and outreach as well as the program partners, such as local jurisdictions or homeowners associations, that can be influential in reaching these populations. Data for these maps was taken from the U.S. Census American Community Survey (ACS). The following maps show the home location of Washington County residents, by density, who are considered a zero-vehicle household, low-income, a millennial, and an older adult followed by the residential travel options propensity map.

- **Figure 3-9 Zero-Vehicle Households:** The highest densities of zero vehicle households are concentrated in areas with multiple transit services available, such as the intersection of MAX, WES, and frequent bus service in Beaverton, and the intersection of the MAX blue line and frequent bus service in Hillsboro. Many areas of the scattered throughout the county have no zero vehicle households.

- **Figure 3-10 Low-Income Residents:** The highest concentrations of low-income residents are in Beaverton and Hillsboro. Forest Grove and Tigard also have some areas with a high density of low-income residents.

- **Figure 3-11 Millennial Residents:** Beaverton and Hillsboro have the highest concentrations of residents who are millennials.

- **Figure 3-12 Older Adult Residents:** Areas with the highest density of older adults are located in Beaverton, Hillsboro, Forest Grove, and Tigard.

- **Figure 3-13 Resident Travel Option Propensity:** Similar to the travel options propensity for employees, the areas with the highest propensity for travel options are located at the intersection of major transit routes. However, some areas directly adjacent to existing transit have an extremely low travel options propensity. In addition, this map illustrates Forest Grove with areas of high travel options propensity.

- **Figure 3-14 Resident Access to Transit:** With a variety of frequent transit options available in Washington County, many residential areas are within one mile of frequent transit service. The highest number of residents within one mile of frequent transit service are located in Beaverton, Hillsboro, and Forest Grove. As such, these areas should be targeted for travel options outreach and programming. In contrast, much of the southwest portion of the county is not within one mile of frequent transit.
Figure 3-9  Zero Vehicle Households in Washington County – Residents
Figure 3-10  Low-Income Individuals in Washington County – Residents
Figure 3-11  Millennials in Washington County – Residents

Note: The data used for this map, American Community Survey (ACS) does not break up the data by age cohorts that exactly match the definition of Millennials (a person born between 1981 and 1997). As such, this map uses data for residents born between 1980 and 1996.
Figure 3-12 Older Adults in Washington County – Residents
Figure 3-13  Travel Options Propensity Index - Residents
Figure 3-14  Resident Access to Transit

Resident near Frequent Transit
Residents within 1 mile of Frequent Transit per Acre (by Block Group)

- None
- 1 - 2.9
- 3.0 - 4.9
- 5.0 - 7.9
- 8.0 - 12.9
- 13.0 - 20.9
- 20.1 or more

- MAX
- Frequent Bus
- Regular Bus
- WES
- SMART
- Public Shuttle
- Intercity Service
- TriMet Boundary
- University/College
- Hospital

Data Source: US Census Bureau ACS 5-Year Estimates 2010-2014, TriMet, Ride Connection, Metro

This product is for informational purposes only and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review and consult the primary data and information sources to ascertain the usability and reliability of the information. Care was taken in the mapping, but there are no warranties for this product. However, redistricting of any errors will be appreciated.

June 2016
EXISTING AND FUTURE TRAVEL PATTERNS

Washington County is a critical economic generator for the state of Oregon. Home to over a half a million people and over 200,000 jobs, the county attracts a large number of trips from throughout the Portland metropolitan region and beyond. To date, driving alone has been the primary mode of travel for the majority of residents and employees in the county. As growth proceeds in the coming decades, congestion on key thoroughfares like US 26 will worsen if current trends continue, presenting an opportunity for improved travel options programs and services.

Population and Employment Growth and Trends

Over the past 40 years, population has grown by 337%, from 157,920 people to 532,620 people and employment by 447%, from 51,935 jobs to 232,019 jobs. This dramatic growth is expected to slow down but continue above the national average.\(^9\)

Washington County’s population and employment are expected to grow significantly by 2035:

- Population is projected to increase 42% to 758,500 people—a projected average annual growth rate of 1.4% over the next 20 years.
- Employment is projected to increase to 382,000 jobs—an average annual employment growth of approximately 2.0 percent per year over the next 20 years.\(^10\)

This growth is expected to have significant impacts on Washington County’s transportation system. The number of trips is expected to increase 43% by 2035, with transit, bicycling and pedestrian travel increasing the most (increases of 90%, 54% and 52%, respectively).\(^11\)

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\(^10\) Ibid.

Demographic and Other Trends are Changing the Face of Transportation

In addition to population and employment projections, changing demographics coupled with a rapidly changing transportation sector will also influence future travel patterns in Washington County. Nationwide, car ownership is expected to decline as preferences for travel change. Millennials and Baby Boomers—two generations that make up a significant portion of the population—are showing changing preferences for transportation options. Millennials are multimodal using transit, bicycling, and walking more. Nearly 70% of Millennials use multiple travel options several times or more per week. Baby Boomers preferences have also shifted, with 87% of adults ages 65 and older wanting to age in place (i.e. being able to stay at the same residence or in the same community independently regardless of age).

New technologies are also changing the transportation landscape, allowing transit and shared ride opportunities to be dynamic and flexible. Emerging technologies are predicted to increase the use of ridesharing; shared rides are expected to increase in Washington County by 38% by 2035. Autonomous vehicles — and autonomous shared ride vehicles — will be commonplace before we know it. Some researchers predict that autonomous vehicles will reduce vehicle ownership by upwards of 40%.

Existing Travel Behavior

This section provides an overview of commute travel patterns, followed by a summary of how employees travel.

Commute Travel Patterns

Figure 3-15 illustrates the work locations for residents who work in Washington, Multnomah, Clackamas, and Clark Counties. Metro recently conducted a regional snapshot of transportation, which revealed that the number of Washington County working residents (230,000) who work in the county (52%) and who work outside the county (48%) is almost evenly split. Illustrated by the thickness of the arrows pointing towards Washington County, the largest portion of Washington County employees who live outside of the county commute from Multnomah County.

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16 http://www.vtpi.org/avip.pdf
Figure 3-15  Work Locations of Portland Metro Region Working Residents

Where Portland region’s residents work

Source: LEHD 2013. Excludes trips outside of 4-county area.

Source: Metro
As shown in Figure 3-16, the majority of employees who commute into Washington County for work primarily live in Multnomah and Clackamas Counties.

### Figure 3-16  Commute Flow of Washington County Employees, by County

<table>
<thead>
<tr>
<th></th>
<th># of Jobs</th>
<th>% of Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Jobs in Washington County</td>
<td>269,459</td>
<td>100%</td>
</tr>
<tr>
<td>Live and Work in Washington County</td>
<td>135,002</td>
<td>50.1%</td>
</tr>
<tr>
<td>In-Commuters</td>
<td>134,457</td>
<td>49.9%</td>
</tr>
<tr>
<td>Multnomah County, OR</td>
<td>49,193</td>
<td>18.3%</td>
</tr>
<tr>
<td>Clackamas County, OR</td>
<td>29,456</td>
<td>10.9%</td>
</tr>
<tr>
<td>Marion County, OR</td>
<td>10,066</td>
<td>3.7%</td>
</tr>
<tr>
<td>Clark County, WA</td>
<td>9,720</td>
<td>3.6%</td>
</tr>
<tr>
<td>Yamhill County, OR</td>
<td>8,307</td>
<td>3.1%</td>
</tr>
<tr>
<td>Columbia County, OR</td>
<td>3,664</td>
<td>1.4%</td>
</tr>
<tr>
<td>Lane County, OR</td>
<td>3,529</td>
<td>1.3%</td>
</tr>
<tr>
<td>Deschutes County, OR</td>
<td>2,156</td>
<td>0.8%</td>
</tr>
<tr>
<td>Polk County, OR</td>
<td>2,045</td>
<td>0.8%</td>
</tr>
<tr>
<td>All Other Locations</td>
<td>16,321</td>
<td>6.1%</td>
</tr>
</tbody>
</table>


### Commute Mode Split

To analyze how Washington County employees get to work, Figure 3-17 compares commute mode shares for employees who:

- Live and work in Washington County
- Live in Washington County and work outside of the county
- Live outside Washington County and work in Washington County
- Live outside Washington County and work outside Washington County

SOV makes up the largest portion of mode share regardless of home or work location. Washington County employees are more likely to take transit to work if they live outside the county (4.4%) rather than employees who live and work in the county (3.3%). The highest percentage of people who walk to work live and work within Washington County (3.9%). Ten percent of both Washington County employees who live in the county and live outside of the county carpool to work. Similarly, approximately 10% of Washington County residents who work outside the county carpool to work. Bicycling makes up the smallest percentage of the commute mode split.
### Figure 3-17 Commute Mode Share Patterns in Washington County

<table>
<thead>
<tr>
<th>Home Location</th>
<th>Work Location</th>
<th>Drive Alone</th>
<th>Transit</th>
<th>Carpool</th>
<th>Bicycle</th>
<th>Walk</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Washington County</strong></td>
<td>Washington County</td>
<td>72.9%</td>
<td>3.3%</td>
<td>10.0%</td>
<td>1.3%</td>
<td>3.9%</td>
<td>8.7%</td>
</tr>
<tr>
<td></td>
<td>Outside Washington County</td>
<td>76.1%</td>
<td>12.1%</td>
<td>10.1%</td>
<td>0.3%</td>
<td>0.4%</td>
<td>0.9%</td>
</tr>
<tr>
<td><strong>Outside Washington County</strong></td>
<td>Washington County</td>
<td>83.4%</td>
<td>4.4%</td>
<td>10.0%</td>
<td>1.1%</td>
<td>0.4%</td>
<td>0.7%</td>
</tr>
<tr>
<td></td>
<td>Outside Washington County</td>
<td>68.8%</td>
<td>7.3%</td>
<td>9.6%</td>
<td>2.7%</td>
<td>3.7%</td>
<td>7.9%</td>
</tr>
</tbody>
</table>

Notes: (1) The regions in “Outside Washington County” include Multnomah, Clackamas and Clark Counties. (2) Other modes include motorcycle, working from home, taxis, and other.

Source: Census Transportation Planning Products, 2006-2010

Oregon law requires all employers in the Portland metro area\(^{17}\) with more than 100 employees at a work site to develop a transportation demand management program to reduce single-occupancy vehicle trips to work by 10% within three years. The purpose of this program is to comply with federal regulations to reduce smog levels in the Portland area. These employment sites, known as Employer Commute Options (ECO) sites, are shown in Figure 3-18. Each site is classified by the percent of employees who do not drive alone to work—non-single occupancy vehicle (SOV) mode share. Non-SOV includes taking transit, ridesharing, biking, walking, and telecommuting.

A large number of the ECO sites in Beaverton and Hillsboro have a high percentage of employees who do not drive alone to work. Additionally, some ECO sites along frequent bus service routes have a high concentration of non-SOV commuters.

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\(^{17}\) The law only applies to employers within the Portland Air Quality Maintenance Area.
Figure 3-18 Mode Splits at ECO-affected Site in Washington County

Non-SOV Use at ECO Sites

- Non-SOV includes bike, walk, transit, telecommute, and rideshare.
- Non-SOV Mode Share:
  - 20% or less
  - 21 to 40%
  - More than 40%

- University/College
- Hospital

Data Source: Oregon Department of Environmental Quality ECO Program (2016), TriMet, Ride Connection, Metro

Nelson\Nygaard Consulting Associates, Inc. | 3-24
EXISTING AND FUTURE LAND USE

In 1995, Metro adopted the 2040 Growth Concept, the long-range plan for managing regional growth. The Growth Concept states the preferred form of regional growth and development and includes the Growth Concept map. Consistent with this concept, Washington County and its cities began to plan for areas of more intense activity by defining and planning for city and community centers, nodes along corridors, employment areas, and higher density residential communities consisting of smaller single family lots and multi-family housing options.

Adoption of the 2040 Growth Concept established a new direction for planning in the region by directly linking urban form to transportation decisions. Development of Orenco Station in Hillsboro, which began in 1997, is a well-known example of a new growth area guided by the 2040 Growth Concept. Land use patterns, guided by the 2040 Growth Concept, are changing throughout Washington County, which can influence the demand for and viability of travel options. The following maps show the current and future land uses in Washington County. Descriptions for each classification are included in the Appendix.

- **Figure 3-19 Washington County Existing Zoning:** Major transit corridors are primarily developed as commercial, industrial, and multi-use residential uses. Multi-use residential uses are closer in proximity to a variety of travel options—high frequency transit, local bus services, car-sharing—than single family residential uses. These lower density land uses that do not have convenient access to frequent transit service may be more likely to utilize other travel options, such as biking or walking, community shuttles, carpooling or vanpooling, or ridesourcing.

- **Figure 3-20 Washington County Future Land Use:** By the year 2040, targeted development is expected to occur in North Hillsboro, along the 217 corridor, Tigard Triangle, and the Basalt Creek employment area. These targeted areas of development are expected to have the most employment growth in the future. Urban Transit Corridors and Regional Corridors, primarily located along high frequency transit, such as the MAX and WES, are planned to continue to provide future opportunities to offer additional housing, commercial, and employment choices. New urban areas including South Cooper Mountain (Beaverton), River Terrace (Tigard), South Hillsboro, AmberGlen (Hillsboro), West Sherwood are expected to develop as mixed-use centers with residential neighborhoods, commercial nodes, and employment districts.
Figure 3-19 Washington County Land Use and Transportation
Figure 3-20  Washington County Future Land Use Map
4 EXISTING TRAVEL OPTIONS PROGRAMS

A variety of programs in Washington County work with employees, residents, and schools to encourage the use of travel options, including biking, walking, transit, and ridesharing. Figure 4-1 provides a summary of the travel option programs available in Washington County.

Note: This table is a work in progress. As outreach for the project progresses, additional information will be incorporated into this table including FTE, funding source(s), and annual funding amount. Much of this information will be gathered through interviews.

Figure 4-1 Summary of Travel Options Programs in Washington County

<table>
<thead>
<tr>
<th>Travel Options Program</th>
<th>Brief Description</th>
<th>Geographic Coverage</th>
<th>Program Focus</th>
<th>FTE</th>
<th>Funding Source(s)</th>
<th>Annual Funding Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive less. Connect.</td>
<td>Statewide rideshare database and trip logging tool</td>
<td>Statewide</td>
<td>Transit providers and employers</td>
<td></td>
<td>ODOT</td>
<td></td>
</tr>
<tr>
<td>TriMet Employer Outreach Program</td>
<td>Encourages employees to use commute options other than driving alone</td>
<td>Portland Metro Area</td>
<td>Employers</td>
<td></td>
<td>TriMet</td>
<td></td>
</tr>
<tr>
<td>Safe Routes to School</td>
<td>Programs and events that encourage children to walk and bike safely to school as part of a healthy daily routine</td>
<td>Washington County</td>
<td>Local schools, particularly students</td>
<td></td>
<td>Oregon Safe Routes to School Program</td>
<td></td>
</tr>
<tr>
<td>Westside Transportation Alliance</td>
<td>Provides programs and services to encourage employees to commute to work by transit, carpool, vanpool, biking, and walking.</td>
<td>Tualatin, Tigard, Beaverton and Hillsboro areas</td>
<td>Employers</td>
<td></td>
<td>MSTIP Opportunity funds, jurisdictions, member businesses, Metro's Regional Travel Options Program and other grants</td>
<td></td>
</tr>
<tr>
<td>Wilsonville SMART Program</td>
<td>Program includes employer outreach, targeted individualized marketing, promotional campaigns, events, wayfinding, and management of bike lockers.</td>
<td>Wilsonville Area</td>
<td>Employers</td>
<td></td>
<td>Wilsonville SMART</td>
<td></td>
</tr>
</tbody>
</table>
### Drive less. Connect.

ODOT manages the statewide Drive less. Save more. (DLSM) campaign in conjunction with the state’s online rideshare matching and trip logging service, Drive less. Connect. (DLC). The DLC web service supports seamless ridesharing across state lines by allowing people to set up and manage their own carpool or join an existing carpool. The website also connects “biking partners” to help bicyclists find others who may want to ride together. Drive less. Connect. participants are able to track rideshare and bike trips and subsequent monetary savings.

In 2012, the ODOT Transportation Options program initiated statewide Regional Network Administrators (RNA) to help market DLC locally. In Washington County, Westside Transportation Alliance (WTA) is the designated RNA.

In 2015, ODOT launched its Individualized Marketing Pilot Program using a portion of DLC funds. These programs encourage residents to utilize travel options other than driving alone through targeted marketing. Cedar Hills in Washington County was a recipient of individualized marketing funding in 2015 (see sidebar on next page).

### TriMet’s Employer Outreach program

The TriMet Employer Outreach program encourages employees to use commute options other than driving alone. TriMet works with employers to encourage employees to use travel options through the promotion of the Universal Annual Pass Program. Employers can purchase annual passes at a lower rate based on employee ridership. The program has helped increase the use of transit for commute trips.

Employers who use the Universal Pass Program or subsidize at least $10 per employee per month for using alternative transportation are also eligible for Emergency Ride Home. This program provides employees who have taken alternative transportation to work a free taxi ride in the event of a family emergency or personal illness.

### Safe Routes to School Programs

The Washington County Safe Routes to School (SRTS) program works with elementary schools to encourage children to walk and bike safely to school as part of a healthy daily routine. This program supports the county’s effort to encourage active transportation to promote community health, reduce traffic congestion, and improve community livability.

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In September 2013, Washington County received a $150,000 non-infrastructure grant from the Oregon Safe Routes to School Program. This grant funded a SRTS coordinator for three years to help boost the number of SRTS programs and activities throughout the county. In addition, an SRTS coordinator was tasked to reach out to city and county agencies, schools, community organizations, and neighborhoods to build valuable partnerships for expertise, resources, and programming support.

The county has also recently completed a School Access Improvement Study (SAIS). This study evaluated 53 public schools that are significantly impacted by county roads in urban areas throughout the county. Working with school districts, parents, and communities, a list of projects was developed to guide future developments for improving safety and increasing walking and biking to and around schools.

**Westside Transportation Alliance (WTA)**

The Westside Transportation Alliance (WTA) is a Transportation Management Association (TMA) that provides commuter programs and services to the urbanized areas of Washington County. This includes the Tualatin, Tigard, Beaverton and Hillsboro areas. WTA works with local partners and employers to encourage employees to commute to work by transit, carpool, vanpool, biking, and walking. Services include transportation fairs, assistance with ECO Rule compliance, ECO surveying, events, incentive programs, and participation on local and regional planning committees.

WTA also developed an app, Commove, to help users find a transportation route to and from work, via walking, biking, taking transit, or carpooling. A few Washington County employers partnered with WTA for a pilot project of the app in spring of 2015. Employees who used the app were awarded points based on calories burned, carbon reduced, and money saved on non-SOV trips. In the near future, WTA hopes to release the app countywide.19

The WTA is funded primarily by Metro’s Regional Travel Options Program and the support of its 25 member businesses in Washington County.

**Wilsonville SMART Program**

Wilsonville’s primary transit provider—South Metro Area Regional Transit (SMART)—offers free assistance to employers through the SMART Options commuter program. This program includes

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employer outreach, targeted individualized marketing and promotional campaigns, Sunday Streets events, wayfinding, and management of bicycle lockers at local transit stations. The program has developed water resistant biking and walking maps. Wilsonville SMART also launched a year-long individualized marketing campaign, Discover Wilsonville that encouraged Wilsonville residents to walk, bike, and take transit.

**Employer Programs**

There are several employer-based transportation programs in Washington County. A few of them are highlighted below.

- **Tualatin Valley Water District (TVWD):** TVWD, headquartered in Beaverton, offers its employees free transit passes, preferential parking for carpool vehicles, bike storage and showers in locker rooms, compressed work weeks (all employees have every other Friday off), and telecommuting for certain job classifications.

- **SolarWorld:** Located in Hillsboro, SolarWorld offers its employees free transit passes, bikes and an electric truck to commute around the 97 acre campus, secure, covered bike parking, showers and locker rooms, on-site bike tune-up clinics, and travel options information posted at central locations.

- **Nike:** The Nike Corporation, located in Beaverton, provides a comprehensive employee transportation demand management (TDM) program for Nike’s world headquarters outside of Beaverton, Oregon. Since 1992, Nike has experimented with different ways to encourage employees to use commute options. Today’s program includes a shuttle and taxi service (as previously noted in Chapter 2), transit subsidy, corporate bike share, and other on-site services all of which help reduce the need for employees to use their cars to access services during the day.

**Other Programs and Partners**

Other programs and partners in the County that work to support transportation options programs, include the Westside Economic Alliance, chambers of commerce, and local health partners. For example, the Hillsboro Chamber was a strong advocate for the development of the North Hillsboro shuttle to respond to demand from employees in the region who wanted to ride transit to work. Another example is the City of Beaverton’s Green Travel Map, which provides the health impacts of five local walking and jogging routes. Data for this resource is provided by SparkPeople, a private health organization.
# 5 PLANS & POLICY REVIEW

Policies applicable to Washington County’s Travel Options Strategy include state, county, regional, and local plans. All of these regulatory bodies have developed policies and strategies to support the expanded use of travel options other than driving alone. For the purpose of this project, relevant policies are primarily focused on parking codes and local approaches to parking management practices, travel options programs, and references to inclusion of travel options/TDM in the new development process. A summary of relevant plans and policies in Washington County is provided in Figure 5-1 below.

## Figure 5-1 Summary of Relevant Plans and Policies

<table>
<thead>
<tr>
<th>Type</th>
<th>Plan</th>
<th>Plan Author</th>
<th>Relevant TDM/Last Mile Connection Policies and Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Oregon Transportation Options Plan (2015)</td>
<td>ODOT</td>
<td>Establishes a statewide vision and provides policy guidance that integrates transportation options in local, regional, and state transportation planning, programming, and investment. Policies and strategies were developed around 10 goals including safety, funding, accessibility, mobility and system efficiency, economy, health and environment, land use and transportation, coordination, equity, and knowledge and information.</td>
</tr>
<tr>
<td>Regional</td>
<td>Metro Regional Travel Options Strategic Plan (2012)</td>
<td>Metro</td>
<td>The RTO Strategic Plan strives to support a regional travel options program that helps to achieve regional air quality, transportation, and livability goals, such as:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ Enable local partners to reach out to employers and residents to help make non-SOV travel choices</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ Integrate TDM into regional planning and growth management processes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ Provide regional policy support and program development to support existing transportation systems</td>
</tr>
<tr>
<td>County</td>
<td>Washington County Rightsizing the Parking Code (in progress)</td>
<td>Washington County</td>
<td>Evaluating development standards related to parking that may support and sustain vibrant, walkable, and transit-supportive communities. Standards will aim to reduce SOV use, reduce VMT and GHG emissions, and provide opportunities for safe and convenient walking and biking.</td>
</tr>
<tr>
<td>Type</td>
<td>Plan</td>
<td>Plan Author</td>
<td>Relevant TDM/Last Mile Connection Policies and Strategies</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Washington County | Washington County Community Development Code (2016)             | Washington County                      | Parking and loading development standards include:  
- Reduce minimum off-street parking requirements based upon the availability of transit  
- When a development provides a transit amenity associated with a bus stop parking spaces may be reduced  
- Preferential parking for vanpool/carpool shall be provided for all institutional, office, and industrial uses having fifty (50) or more parking spaces  
Total minimum automobile parking may be reduced and replaced by bicycle parking.                                                                                                           |
| Washington County | Washington County Transportation System Plan 2035 (2014)    | Washington County                      | Identifies TDM as an important factor in improving the performance of existing transportation infrastructure through marketing, employer, and rideshare services. Documents the Westside Transportation Alliance as an entity in the County helping employers develop auto trip reduction plans and satisfy ECO rule mandates.                                                                 |
| TriMet        | TriMet Southwest Service Enhancement Plan (2015)                 | TriMet                                | Identifies improvements needed to meet growing demand for the region, such as: improve transit connections for suburban residential communities and suburban employment centers; expand frequent bus service; pass through federal funds to communities where fixed-route service is lacking (e.g. Tualatin, Tigard, Sherwood); and partner with local cities, counties and ODOT to improve pedestrian environments.                              |
| TriMet        | TriMet Westside Service Enhancement Plan (2013)                  | TriMet                                | Proposes improvements to transit services on the Westside, including increased frequencies, innovative transit services, and improved facilities for pedestrians. Identifies a variety of last mile solutions to improve transit access on the Westside to jobs that are close to transit but beyond a comfortable daily walking distance. These solutions include access to transportation information, increased frequencies on routes that connect with MAX stations, private employee shuttles between employers and transit stations, new and improved bikeways, trails and bicycle parking, and bike/car-sharing. |
| Local         | Banks Transportation System Plan (2010)                         | City of Banks                         | Opportunities identified in the Banks Transportation System include:  
- Construct one or more pedestrian and bicycle overcrossings to ensure connectivity  
- Establish a north south bike route  
- All new roadways should include bicycle and pedestrian accommodations  
- Regularly monitor TCTD bus service in Banks to identify any transit capacity improvements needed                                                                                                                                   |
<p>|              | Beaverton Comprehensive Plan (Transportation Element) (2010)   | City of Beaverton                     | Indicates effective TDM strategies “should go beyond the low-cost, uncontroversial measures commonly used.” Strategies include parking, improved services for non-auto modes, and market-based measures.                                                                                                                                   |</p>
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<th>Relevant TDM/Last Mile Connection Policies and Strategies</th>
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| Local | Cornelius Transportation System Plan (2005) | City of Cornelius | Goals identified in the Cornelius Transportation System Plan include:  
- Develop a safe, complete and efficient transportation system that provides multimodal access  
- Continue to explore mechanism to enhance the multi-modal access and circulation throughout the community  
- Coordinate with Tri-Met to continue enhancements at bus stops to provide a more attractive environment for transit users |
<p>|       | Forest Grove Local Service Study (2013) | City of Forest Grove | Evaluates the need for enhanced transit service within Forest Grove and improved access to regional destinations. Helped Forest Grove decide to invest in a local circulator for the community (GroveLink). This decision was based on several factors, including the size and density of the community, and that the route could be “personalized” for the community’s needs. GroveLink serves employment areas in Forest Grove. |
|       | Forest Grove Transportation System Plan (2014) | City of Forest Grove | Encourages employers to install bike racks, place carpool parking close to building entrances, provide commute options information to employers, support telecommuting and flexible work hours, provide incentives to take transit, and schedule deliveries outside peak travel times. |
|       | Hillsboro Transportation System Plan Update (2004) | City of Hillsboro | Cites the following as strategies for TDM: telecommuting, compressed work weeks, transit subsidy, employee parking cash out, reduced cost for HOV parking, bicycle programs, on-site rideshare matching for HOVs, vanpools, walking program, guaranteed ride home program, and time off with pay for alternative mode use. |
|       | Sherwood Transportation System Plan (2014) | City of Sherwood | Encourages the development of high speed communication to decrease reliance on the transportation system for conducting business and encourage development that mixes land uses to reduce vehicle trips. |
|       | Tigard Transportation System Plan (2010) | City of Tigard | Lists two TDM strategies that are implemented primarily by employers: parking cash out and subsidized transit passes. Other strategies which have a secondary and support role by employers are public parking management, flexible parking requirements, pedestrian facilities, and car sharing program support. The TSP indicates that the City of Tigard does not have a dedicated TDM program, but that the WTA assists local employers with TDM strategies. |</p>
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| Local        | Tualatin Transportation System Plan (2013)                          | City of Tualatin  | Lists the following TDM policies:  
- Support demand reduction strategies (ride sharing, preferential parking, flextime programs)  
- Partner with area agencies and employers to implement TDM programs  
- Explore use of new TDM strategies to make the transportation system more efficient  
- Support regional TDM programs and policies to reduce SOV trips  
- Promote use and expansion of the Tualatin Shuttle program Lists employee shuttle services, employee pass programs, and car sharing and rental services as key strategies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Wilsonville  | Wilsonville Transit Master Plan (In Progress)                       | City of Wilsonville | Update of the 2008 plan will account for new development trends (rapid population growth, aging population, greater movement of people to jobs throughout the city and region) while advancing the City’s Climate Smart Goals, which include strategies for promoting transit use, active transportation, and employer-based commuter programs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Wilsonville  | Wilsonville Transportation System Plan (2013)                       | City of Wilsonville | References Wilsonville’s transportation options program, SMART Options, which provides assistance to businesses to set up transportation programs and organize vanpools.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|              | Wilsonville Bicycle and Pedestrian Master Plan (2008)               | City of Wilsonville | Promotes non-motorized travel to provide a safe, interconnected system of pedestrian and bicycle facilities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Other        | Suburban Transportation Demand Management for a Diverse Workforce (2013) | Upstream Public Health and the Westside Transportation Alliance | Analyzes the most effective ways for employers in suburban locations to improve their employee’s commutes by improving transportation options and reducing single-occupancy vehicle trips. The report lists the following as strategies employers can use to support commute trips: onsite transit information and pass sales, guaranteed ride home, rideshare matching services, preferential parking, bike-sharing and car-sharing, land use support, bicycle storage, lockers and changing/showering facilities. Additionally, flexible work hours, transit subsidies, parking management and pricing are also options for employers to use.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|              | Washington County Last Mile On-Demand Rideshare Feasibility Study (2014) | Westside Transportation Alliance | Identified a significant market of employees in need of last mile connections, evaluated the feasibility of on-demand rideshare, on-demand shuttle, and ridesourcing companies, and recommended on-demand shuttles to help more employees take transit to work. WTA is working with the Washington County business community, local jurisdictions, and the County to identify partnerships, funding sources, and potential pilot areas for the on-demand shuttle.  |
6 TRAVEL OPTIONS BEST PRACTICE RESEARCH

To better develop and coordinate travel options in Washington County, a survey of both how a program could be organized (e.g., who are the partners) and what policies and programs could be in place to support travel options is important. This chapter first outlines different organizational structures for a travel options program and then provides an overview of parking management strategies and best practices in program implementation from cases across the U.S.

Note: This section is a work in progress and will be updated after the first Project Advisory Committee meeting in June.

TRAVEL OPTIONS PROGRAM ORGANIZATIONAL STRUCTURE

Travel options programs are formed at various geographic scales and through different organizational structures. There is no one way to structure a program; it depends on the geographic context, organizational capacity, and funding sources. This section provides an overview of two typical organizational structures that are relevant for Washington County: a transportation management association and city or region-led programs.

Transportation Management Associations

What is it?

A Transportation Management Association (TMA) is a non-profit, member-controlled organization that provides transportation services in a particular area, such as a commercial district, mall, campus, or industrial park. Or, in the case of Washington County, the Westside Transportation Alliance covers the geographic extent of the county. TMAs support the transportation needs of businesses and are generally a public-private partnership, consisting primarily of area businesses with local government support.

TMAs provide an institutional framework for programs and services and allow employers to collectively provide transportation services. This collective framework can create economies of scale, leverage and equity, which also allow small employers the opportunity to provide commute trip reduction services comparable to those offered by large companies. TMAs provide a variety of services that encourage more efficient use of transportation and parking resources. Such services can include:

- Survey and evaluation
- Access management
- Advocacy
- Education and outreach
Guaranteed Ride Home services
Coordinated incentive and reward programs
Individualized commute trip planning services
Marketing and promotion
Parking management, including shared parking coordination
Pedestrian and bicycle planning and infrastructure support
Rideshare matching and vanpool coordination
Telework and flextime support
Transit fare products and/or incentives
Transit improvements

In addition to developing and coordinating transportation management strategies, a TMA can bring a variety of stakeholders together to jointly address transportation challenges – and to give stakeholders a unified voice in advocating for enhanced transportation investments and coordination in their area. TMAs often represent the only organization providing private sector decision makers and full coverage of a geographic area with common transportation challenges; this can offer a unique forum for coordination of public and private transportation programs.

Regional or local governments, chambers of commerce, downtown business associations, or internal management of a major facility/campus can help create a TMA. Affiliation with existing business associations is common to many TMAs, which allows for integration of an aggressive and innovative transportation management program into a broader economic development program and vision.

Where has it been done?

**Minneapolis, MN:** Created by the City Council in 1991, [Move Minneapolis](https://www.movempls.com/) is public-private partnership of the City of Minneapolis and the downtown business community. The organization advocates for and promotes a sustainable transit and transportation system that supports a vital and growing downtown Minneapolis.

**Tacoma, WA:** Leaders from more than 15 downtown businesses formed the [Downtown: On the Go!](https://www.tacomadowntownonthe.com/) Transportation Partnership to identify viable solutions to the parking and transportation challenges facing downtown businesses and commuters. Its goal is to increase employee use of alternative commute options from the current 24% to 35% by 2020.
• **Portland, OR:** The [Lloyd District TMA](#) in Portland is among the most successful TMAs in the nation. This program reduced the drive-alone rate from 86 percent to 41 percent between 1994 and 2009 through a comprehensive package of business-based programs for transit, biking, walking, and business/employee assistance. The combination of metered parking, access challenges, public/private partnerships, transit investments, and the development of the Lloyd Business Improvement District are the recipe for this TMA’s success.

**Lloyd TMA Partnership Plan**

Key to the Lloyd District’s success was the public/private partnership between the City of Portland, TriMet, and the business community. The “Partnership Plan” established a partnership that linked the number of net new employee transit passes sold in the district to the provision of new transit service to the district. This agreement was entered into as a result of the TMA’s success in working with the business community to remove free commuter parking from the district and implement on-street metering. The parking management strategy was a key goal of TriMet as a means to better facilitate transit use and maximizing the existing transit services in the district. This partnership has resulted in the addition of new service to the district, in addition to a steady source of funding for the TMA from the parking meters and a commission on the transit passes sold in the district.

Source: Lloyd District Regional Center Plan and Progress

**City, Region, and State-Led Travel Options Programs**

**What is it?**

City and region-led travel options programs are commonplace in communities large and small across the U.S. There is often a natural synergy between a city’s travel options programs and its bicycle and pedestrian program and education and outreach efforts. Regionally-set programs can play an important role in gathering a range of partners and funding sources together.

**Where has it been done?**

**Missoula, MT**

Missoula is a national leader in TDM programming—particularly for a community of its size. Missoula invests in a wide-range of travel options programs, including marketing and outreach to employers, general marketing which includes Missoula In Motion’s Way to Go! Club, Safe Routes to School programs and infrastructure improvements such as sidewalk improvements, and bicycle and pedestrian safety outreach. The core program, Missoula In Motion, is housed at the MPO; other partners include the City Bike/Ped Office, and the Parking Commission.

• **Missoula In Motion** (MIM) is housed at the MPO and provides education and encouragement to empower Missoulians to reduce single-occupancy vehicle travel. MIM’s two primary programs are the *Momentum* program and the The Way to Go! Club. The *Momentum* program is an employer outreach program which helps employers and employees walk, bike, take transit, and rideshare to work. Programs include an annual Commuter Challenge as part of BWBW; the Corporate ToolKit that
provides survey assistance, individualized commute planning, and reporting; the EZ Pass Program that enables employers to purchase subsidized transit passes for its employees; and the Best Practices Award program that rewards stand-out employers on an annual basis. Way to Go! is an individual reward program for employees and residents using non-SOV transportation. Way to Go! Club members log their trips on-line and receive incentives and awards for doing so. In addition to prizes, members are enrolled in MIM’s Guaranteed Ride Home Program that offers up to four free cab rides home per year. MIM also provides transit marketing and outreach for the local transit agency. Over the years, MIM has built a recognizable brand in the community through travel options billboards, marketing materials provided to employers, and its sponsorship of Sunday Streets. It also has a downtown storefront location where people can purchase transit passes and learn about travel options in the community. This storefront has increased the visibility and reach of the program.

- **City Bike and Pedestrian Office** manages programs to increase the number of people biking and walking in Missoula through education and outreach, safety campaigns, and bike and pedestrian infrastructure. Specific programs include Bike Walk Bus Week, Missoula Walks, Safe Routes to School, and a bike and pedestrian safety campaign including the Bicycle Ambassadors program.

- **Missoula-Ravalli Transportation Management Association (MR TMA)** provides vanpool service to residents in Missoula and Ravalli counties. MR TMA is funded in part by federal Congestion Mitigation and Air Quality (CMAQ) funds and in part by Missoula and Ravalli counties, City of Missoula, the Missoula Parking Commission, the local University, and corporate sponsorships.

- **Missoula Parking Commission (MPC)** works with government, business, and citizens to provide and manage parking and parking alternatives. Its revenue comes from three main sources: parking tickets, parking meters, and leased parking. The MPC has historically provided matching funds and donations to TDM programs in the region.20

**Ann Arbor, MI**

Ann Arbor Michigan provides an interesting case of a coordinated travel options program across multiple entities, including the Downtown Development Authority, the transit agency, and the City of Ann Arbor.

- **Downtown Development Authority (DDA).** In 1992, the City of Ann Arbor gave control of its seven parking structures to a newly created Downtown Development Authority (DDA). This quasi-public agency agreed to finance a $40 million garage repair and replacement program, using funds from a tax increment financing district. The City is responsible for parking enforcement, but the DDA operates the downtown parking structures and several lots. In 2002 it took responsibility for the remaining public parking system including the on-street meters. Today, the DDA manages a diverse parking

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20 The recent Missoula TDM Organizational Plan completed in 2012 recommended that a specific level of MPC funding be dedicated to downtown programs and that coordination be enhanced by forming a downtown leadership group to manage downtown access issues. It was recommended that the group be comprised of MPC, MIM, the Missoula Redevelopment Agency, MUTD, the Downtown Association, and other employer representatives.
inventory, including on- and off-street parking spaces, with the goal of balancing parking demand with maximum benefit to the community. Given its responsibility to manage car parking in downtown, the DDA also manages and funds bicycle parking. A key to the system’s success is providing people with a menu of transportation options, such as subsidized downtown Zipcars, prioritized parking for vanpools/carpools, free parking for the airport shuttle, and subsidized transit passes (called the go!pass). The DDA is funded in part by a tax increment financing (TIF) district that has been in place since 1982. TIF money is used to fund pedestrian improvement projects, affordable housing grants, and downtown studies. Parking revenue is a second primary source of funding for the DDA. Parking revenue is used to operate the parking facilities, and pay for repairs and maintenance, regular equipment upgrades, and debt service. The remainder is used to fund alternative transportation programs that support the downtown including the go!pass, the Link shuttle, bike lockers, and the getDowntown program (described in further detail below). In recent years, the DDA has provided approximately $600,000 per year or 95% of the funding for go!passes for downtown employees (employers are expected to make up the remaining 5% which amounts to approximately $10 per employee per year).

- getDowntown was established in 1999 through a partnership between the DDA, the transit agency, and the City of Ann Arbor. getDowntown works to reduce the number of downtown commuters driving to work alone by promoting various transportation choices, providing research on the benefits of sustainable transportation, organizing events, interacting with downtown employers and employees, and interfacing with numerous downtown stakeholders. Programs and services include the go!pass, the Commuter Challenge and Commuter Club, bike locker rentals, free commuting assistance to downtown employees and employers, bicycle and pedestrian maps, and Zipcar coordination. getDowntown is technically housed at the Ann Arbor Transit Authority (AATA) - its employees are technically AATA employees. The getDowntown Program also receives funding through a Federal CMAQ Grant passed through the Ann Arbor Transportation Authority. In addition, the Ann Arbor Downtown Development Authority provides funding for go!passes and general operations. The City of Ann Arbor also contributes funding to the general operations of the getDowntown Program.

New Jersey

In 2011, the New Jersey Department of Transportation (NJDOT) transferred the management and administration of the TMA program to the North Jersey Transportation Planning Authority (NJTPA), the MPO covering northern New Jersey and the dense areas outside New York City. NJTPA now oversees the development of annual work programs and coordinates activities among the eight TMAs in the state. Each TMA’s workplan is folded into NJTPA’s Unified Planning Work Program (UPWP). The TMA program is funded by Surface Transportation Program funds.  

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21 The New Jersey and Massachusetts examples are included to provide insight into what a more regionally-focused TMA operation could look like for Washington County.

Additionally, the executive directors of New Jersey's eight TMAs have joined together to form the TMA Council of New Jersey (TMAC NJ). The council helps to connect the TMAs and provides a forum for sharing current happenings and best practices from each TMA.

**Massachusetts**

MassCommute is a coalition of 12 TMAs in Massachusetts that promote the common interest of TMAs and their partners. Primary responsibilities of the coalition include:

- **Collaborate** with state agencies and other partners to develop programs and events that promote Transportation Demand Management (TDM) measures
- **Advocate** on behalf of the participating TMAs regarding legislation and issues that impact them and their employee organizations
- **Informs** TMAs about state-wide & federal transportation issues that affect their member organizations

MassCommute also acts as a liaison between Massachusetts TMAs and MassDOT to facilitate the negotiation and management of Service Coordination & the Funding Agreement. To receive funding, a TMA must become full participatory member of MassCommute, paying annual dues and participating on committees.

### PARKING MANAGEMENT

The success of travel options programs depends largely on the policies in place to support them. Policies that actively manage parking—both the supply and demand—support the success of travel options programs. Many areas of Washington County have free and plentiful parking, making it difficult to convince travelers that biking, walking, transit, and sharing rides is more convenient than driving alone.

#### What is it?

Parking management refers to policies and programs that result in more efficient use of parking resources. Several best practices in parking management solutions include:

- **Reduce minimum parking requirements.** Many jurisdictions require more parking than is actually used or needed. Eliminating, or reducing, parking minimums can reduce the number of parking spaces built, thereby reducing housing and construction costs. Actual (not estimated or modeled) parking demand data can help tailor parking requirements to the need. When the development market is solid, parking maximums can also reduce development of unnecessary parking and encourage shared parking.

- **Require most, or all, parking is shared.** Different land uses have different periods of parking demand allowing them to easily share a common parking facility and limiting the need for additional parking. For example, a bank will have a higher parking demand during the day while a restaurant may be in need of more parking in the evening. Shared parking agreements can encourage these disparate uses to share parking and reduce the number of parking spaces needed.

- **Link vehicle trip generation to parking requirements.** The Institute of Transportation Engineers has published Trip and Parking Generation Standards that are widely used in cities across the U.S. The problem is that they often overestimate the number of parking spaces required for certain land uses. Communities can “right size parking” to assess parking requirements and help developers balance parking supply and
demand, or develop a localized trip generation model that accounts for trips by person and mode, not just vehicles. Basing parking requirements on the anticipated number of vehicle trips generated can reduce development of access parking.

- **Require car share spaces and EV parking.** Promote travel options by requiring car sharing and EV parking spaces to be included in designated parking areas.

- **Unbundle pricing from multifamily and all commercial leases.** The cost of parking is often “bundled” or passed on to the occupants indirectly through the rent or purchase price. Unbundling parking shows tenants the true cost of parking and also supports low-income tenants by not automatically including the cost of parking in lease rates.

- **Require development standards fit for future retrofit.** Parking structures that are no longer needed can be retrofitted into office or residential space. To allow for retrofits, specific development standards prior to construction of the parking structure, such as level floors, 11-12’ floor-to-ceiling heights, and central or external ramps.

- **Paid parking.** Charging for parking can discourage some people from parking and encourage more affordable travel options, such as taking transit, walking, or biking. As an added bonus, parking revenue can serve as a funding source to support travel options programs and infrastructure.

**Why is it important?**

Parking management strategies can help reduce the amount of parking needed and also provide economic, social, and environmental benefits. Parking revenues can be an economic stimulus for local jurisdictions or other travel options programs and investments. Parking management strategies also have the potential to encourage the use of other forms of transportation. The number of required parking spaces is often overestimated for certain land uses resulting in empty parking spaces and underutilized land uses. Flexible parking standards help shape the demand for parking and can ensure the number of parking spaces more accurately reflect the demand, in addition to making non drive alone options more attractive in some cases. Reducing automobile mode share can contribute to reduced traffic congestion, vehicle miles traveled, and carbon emissions.

**Where has it been done?**

**Parking Minimums**

**Eugene, OR**

The Downtown, West University, and Blair Boulevard Historic Commercial areas are exempt from the minimum off-street parking requirements outlined in Eugene’s municipal code.

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23 Washington County is currently developing its Rightsizing the Parking Code Project to evaluate development standards related to parking that may support and sustain vibrant, walkable, and transit-supportive Town Centers and Station Communities.
Portland, OR

According to Chapter 33.266 of the Portland Development Code, there are no parking minimums for the primary mixed-use district (Mixed Commercial/Residential). Other land use categories, such as Central Residential, also have no minimum parking requirement.

Boulder, CO

Within Boulder’s downtown special district—the Central Area General Improvement District (CAGID)—the City has eliminated minimum parking requirements for non-residential uses. Developers are allowed to build as much or as little parking as they choose, subject to design standards in the zoning code, and to manage it as they see fit. If they choose to build little or no parking on-site, they can purchase permits for public lots and garages for resale to their employees.

Shared Parking

Santa Monica, CA

There are more than 10 public parking garages in the Santa Monica Downtown District that serve as the parking supply for retail and commercial businesses along the popular Third Street Promenade and surrounding retail streets. Business and infill projects in the district can utilize this shared parking pool, reducing parking obligations. To reinforce and support this existing shared parking district, Santa Monica recently updated the Land Use and Circulation Element (LUCE) of its General Plan to include specific goals related to shared parking in its Downtown core.

Downtown Ventura, CA

Shared on-site parking between land uses with different periods of peak parking demand is allowed for all uses in downtown Ventura, CA. Shared on-site parking is allowed to satisfy 100% of the minimum parking requirement for each use.

Right Sizing Parking

Seattle, WA

As part of the Right Size Parking Project, King County Metro developed the Right Size Parking Calculator as a resource to inform discussion, weigh the factors impacting parking demand, and help guide decisions related to parking. The map-based web tool allows users to estimate the number of parking stalls needed for multi-family developments with regard to the specific site. The tool can reduce over-building of parking supply, potentially decrease vehicle miles traveled, congestion, and housing costs, and support travel options.
INTEGRATE TRAVEL OPTIONS INTO THE PLANNING PROCESS

Travel options can be integrated into the planning process in a variety of ways, including through development review process, through construction mitigation, and as a component of infrastructure projects and service enhancements.

What is it?

Travel options can be incorporated into the planning process in three ways:

1. **New Development**: Travel options can be incorporated at the time of new development by incentivizing or requiring travel options programs as part of the development review process. This helps to ensure programs and supportive infrastructure are in place throughout the lifetime of a building. The threshold of applicability and mitigation efforts can vary by jurisdiction. Travel options strategies range from developing a complete TDM plan with performance monitoring to a one-time installation of bicycle or pedestrian supportive amenities and infrastructure.

2. **Construction Mitigation**: During construction projects, travel options can be a required mitigation effort to reduce traffic congestion and encourage travelers to use other modes. This might include outreach to the affected community about alternative travel options or enhanced transit service. These strategies can be directly funded through the construction project budget.

3. **Infrastructure and Service Investments**: Travel options can also accompany new infrastructure projects and service investments at the time of implementation. Similar to construction mitigation, funding for travel options can be included in the project budget and can help promote and educate potential users of the new transportation investment.
Why is it important?

Too often, new investments in infrastructure, construction projects, and development occur without the programs to encourage people to bike, walk, take transit, and share rides. Integration at various points in the planning and project delivery processes gives leverage to travel options investments. Incorporating travel options into construction projects minimizes impacts on the community’s travel needs. There is also potential for a shift in travel behavior, encouraging some travelers to continue to use travel options even after construction is completed. Travel options promotions during infrastructure and service investments informs the public about the availability and benefits of this new investment. It also encourages the use of the new service or infrastructure with hopes that it will be well used and therefore validated as a worthy investment. These efforts ensure that travel options are incorporated early on in the planning process rather than being more of an after-thought.
Where has it been done?

New Development: Cambridge, MA

The City of Cambridge adopted two transportation management policies that are part of the development review process: the Parking and Transportation Demand Management Ordinance (PTDM) and Article 19 (Project Review and the Project Special Review Permit).

The Parking and Transportation Demand Management Ordinance (PTDM), established in 1998, requires any non-residential landowner increasing the supply of off-street parking to implement TDM measures. “Small projects”—developments with a total of 5 to 19 parking spaces—must implement three TDM measures from a list of suggested TDM measures, such as subsidized transit passes, information kiosks, bike racks, or bike showers. “Large projects”—developments with a total of 20 or more parking spaces—must commit to reducing drive-alone trips by 10% from 1990 levels for the census tract in which the project is located. Landowners must also develop a PTDM plan.

Formalized in 2000, Article 19—Project Review and the Project Special Review Permit—requires new developments that exceed a threshold of 50,000 square feet to conduct a detailed traffic review. This study must highlight the potential traffic impacts of the new development and identify parking, TDM, and other mitigation measures to mitigate any adverse traffic impacts.

Upon reviewing the results of the study, the City may require any combination of the following:

- Develop a TDM plan
- Make roadway, bicycle, and pedestrian facilities improvements
- Develop measures to reduce traffic on residential streets
- Undertake measures to improve safety for pedestrians and vehicles

The program has proven very successful for Cambridge since its inception in 1998. Nearly 100 large projects have resulted in detailed monitoring plans, while dozens of small projects have implemented one-time transportation demand management (TDM) measures. In 2006, the sunset clause was removed and the ordinance was made permanent. Approximately 35,000 employees and graduate students are covered under the ordinance and an estimated 38 million VMTs have been reduced as of 2011. Developers are even using their TDM measures as a recruitment technique for new employees. Over 85% of the monitored businesses have met or exceeded their mode split goal. In 2004, the average drive-alone mode split for

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Integrating Travel Options into Development Review in Oregon

Several efforts in Oregon at the state and local level support the integration of travel options in the development process. In 2014, the State’s Transportation and Growth Management division developed the Transportation Demand Management (TDM) Plans for Development model code that provides a step-by-step process for jurisdictions to update their codes. The state’s first statewide Transportation Options Plan also includes a strategy to “work with developers and local jurisdictions to integrate, incent, or require transportation options as part of the development review process.” The City of Portland has also been working to incorporate travel options into their development code as part of the update to their Comprehensive Plan.
participating businesses dropped from 68% to 55% (an estimated 7,000 vehicle trips were removed from the roads in Cambridge each day). 25

New Development: Pasadena, CA

The City of Pasadena instituted Chapter 10.64 Transportation Management Program to implement the requirements of the Los Angeles County Metropolitan Transportation Authority’s Congestion Management Program and model trip reduction ordinance. The following development projects are subject to the Pasadena ordinance:

- Non-residential projects between 25,000 square feet and 75,000 square feet of gross floor area
- Multi-family residential developments with 100 or more units
- Mixed-use developments with 50 or more residential units; or 50,000 square feet or more of non-residential development

Development projects that meet one of these thresholds are mandated to provide employee transportation information services, a transportation plan, and report on progress annually. Progress must be documented through an annual survey.

New Development: Arlington County, VA

In 1990, Arlington County adopted the TDM Program for Site Plan Development. The Arlington County Commuter Services (ACCS) works with developers and property managers to mitigate the transportation impacts of residential and commercial development by increasing the availability, awareness, and use of transit, ridesharing, carsharing, biking, bikesharing, and walking.

The ultimate goal for this program is to reduce single-occupant vehicle (SOV) trips by offering more and better choices for transportation. Although participation in the Site Plan Review process is voluntary, it is incentivized through density bonuses.

Since 1990, ACCS has continued to develop this program, which now includes a 10-person sales team that serves 600 businesses. Approximately 90% of all development is now conducted through the Site Plan review program—the remaining 10% primarily consists of single-family homes or small, town home developments. This leverage has allowed the County to achieve high levels of transit oriented development supported by a renowned travel options program.

Construction Mitigation: State of Washington

Washington Department of Transportation (WSDOT) directly integrates travel options as a mitigation for major construction projects. This need is identified through the project’s Environmental Impact Study (EIS) and is incorporated into the project’s funding. Two examples include a project along I-405, in which 1% of the project funding was dedicated to travel options and the Alaskan Way Viaduct Project, which dedicated $8.5 million per year to purchase transit service to help mitigate the impacts of construction. WSDOT tracks performance of the mitigation effort through ridership, quality of service, travel time delay, VMT reduced, participation levels, and households reached.

Infrastructure and Service Investments: Portland Metro Region, OR

In 2015, a new light rail service was constructed in the Portland Metro Region—the MAX Orange Line. This new service was developed through a partnership between TriMet, the City of Milwaukie, and Metro. Construction was accompanied by an individualized marketing campaign to raise awareness about the new infrastructure and promote the use of this future service. This campaign is described in more detail in the following section.

INDIVIDUALIZED MARKETING PROGRAMS

Individualized marketing programs bring the high-touch outreach needed to educate people about their travel choices. Increasingly, these programs are being initiated alongside major transit service and infrastructure projects to leverage investments.

What is it?

Individualized marketing (IM) is a customized outreach method to promote transportation options within a specified geographic area and/or to a designated demographic audience. IM campaigns are typically limited in duration (about three to six months) but include significant outreach through a variety of mediums, such as direct mail, social media, email, and events. The primarily goal of these programs is to bridge the information gap and support a change in travel behavior—driving less and using travel options more.

Why is it important?

While mass marketing may reach more people, IM incorporates personalization and hands on engagement to promote travel options. It also only targets people who demonstrate interest in learning more about travel options (each program begins by sending a postcard to each household asking them if they’d like more information; customized information is only provided to those who reply “yes”). The customized information allows each program to focus on the unique travel needs of the individual community or audience. In addition to customized materials, IM programs usually include community events to raise awareness about the effort. Due to the variety of outreach methods and focused target area or audience, IM programs have been proven to have a significant impact on travel behaviors. Successful examples are described in the following section.
Where has it been done?

Portland Metro Region, OR

The City of Portland is one of the nation’s leaders in IM programming. The program originally targeted a new neighborhood each year; it recently expanded to focus on businesses and new residents to the region.

In 2015, a unique partnership between TriMet, the City of Milwaukie, and Metro formed to help launch the opening of the region’s newest MAX line—the Orange line connecting downtown Portland to Milwaukie. An individualized marketing campaign was developed to promote service. The target area for this IM program focused on approximately 4,500 households throughout Milwaukie and parts of Oak Grove. Outreach included but was not limited to door-to-door distribution of informational materials, e-newsletters, and community events, such as a family bike ride and art walk.

A pre-program survey was distributed to establish a baseline. During the program, a participant survey was conducted to obtain qualitative data on the user experience with the program. A final post-program survey will be sent at the end of program in summer 2016 followed by a program report in 2017.

Cedar Hills, OR

Drive Less Save More: Cedar Hills was a three month individualized marketing campaign aimed at reducing drive-alone mode share for all trips. The ODOT funded program was a collaboration between numerous organizations, including Metro, Pac/West Communications, Alta Planning + Design, Washington County, local jurisdictions, local businesses, and the Bicycle Transportation Alliance.

The campaign had a specific focus on women and families to encourage them to walk, take transit, bike, and carpool through a neighborhood-based approach, including hand-delivered customized transportation information, neighborhood events, and pre and post-program surveys.
To evaluate the effectiveness of the campaign efforts, pre- and post-program travel surveys were conducted to measure mode share in the target area. Results indicated that residents decreased their drive-alone mode share 1.2%, increased their transit 2.0% and walking 0.6%. Carpooling and bicycling both decreased by 1.3% and 0.1% respectively. Vehicle miles traveled was also reduced for the program target area by approximately 1,880 miles per day.

Respondents in the post-program survey were also asked if they were driving alone more often, less often, or about the same compared to six-months prior—before the start of the program. About 20% of post-survey respondents stated they were driving alone less often. Of the 20%, approximately 9% claimed access to better information about transportation options contributed to this change.

Austin, TX

Movability Austin—the local Transportation Management Association in Downtown Austin—worked with the City of Austin, Capital Metro, the Greater Austin Chamber of Commerce, and the Downtown Austin Alliance to conduct an IM program to encourage downtown employees to use more travel options. The program was funded by a Surface Transportation Program-Metropolitan Mobility (STP-MM) grant from CAMPO Texas—Austin’s regional planning organization. Capital Metro served as the funding recipient for the $114,000 grant. Local share included $32,500, providing a total of $146,500 in funding for the program.

Outreach for the “Do more: Transform Your Trip” campaign included emails to employers, targeted social media, and direct contact with commuters via street stands and company events. Directly engaging commuters on the street proved to be more effective than outreach to the employers. A total of 26% of people engaged through street-level activations pledged to try a new travel mode, including taking transit, ridesharing, biking, or teleworking. Unfortunately, the project did not report on pledge follow-through.

SAFE ROUTES TO SCHOOL PROGRAMS

What is it?

Safe Routes to School (SRTS) programs provide safe, healthy, convenient, and fun opportunities for children to get to school via active transportation. Through a variety of outreach and education
efforts, SRTS promotes vibrant communities, increased physical activity, and improved walking and bicycling conditions throughout the community.

**Why is it important?**

SRTS is a national model that encourages the use of travel options among children. Safety is a major component of the program, in addition to instilling long lasting understanding of the benefits of travel options. SRTS programs also focus on help by encouraging active forms of transportation. In July 2015, the U.S. Surgeon General launched a national call to action for local community planners and leaders to create more areas for walking and wheelchair rolling and prioritize the development of safe routes for children to and from schools. By encouraging walking and active forms of transportation to school, children are more likely to get the recommended 60 minutes of physical activity each day.⁵⁶

**Where has it been done?**

**Eugene, OR**

The [Eugene-Springfield SRTS program](http://www.eugnews.com/article/2008/02/12/080212-pt2.htm) has been active for eight years and now teaches Bicycle and Pedestrian Safety Education to over 1,000 students in elementary and middle schools. Program members include schools districts, local jurisdictions, the local travel options program (Point2Point Solutions), the Lane Coalition for Healthy Active Youth, and the University of Oregon. SRTS program staff work closely with local jurisdictions on infrastructure improvements in addition to other partnerships to increase active transportation throughout the region. As of May 2016, there are over 40 schools throughout the region currently executing some kind of SRTS activity.²⁷

**Independence, OR**

The Monmouth-Independence Safe Routes to School Program is a collaboration between the cities of Independence and Monmouth, the Independence Police Department, the Independence Traffic Safety Commission, and the Central School District. Of the six schools within this district, three are located along a busy street in Independence.

To address this, Independence increased law enforcement along the corridor, conducted safety education at schools, and proposed a new pedestrian path adjacent to the roadway. Independence received a $13,000 grant from ODOT to be used on non-infrastructure programs and also pursued $250,000 of SRTS infrastructure funding for the new walking path.

**Marin County, CA**

Marin County played a strong role in pioneering the national Safe Routes to Schools program. In August 2000, the Marin County Bicycle Coalition received funding from the National Highway Traffic Safety Administration to develop a national model Safe Routes to Schools program. Today, the [Marin County Safe Routes to School (SRTS) program](http://transport.ca.gov/srtspgracis/) is administered by the Transportation

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Authority of Marin (TAM) and currently operates in over 50 schools, serving about 20,000 students.

SRTS activities in Marin County include education, outreach events, jurisdictional partnerships, and promotional campaigns. Professional SRTS instructors teach safe bicycling and pedestrian safety skills and oversee outreach volunteers who promote the program through contests, events, and regular school newsletter submissions. A task force is assigned to each school district for bringing together school faculty, jurisdictional staff, and law enforcement to discuss infrastructure and enforcement issues and plan district-wide promotional campaigns.

**INNOVATIONS IN TECHNOLOGY**

Technology has and will continue to influence travel options programs. With the emergence of companies like Uber and Lyft, the expectation is that travel options will be available at the click of a button – and that weighing the benefits of choices will only get easier.

**What is it?**

Technology is providing more flexibility and reliability for travel options. With smart phones and the nearly constant availability of the internet, people have instant access to information and can make more spontaneous and informed travel decisions at the click of a button. Technology related to travel options include:

- **Smart phone apps** allow the user to easily access travel options information when they are away from a computer or on the go.
- **Multimodal trip planners** incorporate multiple travel modes, such as walking, biking, and transit, into the users suggested trip.
- **On-demand transportation services** allow people to catch rides on the fly.
- **Real-time traveler information** provides real-time roadway conditions and accurate transit arrival or departure information, which may vary from the schedule.
- **Employer commute websites** serve as a centralized hub of information and benefits for employees.

**Why is it important?**

Technological investments can enhance the user experience and encourage travel options. People can see their travel options in real time and make informed decisions based of their individual trip. This provides an opportunity for users to compare modes and understand the benefits of their travel choices.

Technological innovations are also shaping travel preferences for Millennials, the largest generational cohort in Washington County at 42% of the total population. Millennials are more likely to use travel options and are also more dependent on smart-phones, making technological investments for travel options a ripe market.
Where has it been done?

Smart Phone Apps

In spring of 2015, the Westside Transportation Alliance (WTA) launched an app, Commove, to help users find a transportation route to and from work, via walking, biking, taking transit, or carpooling.

Employees create an account and log the mode, origin, and destination of their trips. User are then awarded points based on calories burned, carbon reduced, and money saved on non-SOV trips. This provides opportunity for employers to generate some friendly competition amongst employees and provide incentives to employees with the highest number of points.

Two Washington County employers partnered with WTA to test the app over a three month pilot in 2015. In the near future, WTA hopes to release the app countywide.28

Multimodal Trip Planners

In 2012, TriMet launched an online multimodal trip planner, which allows riders to plan their trip using multiple modes. The open source tool is the first of its kind produced by a transit agency in the U.S., and offers the following features:

- Combines transit, biking, and walking into a single itinerary.
- Customizes routes based on user selection, such as quickest, flattest, or most bike-friendly.
- Displays an elevation chart for bike routes.
- Uses OpenStreetMap to keep bike routes and walking paths up to date.
- Provides carshare locations to easily integrate carshare trips with other modes.

According to TriMet, the online tool cost a total of $240,500 to launch, which includes the cost of system design and development (public phasing interface, internal facing interface, backend development, routing algorithm, and feature requirements); data improvements to support multimodal routing; testing and reporting; beta and public launch. Annual support for the system is estimated at $25,000 per year.

On-Demand Transportation Services

On-demand, point-to-point transportation services allow passengers to connect to and from public transit services or complete short trips. Companies like Uber and Lyft already operate in Washington County. The ability to book a trip via a smartphone means that a ride can be summoned easily in areas where transit is not available, increasing the catchment area of transit and providing access to transit at early morning or late evening hours when some fixed-route services do not operate. Companies like Uber and Lyft are gaining in popularity, particularly as they expand their service models to include shared ride models (UberPool and Lyft Line).

The Westside Transportation Alliance On-Demand Last Mile Feasibility Study (2015) identified a significant need for last mile services in Washington County. The study noted that partnerships with on-demand transportation services, such as Uber or Lyft, could be critical to fill the last mile

Several transit agencies around the country are exploring these options. One example is the Livermore-Amador Valley Transit Authority (LAVTA) in California where they are pursuing a subsidy program with Lyft to promote demand-responsive ridesharing as an alternative to low-performing LAVTA routes that provide access to Bay Area Rapid Transit (BART) stations. The Denton County Transportation Authority (DCTA) in Texas is also in the process of providing subsidies for first and last mile trips made with Uber.

Real-Time Arrival Information

Real-time arrival information is status quo across the country as more and more transit agencies make their data open source. King County Metro offers trip arrival information through the Real-Time Map. Users can select which routes they would like to be displayed on the map and click on a stop to see the next three scheduled and estimated departure times. By clicking on a bus icon, users can see the status of each vehicle on their desired route (e.g. 1 minute behind schedule). Real-time arrival signs at transit stops and stations also ease the waiting customer.

Travel Options Websites

Travel Options websites provide a centralized portal for travel options information, including schedules, fares, ride matching, and benefits. A few examples are provided below:

- **GetDowntown** is the centralized travel options website for the GetDowntown program in Ann Arbor, MI. The website provides links to transit services and discount pass programs, commuter challenges, and ridematching services.
- **King County Metro Commute Calculator** provides a tool for commuters to calculate the cost of their driving trip compared to transit.
- **Seattle’s Way to Go Program** website provides travel options resources for commuters, residents, and visitors. The website includes a series of photos to “Visualize The Impact of Your Transportation Option” by comparing the impact of 200 travelers in a car, on a bus, on a light rail train, or by bike.
- **Luum** is a full service Commute Management System for employers that can manage and track employee transportation choices to improve understanding of employee commute activities and help better determine employee commuter needs. The Luum software features a branded Commuter Hub web portal where employees can access commute information and track their commuting behavior and associated costs. Another feature includes a social and game-based system to incentivize travel options and team-based commute challenges where organizations and individuals. Luum can also be integrated with employer parking systems to allow employers to track (and charge) employees to park, or provide them a credit for biking, walking, taking transit, or sharing a ride.
7 KEY FINDINGS

The following key findings will inform the travel options assessment and organizational scenarios:

- **Washington County has a wide range of existing services.** There are a variety of travel options available in Washington County: local and intercity bus, light rail, commuter rail, community shuttles, ridesourcing, car sharing, and active transportation. Such a wealth of existing services provides Washington County with an opportunity to leverage and encourage travel options.

- **Washington County is expected to continue to experience growth over the next 20 years.** As population and employment growth continues, the number of trips is expected to increase 43% by 2035, with transit, bicycling and pedestrian travel increasing the most (increases of 90%, 54% and 52%, respectively).

- **Employment sites in Beaverton, Hillsboro, and Tigard are ripe for travel options.** Analyzing the densities of low-income, millennial, and older adult employees revealed that employees within Beaverton, Hillsboro, and Tigard have the highest propensity for travel options. Additionally, Hillsboro has a high number of employment sites within one mile of frequent transit service, heightening its potential for the use of travel options.

- **Residents concentrated along frequent transit services would be most receptive to travel options investments.** Analyzing the densities of zero-vehicle households as well as low-income, millennial, and older adult residents indicated residents in Beaverton, Forest Grove, Hillsboro, and Tigard have the highest propensity for travel options. The highest number of residents within one mile of frequent transit service are located in Beaverton, Hillsboro, and Forest Grove, which increases the likelihood of travel options being well used.

- **Travel options programming should occur simultaneously with new development in targeted development areas.** By the year 2040, North Hillsboro, along the 217 corridor, Tigard Triangle, and the Basalt Creek employment area are expected to have the most employment growth. New urban areas including South Cooper Mountain (Beaverton), River Terrace (Tigard), South Hillsboro, AmberGlen (Hillsboro), West Sherwood are expected to develop as mixed-use centers with residential neighborhoods, commercial nodes, and employment districts.

- **The southwest portion of the county has limited access to transit.** Residents and employees in this area are not within one mile of transit service. As such, travel options strategies in this area should be more focused on community shuttles, car sharing, and ridesharing.

- **Travel options strategies should consider home and work locations.** Currently, SOV makes up the largest portion of mode share regardless of home or work location. Washington County employees who live and work within the county utilize transit for their commute but are more likely to walk or bike to work than residents outside the...
county. The majority of employees who commute into Washington County for work primarily live in Multnomah and Clackamas Counties. These employees are more likely to take transit or carpool to work.
APPENDIX

METRO RLIS ZONING CLASSIFICATIONS

Central Commercial (CC): allows a full range of commercial typically associated with CBD’s and downtowns. More restrictive than general commercial in the case of large lot and highway-oriented uses. Encourages higher FAR uses including multi-story development.

General Commercial (CG): larger scale commercial districts, often with a more regional orientation for providing goods and services. Businesses offering a wider variety of goods and services (including large format retailers) are permitted in this district and include mid-rise office buildings, and highway and strip commercial zones.

Neighborhood Commercial (CN): small-scale commercial districts permitting retail and service activities such as grocery stores and neighborhood service establishments that support the local residential community. Floor space and/or lot sizes are usually limited to between 5,000 to 10,000 square feet.

Mixed Use Commercial & Residential/ Multi-use Residential (MUR)

- MUR1: Mixed Use Commercial & Residential with FAR maximum of about 0.3
- MUR2: Mixed Use Commercial & Residential with FAR maximum of about 0.5
- MUR3: Mixed Use Commercial & Residential with FAR maximum of about 0.7
- MUR4: Mixed Use Commercial & Residential with FAR maximum of about 1.25
- MUR5: Mixed Use Commercial & Residential with FAR maximum of about 1.5
- MUR6: Mixed Use Commercial & Residential with FAR maximum of about 1.75
- MUR7: Mixed Use Commercial & Residential with FAR maximum of about 2
- MUR8: Mixed Use Commercial & Residential with FAR maximum of about 3
- MUR9: Mixed Use Commercial & Residential with FAR maximum of about 4
- MUR10: Mixed Use Commercial & Residential with FAR maximum of about 12.5

Multi-family Residential (MFR)

- MFR1: single family, townhouses, row houses permitted outright. Max density permitted is 15 units / net acre.
- MFR2: single family, townhouses, row houses permitted outright. Max density permitted is 20 units / net acre.
- MFR3: single family, townhouses, row houses permitted outright. Max density permitted is 25 units / net acre.
- MFR4: single family, townhouses, row houses permitted outright. Max density permitted is 30 units / net acre.
- MFR5: single family, townhouses, row houses permitted outright. Max density permitted is 35 units / net acre.
- MFR6: single family, townhouses, row houses permitted outright. Max density permitted is 45 units / net acre.

- MFR7: single family, townhouses, row houses permitted outright. Max density permitted is 85 units / net acre.

**Single Family Residential (SFR)**
- SFR1: Single family - detached housing with minimum lot size from 35,000 sq. ft.
- SFR2: Single family - detached housing with minimum lot size from 15,000 sq. ft. to a net acre
- SFR3: Single family - detached housing with lot sizes from about 10,000 sq. ft. to 15,000 sq. ft.
- SFR4: Single family - detached housing with lot sizes around 9,000 sq. ft.
- SFR5: Single family - detached housing with lot sizes around 7,000 sq. ft.
- SFR6: Single family - detached housing with lot sizes around 6,000 sq. ft.
- SFR7: Single family - detached housing with lot sizes around 5,000 sq. ft.
- SFR8: Single family - detached housing with lot sizes around 4,500 sq. ft.
- SFR9: Single family - detached housing with lot sizes around 4,000 sq. ft.
- SFR10: Single family - detached or attached housing with lot sizes around 3,500 sq. ft.
- SFR11: Single family - detached or attached housing with lot sizes around 3,000 sq. ft.
- SFR12: Single family - detached or attached housing with lot sizes around 2,900 sq. ft.
- SFR13: Single family - detached or attached housing with lot sizes around 2,700 sq. ft.
- SFR14: Single family - detached or attached housing with lot sizes around 2,500 sq. ft.
- SFR15: Single family - detached or attached housing with lot sizes around 2,300 sq. ft.
- SFR16: Single family - detached or attached housing with lot sizes around 2,000 sq. ft.

**Industrial Campus (IC):** Campus/Industrial/Business Park - permits light industrial & limited commercial uses on large/irregular parcels

**Light Industrial (IL):** districts permit warehousing and distribution facilities, light manufacturing, processing, fabrication or assembly. May allow limited commercial activities such as retail and service functions that support the businesses and workers in the district.

**Heavy Industrial (IH):** districts permit light industrial and intensive industrial activity such as bottling, chemical processing, heavy manufacturing and similar uses with noxious externalities.

**Office Commercial/Office (CO):** districts accommodating a range of low-rise offices; supports various community business establishments, professional and medical offices; typically as a buffer between residential areas and more intensive commercial districts.

**Public Facilities (PF):** allows government building, institutional and cultural uses such as museums.

**Parks and Open Space (POS):** Parks and Open Space

**Exclusive Farm Use (EFU):** Exclusive Farm or Forest Use

**Rural**
- Rural Commercial (RC)
- Rural Residential or Future Urban (RRFU): residential uses permitted on rural lands (1 dwelling unit per lot) or areas designated for future urban development, typically lots are 10 or more acres
Future Urban Development/Urban Reserves (FUD): holding zones inside Metro UGB - planned for future residential or nonres. uses (assume 10 DU/net)